North American
AstroPhysical Observatory

NAAPO (North American AstroPhysical Observatory)

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RO Equipment Disposal

Earl Phillips

Following is a list of items at the RO office that are to be disposed of. If you or anyone you know is interested in obtaining any of these items, please contact me on RADOBS as PHILLIPS-E or call 764-0476 nights and weekends. The deadline to contact me for any of these items will be the next issue of Signals (that will be the June issue). We will accept any generous donation to the coffers of the Radio Observatory in exchange for any item of interest.

2	Sorensen A/C regulators
1	Dana digital voltmeter
2	IBM 1072 terminal multiplexers
1	program verifier
3	frequency analyzers (old)
1	Hewlett/Packard power supply
1	DEC reel to reel tape machine
24	boxes of computer tape, various sizes
15	boxes of punch cards (5 each)
1	IBM 29 card punch machine
9	mag. tape reels, in cabinet
1	IBM 1132 printer machine

If anyone is interested in any of the above mentioned articles, please contact me to arrange to meet at the RO office to examine.

WORKING SESSION NOTES
15 April 1989

Phil Barnhart

ATTENDING: Zimmer-P, Zimmer-S, Smith-Mayes, Ayotte, Connell, Childers, Helwig-R, Helwig-D, Dixon, Phillips, Campanella, Jurgens, Kennedy, Barnhart-P.

We continued the practice of brief reports. Bob Dixon seeks fellow travellers to the Dayton Hamvention. This is an annual pilgrimage not unlike that to Mecca. Radio Hams are like that.

Bob shared a letter from Jill Tarter indicating some movement may be getting under way on an engineering study of the telescope. This is good news.

There are still bugs in the SETI program according to the Software group. Recommendation was made to obtain a card that would assure automatic total modem control by the 11/23. This will be explored.

The formal meeting was adjourned so that painting, weed control and general straightening up could be addressed

WORKING SESSION NOTES
6 May 1989

Phil Barnhart

In attendance: from my recollection around the room. (Apologies for any I missed.)

Zimmer-P, Zimmer-S, Mitchell, van Horne, Childers, Connell, Dixon, Ferryman, Phillips, Barnhart-P.

Announcements included the reporting of the Ohio Section of GLPA (Great Lakes Planetarium Association) visit to the RO and Perkins the week before. MITCHELL hosted a productive meeting and considerable enthusiasm was expressed for the cause of the R0. We will start circulating SIGNALS to the Planetarians in the state.

We have received the 1/3 horsepower DC motor, gearbox and shaft encoder from BOB STEPHENS. It looks small. Tests will tell.

PHIL ZIMMER has volunteered to facilitate a peg board brochure display for placing near the guest book.

It was decided to continue storing the truck in the garage, moving it out when access to the tools and machines is necessary.

PHILLIPS-E has done a tremendous job of cleaning up the office/work area. He is commandeering Dixon after the meeting to tag all disposable stuff.

Meeting adjourned at 11:05 so that jobs in progress could be continued.

Next Meeting: 20 May 1989 at Big Ear 10.00 am.

COORDINATOR'S CORNER

Phil Barnhart

George Foster, guiding trustee in the founding of NAAPO, has finally disentangled the equipment left over from one of the businesses that went sour. He called this week and informed me that he is now ready to transfer the material to NAAPO and the Radio Observatory. I took a look with him and Linda Morehead (who officially keeps him from giving the rest of his businesses away) at the stuff that is stored in a few bins around town. There is at first glance a lot that we will have to shuffle through, but that much of the stuff can be used. This now becomes a big job for the summer.

There will be a definite storage problem while we process the material, but all should be cleaned up before the start of classes next fall. It will take some volunteer time and this would be a good effort for a student intern during the summer.

My blood pressure has endured the past two months of launching a grand-daughter into the world. Again I come to the conclusion that insanity is inherited — you can get it from your children!!!!

