NAAPO (North American AstroPhysical Observatory)

"NAAPO News"
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NAAPO Coordinator -- Philip E. Barnhart, Department of Physics/Astronomy, Otterbein College

NAAPO TO ADD ST. VINCENT'S

During the fall NAAPO headquarters received a call from Gordon MacIntosh at St. Vincent's College in Latrobe, Pennsylvania, asking if there was a possibility that some mutually beneficial connection could be made. HAVE WE GOT A DEAL FOR HIM?

Gordon is a graduate of the University of Massachusetts where he got a degree in radio astronomy. He is in his first year at St. Vincent's. The Department chairman is Michael Gainer who has been at St. Vincents for a number of years. With a student body of about 1000 they have 15 strong physics majors including 5 women. St. Vincent's has been coeducational only three years.

We are looking forward to hosting the St. Vincent group at Big Ear early in the new year. Gordon has requested a field trip as soon as possible. Our discussions lead us

to believe they will be a strong addition to our consortium. In addition to the people they will bring to the group, there is a foundation of interest and talent in the 1420 MHz observational role. They are in the process of constructing a 16 foot dish with 1400 MHz capability to be operating by spring. It is an impressive dish on top of their Physics building. Plans are to carry out a 1420 MHz survey to give he students a taste of real world observing.

We look forward to a rewarding and mutually beneficial relationship with the people at St. Vincent's. There will be no shortage of things to do.

GROTE REBER TO VISIT CENTRAL OHIO IN FEB.

Grote Reber, radio astronomy pioneer and very long wave radio observer, will pay a visit to Central Ohio toward the end of February as he prepares to return to Tasmania. John Kraus will host Dr. Reber while he is here and indicates he will probably want to visit Big Ear.

Dr. Reber spent four years at the radio observatory as a visiting astronomer during the sixties. He was working at the time on a cosmic ray "telescope" and occupied space in the present office/laboratory area at the telescope site.

This upcoming visit should spur us to greater effort to get the telescope back on the air so that an honored guest can see an operating instrument. Now that the air conditioner is back in operation we can start to move relevant equipment into the focus room.

SETI PROGRAM SET FOR Maclean's COVERAGE

During the first week in November the Canadian magazine Maclean's sent feature writer Julia Bennett to interview Dixon, Bolinger, Barnhart and any other warm bodies connected with the radio observatory. The purpose was to prepare an article on the search for extraterrestrial intelligence. She took many pictures, some copies of Cosmic Search and bought a "Save Big Ear" tee shirt. The general feeling was that everything went ". . . great!"

COORDINATOR'S CORNER

It is evident that Murphy's Law supersedes all natural law. While in the midst of composing this issue of NAAPOnews I experienced the onslaught of winter storm 87-88-One with its 50 mph winds and sudden drop in temperature. The wind succeeded in a crossing some of Delaware County's floppy power lines and dropped about two pages worth of NAAPOnews from word processor memory.

MURPHY'S LAW OF THERMODYNAMICS

"Things get worse under pressure"

In spite of the pressure attendant upon the end of the term things have not gotten particularly bad. There are the incessant hold-ups and glitches that arise in any project seeking to reach a goal. These come with the territory. The real clinchers all seem to be in the realm of in-effective communication. My time has been spent the past two weeks trying to straighten out people who do not listen to what is being said to them.

Due to a slip in wording the radio observatory has been without monitoring by the security company since summer. When they were informed the smoke detector was sending many false alarm signals and, thus should be ignored, they proceeded to stop all monitoring of the alarm system altogether. I did not become aware of this situation until I started to check the November account and discovered we were not being billed for the service any more. We are now back on line, but need to maintain greater vigilance over what we assume to be in place.

One area to which I am finding it hard to adjust involves hearing what is being volunteered and then beginning to act upon that as if it is done. I am learning the hard way that talk is cheap. In a situation where I can not do the tasks myself, I must become more circumspect in my dealings with persons offering certain services. The Observatory has been offered a six channel strip-chart recorder with a large supply of paper. It was scheduled to be delivered early October and I have been bird-dogging it all fall. I now have the information as to why it is still sitting in a warehouse in Cleveland. It seems the company underwent considerable loss in the past two quarters and if they were to donate the equipment during these quarters it would contribute more to their deficit and they could not claim a donation for tax

purposes. Thus we have to wait for the company profits to become positive before the equipment can be shipped. Hopefully this will occur during the next quarter. Meantime, we must rely upon our own ingenuity.

