

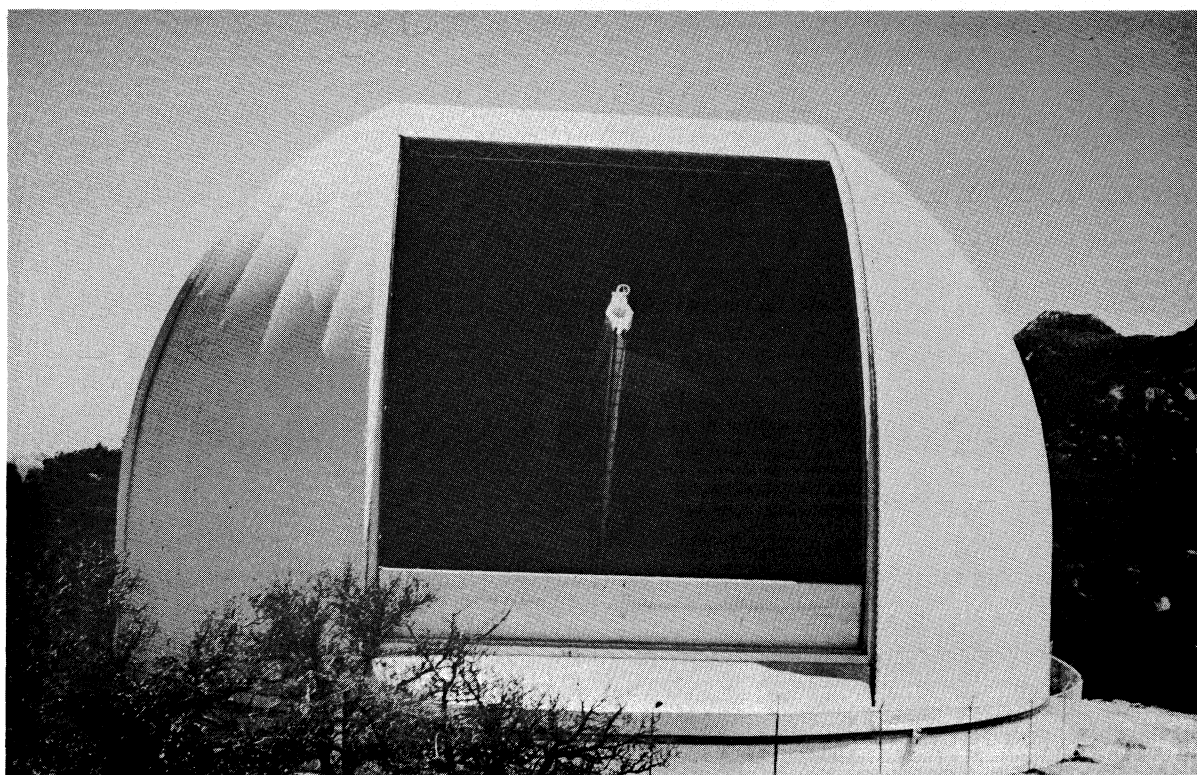
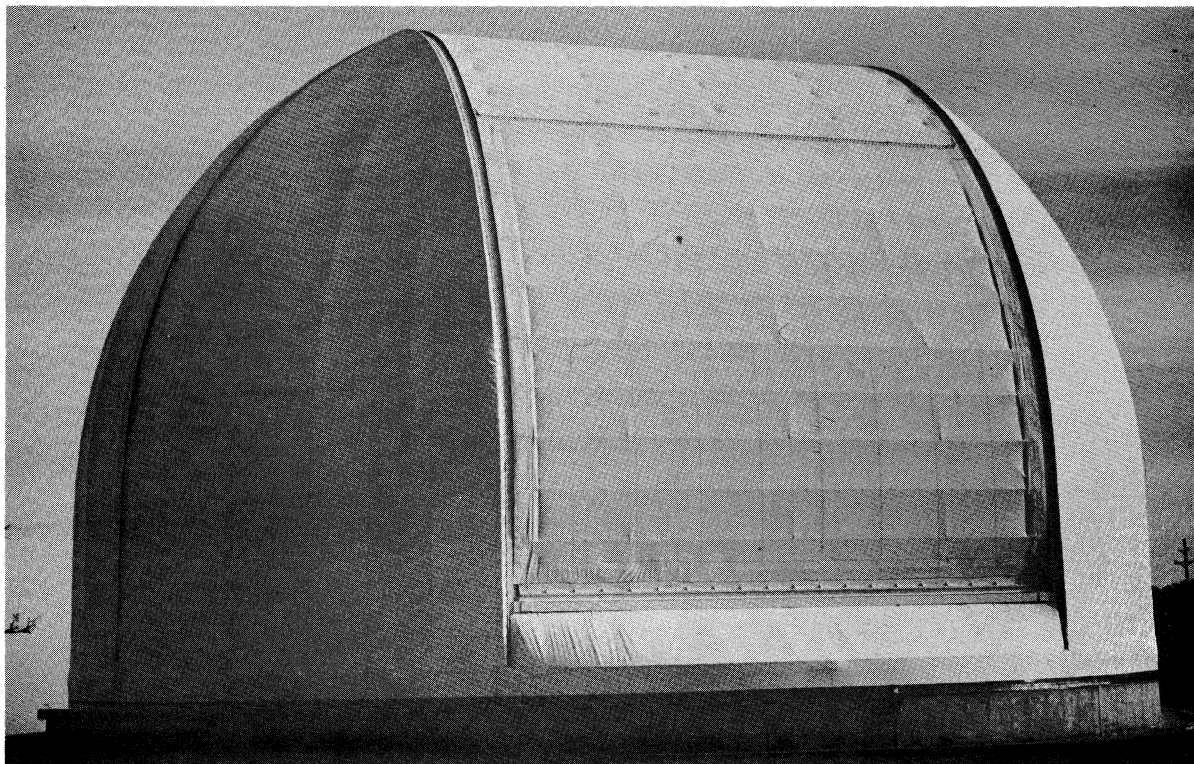
The O B S E R V E R