I am lifted up by the knowledge that the Observatory business continues to roll on

in spite of my absence from direct involvement. Volunteers are great! We are fortunate for your dedication.

OBSERVATIONS

Tom Van Horne

As I sit to write this column, I find myself in the terribly embarrassing position of having already said almost everything I have to say this time out. Specifically, the paper Bob Dixon and I presented to the Planetary Society SETI conference in Toronto, that was sent out with Signals several months ago, covered nearly all the topics I was intending to cover in these articles — WOW and other intermittent signals; Project Argus; details of the new system. So instead, I'd like to break from the specific discussion of our OSU SETI activities and discuss the SETI activity that I call "Blue Skying ".

Blue skying is that form of SETI research that can be carried out on a warm summers day, lying in the grass and staring into the sky. It consists of elaborate speculation about something without any basis in fact or experience whatsoever. In the SETI field, blue skying is most popularly applied to speculation regarding the nature and activities of extraterrestrial intelligence. I think that its safe to say that blue skying easily dominates the SETI literature, and will continue to do so until we actually find something we can get a grip on. Blue skying is very important and valuable in SETI for two reasons — one: it's fun; two: it gives us something to base our SETI experiments on. From Philip Morrison's suggestion that ETI civilizations might broadcast at 21 cm in order to be discovered by new technological species to Frank Tipler's contention that if ETI existed it would be unavoidable, blue skying is the basis for everybody's position on SETI.

I use the term blue skying instead of, say, theorizing because SETI speculation is based on something that we fundamentally cannot know about. In order to theorize about ETI technological civilizations, one has to start with the one example of a technological civilization that we have — ourselves. Because it would be an extraordinary coincidence for another nearby species to emerge into its technological infancy from the millions of years of pre-technological development at exactly the same time as we ourselves have, it is nearly certain that any ETI civilization we detect will have been engaged in technological development for much longer than we have. Thus it is insufficient to theorize about ETI starting with

the example of ourselves, we must instead start with the example of what we will be after a much longer period of technological development. The starting point for SETI theorization is futurism.

SETI speculation is thus subject to the same pitfalls and errors as futurism. Anyone who is unaware of the nature of those pitfalls or is unaware that they exist is directed to Arthur C. Clarke's marvelous book Profiles of the Future. For example, it is apparently ignorance of these pitfalls that enables some of the most prominent SETI researchers to argue that no intelligent civilization will ever engage in interstellar travel. The arguments that they use are frighteningly similar to those that Clarke quotes from the early part of this century proving the impracticality of heavier than air transportation and the impossibility of space travel. In fact, Robert Forward, former chief scientist of Hughes Laboratories, has already worked out two systems of interstellar transportation capable of making round trips to nearby stars within a human life span. Neither of these require fundamentally new scientific or technological breakthroughs and neither would bankrupt a civilization with a substantially more developed presence in space than our own (see Forward's "Future Magic').

Since human experience with futurism (even relating to our own species) is so bad, how successful can we expect to be in theorizing about "future" characteristics of ETI? Until we have solid results, SETI shares with theology a wonderfully egalitarian absence of expertise — anybody's ideas are as likely to be right as anybody else's. This by no means indicates that there is no value in blue skying. If Frank Tipler has failed to convincingly demonstrate the absence of ETI, he has at least pointed out that if such technological societies have existed over long periods of time, they do not expand to fill all available inhabitable environments. Philip Morrison has at least given us a place to start looking.

OSU SETI has consistently followed what I consider to be the safest course. Blue skying can be fun and valuable, but it can be a major mistake to allow it to let you think that you really know what's going on. For this reason, I am very glad that our project has avoided preconception wherever possible. Full sky survey techniques make no assumption regarding where one will find ETI. The new SETI Zoom system eliminates the frame of reference question and is driven by technological capability — doing whatever we CAN do — rather than preconceived notions of how we will "most likely" get results.

So having told you why I distrust blue sky speculation regarding ETI, for my next column I'll tell you what I think may be out there and who I think we should be asking for their ideas.