This issue contain many examples of the application of our ingenuity and we need to recognize the outstanding contributions of those who are giving above and beyond the call of duty. My only wish for the new year is that I can get the newsletter out more frequently.

SECURITY COMPANY CHANGES HANDS

We have just received word that Teamgarde, the security company handling the radio observatory monitoring, has been acquired by Regent Security from Mitsubishi Alarm Center, Inc. We are assured that Regent will honor all rights and obligations effective as of 1 December, 1987. We will still have direct contact with the security monitoring office in Westerville; the new General Manager is Mr. Donald E. Dixon.

NAAPO PUZZLE - -

Here is a puzzle from Jim Bolinger who seems intent upon filling our minds with interesting tasks.

> You are required to construct a fixed resistor network having a resistance value, in ohms, as close as ossible to the value "e" (= 2.7188 . . .). You ordered a wide range of exotic precision resistors, but through a typical jobber foul-up you received only one box of 20 very high precision, very expensive, 1 ohm resistors. With only these resistors construct a network using a minimum number of the 20 resistors (to benefit from the money-back offer) which most closely approximates the value 'e'.
>
> Scores will by evaluated by the expression:
>
> S = 1/(accuracy*number)
>
> where:
>
> accuracy = abs(e - Resistance)

number = the number of resistors used.

Smallest 'S' wins. The prize will be a handful of precision resistors.
Please submit a circuit diagram with your solution.

THREE SAYINGS

If several things that could go wrong have not gone wrong, it would have been ultimately beneficial for them to have gone wrong!

Things equal to nothing else . . . . are equal to each other.

You can always find what you are not looking for.

NEWS NOTES:

EVIDENCE FOR PLANETS AROUND NEARBY STARS

NOAO and NASA scientists have found evidence of cleared regions in the dust clouds surrounding three nearby stars. The suggestion is made that the cleared regions may have been swept up by planet-sized objects orbiting these stars.

The three stars are alpha Piscis Austrini (Fomalhaut), alpha Lyrae (Vega), and beta Pictoris. All three seem to possess a "depleted region" in the midst of each dust cloud surrounding the star. These regions extend from 20 to 30 astronomical units (AU) from the stars, compared to 30 AU our solar system major planets extend from the sun.

These observations tend to lead to the conclusion that planets are ". . . not just kind of common, but very common." [Dana Backman, reporting to the AAS Planetary Science Division, this fall.]

QUASARS MAY BE TRIGGERED BY PASSING GALAXY

Recent work by Vader, et. al., Yee and Green and Hamilton and Keel report in recent Ap.J. and A.J. articles that quasar activity may be triggered by a passing 'intruder' galaxy. They offer evidence for passing galaxies to 'feed' a (probable) massive black hole in the core of its host galaxy. Their work suggests that, for active galaxies, such interactions are just part of growing up.

PLANET-LIKE OBJECT DETECTED IN ORBIT AROUND NEARBY STAR

Ben Zuckerman has detected the presence of a large, Jupiter-like object in orbit around Giclas 29-38. He describes it as larger than Jupiter and about twice the surface temperature of Venus. Giclas 29-38 is a white dwarf located about 46 light years from earth.

N0VEMBER WORKING SESSIONS SPOTTY

NOV. 7

Murphy's Law has left a wake of devastating foul-ups and disasters that turn out on reflection to have been not nearly as devastating as we felt at the time. After a year of making every working session for which he was in town, Barnhart decided to take the opportunity to attend a special openhouse given by the Ohio Deparatment of Natural Resources and the Corps of Engineers at Caesar Creek Lake on 7 Nov. Leaving the Chair in the able hands (or under the able seat) of the ever-faithful Bob Dixon who had skipped off to England a few weeks before, and leaving the pile of agendae in the capable hands of Dave Fisher (intrepid volunteer from the hallowed, if not ivyed, halls of Otterbein) he left the county and spent a cool, windy and relaxed day searching for Ordovician triobites (genus Isotelis) and other shallow sea dwelling invertabrates.

Upon returning to the electronic mail it was discovered that Bob had already volunteered to lead a bus-load of band members to the Ohio Stadium for a festive day of oompah-oompah. It was also learned that Dave with the agenda file suffered a debilitating car failure, and spent the morning trying to get rescued.

Following is a message from Jim Bolinger who sat in the hot seat in place of the oompahed Dixon.