RADOBS NOTES

19 Mar 89
PHILLIPS-E
Name Assignments

I have found something in my clean-up of the RO which may be of interest especially to Mr. Van Horne and Mr. Dixon, due to the amount of old RADOBS messages concerning the potential names of some interesting radio sources. I have found a binder entitled "OSURO PROGRAM DOCUMENTATION", and in it, it contains a memo concerning how to name sources according to their specifications. I will bring it to the next meeting with either of you, for your perusal.

20 Mar 89
JANIS-S
RFI

As per a request made some time ago, I have obtained a "Low Altitude Pilot Chart" for the Columbus/Delaware area. (It actually covers a much larger area). It is awaiting any interested RFI people in the RFI mailbox in Dreese 805.

21 Mar 89
HORNE-W
horn cart drive

I have been reading, with interest, the messages re the horn cart drive system. One thought: the "slide wire" position measuring and feedback system will be a source of problems, I predict. I suggest some consideration for an alternate system, to wit:

One way the position could be measured would be through an ultrasonic system of simple type. This is an idea that was used some years ago in a 10-inch strip-chart recorder for feedback of the pen position to replace the usual slide wire in the null-balance servo. An ultrasonic transducer mounted on the pen carriage emitted pulses that were picked up by a transducer at each end of the pen travel, i.e. each side of

the chart. When the pen was in the middle of the chart, the pulse was detected simultaneously by both transducers; when it was closer to one end than the other, it reached one before the other. The RATIO of the time between emission and reception by the two transducers respectively was a precise measure of its position. The ratio technique eliminates the effect of temperature that would change the speed of sound.

It seems to me that the same scheme could be used on the horn cart. Three 'tweeters' capable of generating sound of twenty KHz, or higher, would be used: one as the 'transmitter' on the cart, the other two as receivers, or microphones, at both ends of travel. A few-millisecond pulse of sound with a repetition rate of perhaps one second should do the trick. Remember that the speed of sound is about one foot per millisecond, so a move of one foot by the cart will cause a 2 ms. difference between the receivers.

The electronics required should be child's play for all the electronic geniuses among the volunteers, right? A few TTL chips and a power supply, right.

22 Mar 89
DIXON-R
Cart Position Sensing

I agree that the slide wire is not the ultimate answer to sensing the cart position. But it is simple and inexpensive so we should retain it in any case to serve as a check on whatever other methods are used. The sonic method is the first new idea in some time, and sounds great to me. Since it is completely independent of the drive system, and is an absolute (not relative) measurement, it meets all my basic criteria. One thing to consider is the achievable accuracy. We need at least 1/2 inch, and 1/10 inch would, be perfect. I suspect the design and construction of the sonic transmitter/receiver/timer may not be so easy, but then I don't design such things. Would this electronic box then provide an analog output voltage proportional to the position? Exactly proportional, or requiring some computation? Connect to computer via a/d converter (12 bits resolution is OK)?

22 Mar 89
DIXON-R
Donations Needed

We need donations of painting equipment:
Rustoleum Rust Reformer
Rustoleum Rusty Metal Primer
Rustoleum Paint, in colors to be determined.
Paintbrushes, rollers, cleaning solvent, drop clothes, etc.
Cherry Picker
Wire Brushes

Need ideas on how to reach the back side of the flat reflector to paint it.

22 Mar 89
PHILLIPS-E
satellite signals

I have received from a Mr. Peter Backus, of Ames Research Center, transmitting freqs of all the satellites they are aware of. Of course, some of them fall in our search area, so now it is necessary to find out if individual satellites affect us. In his cover letter, he suggests that I contact a Mr. Bob Dixon, at OSU for the address to the WARC, and write to them for further info. Mr. Dixon, could you find the address? I will write to them as soon as I have it, and get any data pertinent to us. The info I did receive to date I will bring to the next meeting if you are interested in looking it over.

24 Mar
HORNE-T
overlay challenge

From the April Sky & Telescope 'News Notes' Pg. 351-2

Cataloging One Billion Stars and More

One of the richest resources available to astronomers is the National Geographic Society-Palomar Observatory Sky Survey. The glass plates taken in the 1950s with the 48 inch Schmidt Telescope cover two-thirds of the sky (to -33 degrees declination) down to as faint as 20th magnitude. The survey has helped Researchers track down objects as diverse as red dwarf stars, clusters of galaxies, and optical counterparts to radio and X-ray sources. But to date no catalogue has been made of

all the information these pictures contain.

Now lasers and super computers have enabled such a list to be created. Roberta M. Humphreys and Robert L. Pennington (University of Minnesota, Minneapolis) will head this massive inventory of celestial objects. A grant from the National Science Foundation will allow them to use the university's automated plate scanner to process all the survey's 1870 plates. The high speed scanner uses a laser to digitize images with a resolution of 5 microns. For this project, the machine will operate at its slowest speed for greatest precision measuring two 14 by 14 inch Schmidt plates in 3 hours.

Once the plates have been scanned, a bevy of computers — including a Cray 2 super computer — will sort through the data, separating galaxies from stars and dealing with problems like nebulae, blended star images, and photographic 'defects' such as stray reflections off the Schmidt telescope's optical system.

Announcing their project at the January meeting of the American Astronomical Society in Boston, Humphreys and Pennington explained that the final catalogue will contain the positions, brightnesses, and colors for one billion stars, plus digitized images of three to four million galaxies. The star catalogue will be accurate to about 0.7 arc second and to about 0.2 magnitude. They anticipate that the plate scanning and data processing will take some two years to complete.

A second, deeper Schmidt sky survey is now under way for the northern sky. Once it is completed, Humphreys and Pennington hope to scan its 2,682 plates similarly. Comparisons of the data from plates taken more than 3 decades apart will yield a vast new wealth of information on the proper motion of faint stars.

Sounds like the overlays will need a few more labels!!!

24 Mar 89
HORNE-W
CART POSITION SENSING

I have not given much thought to the details of the electronics of my suggested ultrasonic system. I don't think I am competent to design the system in toto, but I can point out a few salient features.

First, I would not consider an analog final readout of cart position. I think it will be easier to read out an actual dimension in feet or inches from some benchmark. Remember that we are actually measuring time intervals: the length of time required for a sound wave to travel from the cart to each end of the span of travel. At the speed of sound, about 1 millisecond per foot, and a total cart travel of 20 feet, we will be measuring intervals of zero to 20 ms. The easiest way to measure intervals is to use a crystal-controlled clock oscillator and count the cycles over the interval in question.

To convert the measured intervals into a spatial dimension it is necessary to calculate a ratio, as follows:

Let:
HR = Time interval from cart to right end of travel
HL = Time interval from cart to left end of travel
P = Position = Distance from cart to right end
T = Track length = Separation between receivers

Then: P = (HR/(HR + HL))*T

Perhaps the simplest approach would be to enter the digital counts of both intervals HR and HL into the computer and let it perform the arithmetic. Note that since (HR/(HR+HL) is a pure ratio, the frequency of the clock oscillator is purely arbitrary; it can be any convenient value sufficiently large to allow resolution to the desired measuring accuracy.

Second, I had not realized that we require resolution to a small fraction of an inch. In my initial memo I suggested pulses of 20 KHz sound, like "dits" of a CW signal with a carrier frequency of 20 KHz. My reasoning was that, to discriminate against background noise from wind, the received audio would be passed through a narrow-band 20 KHz filter. I am not capable of mathematically analyzing the transfer function of a filter, but intuitively I suspect that the effective time constant of the filter will smear out the leading edge of the pulse too much to allow resolution of measurement to better than 0.5 inch, since one wavelength of 20 KHz sound is about that same value. So I think it may be necessary to increase the carrier frequency to 100 KHz, or more. I don't know enough about loudspeakers to know if it is possible to obtain "tweeters" that will go that high.