Saturday's meeting

Those in attendance were:

Walt Mitchell
Lloyd Barnhart (no relation to Phil)
Jim Bolinger
Tom Van Horne
Ron Huck
Mark Erbaugh

Note that Bob Dixon was absent. I was not informed of this until I was half way to Delaware and as I did not know what the agenda was the meeting was quite short. After we broke up Ron Huck fixed the pump and I gave Lloyd and Mark a tour of the telescope. Both of them are a result of Bob's talk at the CARA meeting. Ron joined us in the focus room at the end of the tour and reported that the pump was working, but the toilet still needs a new set of innards. We looked at the air conditioner blower and decided that it would take two or three people and would have to be a planned scheduled activity.

Bolinger-J; 9 Nov. 1987

NOV. 21

Minutes - - -

Those Present: Dixon, Bolinger, Mitchell, Fisher, Mahan, Helwig, van Horne, Huck, Backus, Barnhart-P.

Announcements: Barnhart reported on a successful trip to Latrobe, Pa. to talk with the physics people there about NAAPO and radio astronomy, SETI, black holes and the status of modern cosmology. All went very well except for a power failure just before a heavily slide supported lecture on cosmology. It devolved into a cosmic audio-visual catastrophe. Next time the speaker will shift gears to a less formal presentation that could be done in the dark.

Dixon and Barnhart held a brief meeting with Dick Rogovin, to clarify some points about the status of NAAPO with regard to receiving grant monies independent of Otterbein College. He spelled out the current status of the organization and consortium and both Dixon and Barnhart agree that funds should be sought by the consortium. Otterbein will still be interested in housing the business and accounting aspect of the operation.

REPORTS:
Dreese Lab:
Abel is gradually beginning to surface. Dixon reports progress in the programming area.

An OSU grad arranged donation by Electric Power Equipment Co. of a PDP 11/70. This raises need for discpacs, operating system software and VT240S terminals.

Dave Backus reports the cable labels are on the 11/23 cables.

A strong need exists for a full blown FORTRAN PROGRAMMER with current RSX11N fluency.

Site:
Ron Huck is getting the plumbing into shape. The pump is running and the toilet now has new innards. Great work Ron!

Attempted breach of security was noted on one of Ron's security checks. An attempt was made to break the lock hasp on the garage (unsuccessfully) and on the pod (successfully). Nothing was apparently missing. Ron rebolted the hasps back on and they seem to remain untouched since.

Barnhart will check with Teamgarde first thing Monday.

We need to assemble a work crew to check the air vents on the Flat Reflector brake system, check on the air pressure hoses and to try to get some WD40 into the working parts.

Otterbein:
A brief financial report was presented. We have about $2200 above encumberances. We have to operate very carefully in order not to exhaust this fund.

A presentation to the group about the Flag of Earth was presented by Dixon and a flag was sold. Van Horne requested to have his work phone number corrected on the Radio Observatory Roster.

Meeting Adjourned: 11:45 AM.

MICRO-GROUP TASK EXPANDED

In addition to the original task of providing a computer with software to provide continuous monitoring of receiver output, display, conmunications and a cart control function Bob Dixon has called for development of an environmental monitoring project. This is a problem that does not require computer speed, but does call for significant communications capability and reliability.

Micro-group has just come into possession of a 100 channel multiplexer (by Leeds and Northrup) which was reputed to be operating when it was taken out of service a short time ago. It will now be necessary to obtain the instruction manual set for this and set it up to monitor the various environmental sensors to be constructed.

The programming tasks of the Micro-group needs a number of volunteers. I will be contacting a number of people who have expressed an interest in this phase of the work in the past. There will be a Micro-group reorganization meeting early in January. Be on your toes.

11/23 PROGRAMMING PROGRESS NOTED

Information from Bob Dixon indicates progress on the final stages of the programming for the 11/23. Bob has taken some of his vacation time to work on the programs.

He reports the two routines SENSOR and ARCHIVE are now operating. SENSOR continually monitors equipment and environmental status and reports changes to the LOG-file. Should any of the changes be deemed a "failure" by the progran the console is beeped and an explanation of the failure is typed on the console.

ARCHIVE will copy data from the 11/23 hard disk to floppies. It is operator controlled and allows storage of up to 25 days worth of continuum data on one floppy disc. Decision yet needs to be made as to how to arrange the floppy storage.

Three types of data are to be saved: Continuum, SETI and Log Information. It is possible to provide storage of all three on one floppy for the dates in question, or use separate floppies for each kind of data. The latter would allow a greater concentration of data (i. e., more days of observation) per floppy, but might make access of pertinent peripheral data more complicated.