I hope that someone who is a far better electronic engineer than I am can review this idea from the standpoint of practicality.

28 Mar 89
CHILDERS-R
Equipment condition

While I have been puttering around the RO, I've tried to get some of the equipment in the garage to work. So far:

Small tractor works
Air compressor: AC motor is shot, will try to use another
Big truck: runs. Thanks Ron Huck for charging the battery
Arc welder: one AC welder works
Drill press: OK
Saw: OK
Hand drill: missing one brush for its motor, will order a new one
Acetylene torch: acetylene on order

I found a small trailer which the tractor can haul around. All the power on the horn cart, plus power strips in the focus room, are fed by Phase 2 of the focus room power supplies. I will try to re-route some of the power to Phase three. Also, the dehumidifier in the horn cart is run off of "Regulated" Phase 2 and "Unregulated" Phase 3. I will try to switch the regulated supply so it only powers sensitive equipment.

29 Mar 89
PHILLIPS-E
SETI

There is an interesting story in the March issue of OMNI mag. dealing with the SETI difficulties. The author, A. J. Kelly Beatty, figures that it should be relatively easy to find ETI signals, by using supernovas. The theory here is that any intelligent civilization would realize that there is a time signal provided by a supernova, as the light moves out from the site of the explosion. The author further states that the best communication therefore, is to point our receivers at the downwind side, as intelligent civilizations would send their signals ahead of the light moving away

from the site. The question of what freq. to tune to seems to be the microwave section of the spectrum, as current theory holds. My only question is: shouldn't light move away from the exlosion concentric, as already seen in sn 1987a. If so, where is the downwind side? also, how do you get the transmitted signal ahead of the light? Although the basic concept seems to be sound, the author states that since supernovas are relatively rare, all civilizations intelligent enough to be able to look at it, will be, so all eyes are glued here, so to speak. The downwind question then becomes which direction are other civilizations watching from, which brings us back to the original dilemma; where is everyone?

4 Apr 89
HORNE-T
Tuesday meeting

In Bob's absence, I indulged my megalomania and seized total control of our Tuesday meeting. Present were myself, Ron H, Tom Shiffler (of the Richland Astronomical Society), Dave Jurgens (who arrived LATE!!!!), Walt M and Rodney.

Ron was concerned about the chart recorder and the state of our pre-amps in the wake of the television crew. He also expressed reservations about rain and snow interference with the recently discussed possible sonic cart location system.

Tom Shiffler is president of the newly-formed Ohio Institute of Science and Technology (OIST), an astronomy/science advocacy/education group. He is also a member of the Richland Astronomical Society which operates the very prominent and successful 'Warren Rupp Observatory' which features the country's second largest (largest until recently) amateur telescope (optical). He suggested that the Richland group has resources and abilities that may be of great benefit to our projects. He said they have thousands of dollars contributed from corporations. He said Russ had been talking with Warren Walker, one of their technical experts about arranging a laser based system for horn cart measurement and that the parts and expertise necessary to create such a system might be forthcoming from their group. He also suggested that they may consider 'permanently loaning' an AT class micro for our focus room and said that they have extensive software directly applicable to lots of things we want to do with our micros. He suggested that we should send up a delegation to visit their facility including our micro people (especially Dave Juigens). Dave said he would follow up on the micro side of this possible

relationship. Tom Shiffler is regularly available at CAS meetings and may be reached at the following address:

Thomas Shiffler
Vice President of Research
Oak Tree Numismatics
P.O. Box 217 * 638 Jefferson St.
Ashland, OH 44805

He gave more contact info to Dave. Warren Walker's address info is available via the "prime focus" membership list.

Dave reported on his efforts to assist Phil with the damage at Otterbein. And agreed that it would be nice if we had an AT machine for the proposed Micro applications.