WORKING SESSION
5 DEC I987

Meeting began 10 am.

Those present: Bolinger, Dixon, Huck, Van Horne, Abbott, Backus, Fisher, Helwig-R, Barnhart-L, Huggins, Mitchell, Barnhart-P, [Manchester College Group): Beery, Ballinger, Leininger-V, Leininger-J, Proffitt, Coots, Thompson].

Announcements:
A SASA questionaire was presented concerning the possibility of forming regional subgroups. Barnhart-P will reply to the request.

The failure of Teangarde to monitor during the fall months was noted by Barnhart. The situation has been cleared up and monitoring should continue - less fire alarm - as before.

Teamgarde is no longer owned by Mitsubishi. It is now a subsidiary of Regent Security, a Denver based security service corporation. We have not yet received our Regency window decals.

Paul Ave, a valuable and talented volunteer is graduating this month from OSU. We certainly hope Paul settles within volunteer range of the Radio Observatory. We have valued his help and enthusiasm very much. Congratulations, Paul, We hope to see more of and from you in the coming years.

Reports:
Dreese Lab:
The Radio Observatory has taken delivery of a working (!) PDP 11/70. Some peripherals are yet to be delivered and software is needed. There is need for another printer and another terminal. We can also use some disc pacs for the 11/70.

Dixon is devoting a portion of his vacation time during the current month to push forward the programming for the 11/23. This is to hurry the date for moving into the focus room.

Huck has found the cause of the breakdown in the West recorder. Nichrome slide wires in the balance potentiometers have been damaged, even separated. Barnhart-L and Barnhart-P will attempt to find replacement wire.

Site:
During a routine security check, Huck reported an attempted break-in to the pod and the garage. He repaired the damage. Nothing seems to be disturbed and access was not gained to the garage.

The air conditioner blower needs service. This will be attempted as soon as possible. The cost of having OSU service personnel do it is prohibitive.

Barnhart expressed his frustration at not being able to move the 11/23 into the focus room.

The air system still needs attention and the process of moving the flat reflector still hangs fire.

Bolinger pointed out the new wheels on the out-rigger and the outbaord end of the Canadian arm are not holding up. It was decided to go for pneumatic wheels which will require some modification to the axle supports and mounting method to accommodate the wider wheels. There may also be problems with axle size.

Backus is to try to check on the strength of motorcycle chain and report to us soon. It would be very convenient to be able to operate the cart with a positive drive rather than the slip drum presently barely working. Dave is also offering to take on the regular security check on Tuesdays and Thursdays to fill in when Paul Ave was doing the check.

Suggestion was made to ask for help in planning a site security system which will feed the observatory communication system. This will be outlined in the next newsletter.

The lamps shining on the brake cylinders on the flat reflector have been left on.

They should be turned off until a few hours before the flat is to be moved. This will be seen to before we leave today.

Micro-Group:
A hardware crisis has arisen within the group. Much of the software now being put in place is developed on and for the IBM PC. It now becomes important to place a PC in the spot. Barnhart is seeking to make this possible.

A number of questions and concerns on the part of the Manchester Group were raised concerning the cart motion project. John Leininger is a senior at Manchester working on a senior project to program the cart motion monitoring and control operation. Discussion centered around the advisability of providing absolute as well as relative cart position. It was decided to compute the cart velocity from the position data. Some concern was raised about the cart response and the tendency to produce oscillation in a direct feedback system. Some information concerning the computer system are to be sent to Manchester by the first of the year.

Following the meeting, the Manchester Group toured the radio telescope, watched the cart move, with some help from the staff shoulders, ate lunch and toured the OSU Astronomy, Physics and Electrical Engineering areas. Walt Mitchell handled the campus tours.

Meeting adjourned at various times from 11:50 till 4:00.

MAGNIFICENT ACHIEVEMENT AT RADIO 0BSERVATORY

As the bitter cold of the first winter storm swept in over the plains of Central Ohio, Jim Bolinger and Ron Huck dug in and replaced the faulty bearings on the air conditioner blower in the focus room at Big Ear. This bearing had gone out, possibly due to lack of periodic lubrication, and was screaming at the top of its roller race. The sound level inside the focus room was nearly down to the threshhold of pain.

These two stalwarts (one or two levels above just plain warts) deserve the Observatory medal of commendation with oak twig clusters. I will provide them, at the next opportunity, each a steak dinner to be eaten on the spot. They may claim their award banquet by calling me on the phone and making the appropriate arrangements.

CONGRATULATIONS, team! Let's attack the flat reflector!