Walt called attention to the Planetarium presentation at the OSU planetarium tomorrow at 8pm — Admission is FREE!

Rodney reported progress with the SETI programs. He said that the OSU SETI system would be running in full-time Search mode by the next Saturday meeting.

As I was running the meeting, no one noticed that I ducked out of giving my report.

4 Apr 89
HORNE-T
Oh, yeah

Oh, yeah — I forgot. At the Tuesday meeting Dave Jurgens got a copy of the RFI pre-print He had also brought a copy of the charted airline data provide by Earl Phillips. This chart showed daily distribution of airline traffic over each week. The RFI pre-print showed daily RFI distribution over each week. At first glance, there seems to be an exact correlation between the two graphs. Dave will compare them in more detail and report. It looks like a very impressive result.

5 Apr 89
HORNE-W
Horn Cart Position Sensing

I have been exchanging memos with Angie Campanella about whether or not the idea of sonic position detecting is practical. I have suddenly realized that I had neglected the effect of wind velocity and its effect on the speed of sound. I am afraid that makes the whole idea impractical.

Remember that the ratio detecting method I proposed completely eliminates any error from changes in the speed of sound, SO LONG AS THE SPEED FROM LEFT TO RIGHT 1S THE SAME AS THAT FROM RIGHT TO LEFT. But if a wind is blowing from right to left, the speeds will NOT be the same.

The magnitude of the resulting errors would be severe. A 60 mph wind is 88 ft/sec., which is approaching 10 percent of the speed of sound. That would cause an error of almost 20 percent in the ratio.

As I said, I borrowed the idea from a 10-inch strip chart recorder built some years ago. In it, the sound enemy was conducted through a metal rod, so they had little problem from wind. I am sorry I got everybody distracted on a harebrained scheme.

9 Apr 89
PHILLIPS-E
RO office inventorying

The inventory of the items in the RO office is now complete, including the published items in the bookcases (except for one bookcase that got inadvertently hidden by stacks of stuff). Barring anything unforeseen, a list will be available at the next meeting for both Mr. Dixon and Mr. Janis. It is my intention that Mr. Dixon and I will be able to make the necessary decisions as to what to keep/dispose of immediately following the meeting. At that point, Mr. Janis will hopefully be able to inform OSU that their items must be handled within a certain short amount of time. The untagged stuff we will be able to dispose of much quicker, of course. Once a decision has been reached on all the items, it will be hopefully a relatively short amount of time before we are down to just the items we absolutely require, and will then be stored in a much more space efficient manner. At that point, we will be able to make much better use of the newly available areas. Some possibilities include a room for the library of all the published material, one possibly as an electronics workroom, another possibly for a kind of shared office situation. Possibly another as a sort of "refreshments room" storing the refrigerator,

an already donated small snack machine, also an already donated coffee machine, etc. Of course, once the items to be disposed of, the next task is to paint. Any extremely early volunteers?

10 Apr 89
PHILLIPS-E
satellites

I have received more info on sats from the government, this time regarding the shuttle. It included a chart of the orbital tracks of sts-30, and a booklet for helping to try to figure out the orbits of the shuttles. It also included some transmitting freq. data, which will be incorporated into the rest of the transmission data I've received. Also received another dozen or so places to write away for related info, to be added to the half-dozen I already have to write to. It's amazing how many places there are connected to the gov. all doing the same thing. My intention is to gather all data I can gather together, then try to build some sort of freq. chart of signals that we may be picking up as RFI, as another possibility to be checked by the computer once a signal has been received, after checking the known RFI signals for any matches. There is still a lot to do though, and many many letters to be written. Boy, what I wouldn't give for a printer! Even a typewriter! If anyone has the address of the British Amateur Astro. Society, or can get it, I would appreciate it.

18 Apr 89
PHILLIPS-E
final frontier story

The story on the radio observatory and Dr. Dixon is in this months issue of final frontier, page 11 for anyone interested in reading it. It points out that it has been involved in SETI longer than anyone else on a continual basis, and that it is also mainly run by a contingent of volunteers. There is also mention of the RFI situation, as well as planned zoom techniques. Its kind of short for the long history we have, but as the saying goes, its simple but it says it. All in all, it was well written, and it would seem that Dr. Dixon gives a pretty good interview! Good job!

21 Apr 89
PHILLIPS-E
satellite traffic

Have received more info from the government regarding satellite traffic. They state that there are currently over 5000 objects orbiting the earth. Approx. 1310 of them are payloads, approx. 60 are rocket bodies that have been in orbit less than two years. They state that they do not necessarily track every object in orbit, as much of it is small and relatively harmless, for now. They will send detailed info on specifically requested objects, so if we ever narrow down the ones that possibly cause us RFI problems, the tracking data is available to help predict when it will bother us (times of day). They also sent an overlay map to help project some orbits.

And the search keeps on.....

22 Apr 89
PHILLIPS-E
satellite transmission freq. info

I have received another 4 packets of info from various government agencies regarding satellite transmitting frequencies. I now have many, many such freqs. and will now begin compiling a list of them so that we have this data for the RFI situation. If there are any suggestions as to how they would like to see this list, or in what format, let me know. There is also more tracking info for the GOES sats, WESATS, NDSATS, and many others, as well as some info on how to construct a receiving station for the WEFAX satellite system, and the related bbs login info, if anyone's interested. They also included another 2 dozen or so further places that I should write to for receiving more related info. Due to the ever increasing volume of this writing campaign, would it be possible to borrow that printer for a little while? Either that or I could compose the individual letters and send them to someone with a printer, whichever is easier. Please let me know so I can get this done soon. Dr. Dixon, will you have a night free this week, or a day this weekend to go through the RO office and begin the task of deciding what to get rid of?

23 Apr 89
BOLINGER-J
Measuring cart motion

Sorry about the untimeliness of this response, folks but have been busy and also had computer problems here at home.

Ultrasonics should not be abandoned completely before a thorough investigation is made. Yes, the wind will affect things if you have only one transmitter receiver pair. But if you have two you can compensate. Mount both transmitters on the cart with the receivers at the end of the track. What will happen is that the wind will cause a doppler shift (it doesn't happen on radio waves but on sound waves — remember the 'ether detection' experiments) of equal but opposite magnitude on the two sound paths. This can be corrected for if it doesn't cancel out in the calculations. You could also use it to measure the relative wind speed.

If both 'channels' are treated the same as far as the signal processing is concerned (squaring up the wave form) the slow rise time should cause no problems.

The only problem that I can see is 'How much attenuation are you going to have over that path length?'

You could set up some sort of interferometer system and count the interference fringes. This would give you an accuracy of one-half wavelength, but this would be a relative reading and not absolute.

The slide wire, I think, is still a viable absolute indicator. It still needs some work to improve it, however. The accuracy is limited only by the manufacturing tolerances of the nichrome wire, which could be replaced by a carbon fiber (talk to the home-brew airplane people — not models but real airplanes) for higher resistance, and the slack in the wire. A carbon fiber would allow greater tension and less sag.

2 May 89
BARNHART-P
GLPA at RO

Walt Mitchell hosted a good meeting of the Ohio Branch of the Great Lakes Planetarium Association at Perkins Observatory last Saturday. The session included a visit to the R0. PHILLIPS-E and Barnhart-P led the tour for about 15 people. This is a good way for the RO to gain visibility.

I talked to Sandy Halleck of the Center of Science and Industry. He is interested in the possibility of getting an active RO display going at the Center. This will mean getting the video display going and a communications link arranged.

3 May 89
PHILLIPS-E
certificates for donors

I would like to suggest that we come up with some sort of certificate of appreciation that we can award to donors while they tour our facilities. This will have the effect of giving us a much better name to the corporate people, and make them feel much more generous if they feel that their efforts are appreciated enough to merit them some sort of award. Any thoughts?