J0URNALS FOR THE ASKING - - -

Some months ago Bob Dixon got rid of some journals by offering them to readers of the NAAPOnews. Not to be outdone, I have such an offer for you. Look to see if your library could use some important astronomical literature. If not your library, perhaps your bedstand or coffee table. These come boxed, but unbound and in the quantities indicated. These are not journals that would be purchased typically by small college libraries, but can serve a good purpose for undergraduate students to begin to scratch through.

The Astrophysical Journal: Vols. 119 - 194

The Astronomical Journal: Vols. 59 - 74

Monthly Notices of the Royal Astronomical Soc.: Vols. 4 (?) - 193

The Observatory: Vols. 94 - 100

If you would like any or all of these just let me know at NAAPO headquarters and I will arrange some sort of delivery. I have promised to move then out by the end of January, so act swiftly.

WORKING SESSION
19 DEC 1987

THOUGH LONG AFTER THE DEADLINE IT WAS FELT THIS SET OF MINUTES SHOULD BE PUBLISHED RIGHT AWAY. WHO KNOWS WHEN THEY WOULD GET OUT IF WE WAITED?

Those Present: Barnhart-L, Van Horne, Backus, Huck, Bolinger, Barnhart-P

Announcements:
Barnhart-P is scheduled to go to Washington, D. C. on Jan 3, the day after the next working session.

Announcement was made that Grote Reber will probably pay the Radio

Observatory a visit around the end of February. He is returning from Canada to Tasmania where he observes 140 meter radiation through holes in the ionosphere. Reber spent four years at Big Ear as a visiting astronomer. Barnhart then spent some time explaining the significance of Reber's pioneering work.

Van Horne reported on an "interesting" find in the SETI data from the early 80's. There will be more on this in future newsletters.

The quad helices are falling further into disrepair.

The janitor seems to be not showing up at the radio observatory.

Dave Backus is volunteering his father to try to work out the brake problem on the flat reflector.

Reports:
DREESE LAB:
There are additional problems with the west recorder. The slide-wire repair was satisfactory, now the pen drive cables are going to pieces. Huck is seeking repair parts.

Bolinger is removing KERMIT from the 11/23 program. It Seems KERMIT is fouling up the communications functions, costing valuable remote programing time.

MICRO-GROUP:
We are still fighting out the hardware problems. We hope to be back in business by the first of the year.

We have a Leeds and Northrup 100 channel multiplexer, that we will explore to see if it can handle the environmental monitoring tasks. It can certainly be done simpler, but the price, if it works, is hard to beat.

SITE:
Now that the air conditioner blower is back in operation, the question of routine maintenance and a fixed schedule of maintenance be established. This is going to be the task of a group in the near future.

There is need for a cement patching project at the entrance to the focus room as

soon as the weather breaks in the spring.

Meeting adjourned 11:57 AM

Next meeting January ?, 1988!
Big Ear, 10:00 AM

MANCHESTER GROUP PAYS RETURN VISIT

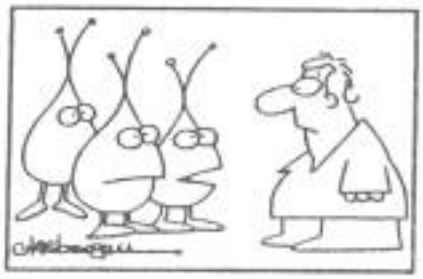
Dwight Beery and six of the Manchester Group paid a working session visit to Big Ear on the 5th of December. They came to clear up some affairs with the cart drive and take another tour of the Dreese Lab office and the Physics/Astronomy building at OSU.

Following a discussion of the cart drive problems, they toured the radio telescope and enjoyed (?) a leisurely lunch at Halfway House -- the gourmet capital of Liberty Township. A quick tour of the Astronomy halls on top of Smith Lab was followed by a visit to the low temperature lab where phase transitions in liquid helium were being investigated.

It is assumed that they made the trip home without untoward incident as we received a letter from them -- albeit dated November 19. Glad they have mastered time travel.

TWO INSERTS

"Take me to your stove? . . . You idiot! Give me that book!"



"We know all about your planet by intercepting television signals in outer space. We would have landed sooner, but we had to vaccinate ourselves against static cling, itchy scalp and ring around the collar." (© Cowles Syndicate, Inc. Distributed by King Features Syndicate, Inc.)

[Note. Click on each picture to see larger version; this will allow you to read the captions more easily.]

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E-mail Webmaster

Designed by Jerry Ehman
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