4 May
FERRYMAN-R
Progress

I would also like to report that I have the SETI Search program working according to Bob's specifications (assuming I interpreted them correctly). This Saturday, I would like to show Bob what I have done, and if it meets his approval, I would like to start working on the Examin program. As far as I know, Examin only has a few problems, and hopefully will not take too much to fix up.

12 May
DIXON-R
Drains and Painting

I spoke with John Kraus today. He is making a number of arrangements:

1. The ESL people have a new grant, and will be making lots of tests thru the summer. This has provided more money for the telescope, so John is now getting bids on painting the parabola. This would be a complete job, with sandblasting followed by 2 coats. He says the flat reflector could be done later if more money comes in.

2. He has asked the OSU plumbing people to clean out the drains, and they say they will (no idea if any payment is needed). He will have them start at the creek end and ream it out upstream in the drain pipe.

3. He has noticed the brush and other work we have been doing and is pleased by it.

4. He has arranged for OSU to get a new mowing contractor as the previous one went out of business. He will try to get them to control the weeds under the flat regularly, but no guarantees as yet.

13 May 89
HORNE-T
volunteer resource

While at the RO this Monday, I was approached by a gentleman in work clothes who asked if he could take a look around. Being somewhat wary, I offered to give him a guided tour. He quickly demonstrated considerable knowledge of the theory and practice of our facility and mentioned that this was because he was very interested in radio astronomy as an outgrowth of his ham radio activities. He was in the process of reading 'Big Ear'and stated that meeting John Kraus was one of his life's ambitions. He was very interested in our activities and noting my efforts at weed control, mentioned that if he'd have known in advance, he could have brought a few gallons of Roundup to help out. He mentioned that he owns a plant nursery up north and was down in Columbus in his capacity as a Pipe welder. He mentioned that he has many interests such as metal sculpture and wondered if there were anything he could do at the RO to help out. In my cool way I said 'Hmmm, let's see, an expert in welding, with professional landscaping resources and experience, who's experienced in amateur radio work and interested m radio astronomy.. boy I don't really know if we have anything up your alley but lets get your information just in case.'

That is:
Tom O'Conner, (NI8G)
13911 Perrin Road
Milan, OH 44846 (419) 499-2109

His work card reads "Portable Gas & Electric Blacksmithing General Repair"
Tom O'Conner Welding and General Repairs
116 Perrin Rd. Milan Ohio

Russ was in the garage at this time doing some welding, so I suggested that we go talk to him. Tom offered to give Russ some free welding lessons which Russ readily agreed to and Tom went and got his portable welding rig.

I informed Tom that I would have Phil Barnhart add him to the Signals roster (Phil please note) and he was ecstatic. He said that he travels a lot and he's based about 100 miles north of us, but that he'd be happy to come down any time we needed something he could help with. He recommended dropping him a line in advance because of his frequent travelling that makes him difficult to get on the phone. As I left, Tom and Russ were happily welding away. I think I would recommend that we try not to let this one get away.

Last minute announcement:

As this issue of Signals was being put to bed, I learned that the RO is searching for a new Chief Engineer. Ron Huck, who has most recently held the title, has decided that he must cut back on his involvement and concentrate on his classes. Ron has accomplished many amazing things around the Observatory, and we will all miss his experience, knowledge, and ability.

If you know of anyone qualified for and interested in the position of Chief Engineer, please contact Steve Janis in 805 Dreese, as he will be coordinating the search for a replacement.

Last minute announcement:

Schedule of Working Sessions at Telescope Site

20 May
03 June
17 June
01 July
15 July
05 August
19 August
02 September
16 September
07 October
21 October

Plus regular meetings in 805 Dreese each Tuesday at 5:00

[Back to List of Issues in Volume 5] | [Back to List of Volumes] | [HOME]

E-mail Webmaster

Designed by Jerry Ehman
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