Vol. 7, No. 3

May-June 1967

Page 1

Even a 36' telescope wouldn't be any trouble,



if it kept it's trap shut!

Vol. 7, #3

May - June 1967

Staff

Editor:

H. Donald Logan

Editorial Assistant:

Sue Miller

Contributions:

Hein Hvatum
Emily Kitchen
Bill Terrel
Bill Kuhlken
Sue Miller

Special Effects:

Neil Albaugh
Peggy Weems

Printing & Publishing:

Gene Crist
Ron Monk

Published by the National Radio Astronomy Observatory (bi-monthly)

Green Bank, W. Va.

Charlottesville, Va.

Tucson, Ariz.

Editorial Comment

by Donald Logan

I suppose it's correct to assume that most people who read the Observer enjoy it, or at least some part of it. But if you have never participated in a project like this one, I feel certain that you can never realize the complete pleasure available.

May was an unfortunate month for those of us who look forward to the Observer, because we lost the talents of one of our most enthusiastic contributors. He left NRAO, and with him go our sincere best wishes, and warm regards. He maintained a style of writing that will be most difficult, if not impossible to continue. Howard, your efforts will not be forgotten, but rather be more conspicuous by their absence.

My thanks and appreciation to Howard Lambert, with one reservation, if the Naval Research Laboratories begin publishing an "Observer" I hope they will allow an occasional letter to this editor.

Excuse Please

In case anyone was wondering what the front cover of the last issue was all about, now you'll find out. It was a photo of a photo of an artist's conception of a proposed telescope and transport vehicle for the proposed Very Large Array project. Simple, yes? No! ? Well neither is the VLA. But anyhow that's one possible method of moving each of the 37 antennas along the 45 miles of railroad-like track which is to lie along the 3 base legs of the array.

And what has Lionel got to do with it? Well, they probably are NOT going to build the vehicle! But I thought it might impart some humor if we implied the same. But, just as we got the photo and were about to dump it in the laps of the Special Effects people, I had to leave for Tucson; so it wound up in Howard Lambert's lap, who was already working on the VLA. I suppose he was afraid to make it look too convincing, for fear that he'd be sent to Lionel for a proposal, and so

But if you think that's something you should only know what a few of us went through to get the series of pictures in this issue.

WHAT HAPPENS AFTER THE SUMMER SOLSTICE!

Once again the Earth has reached its apogee, and for inhabitants of the Northern Hemisphere, tis summer again. Even if the weather is not indicative of the season, we can always tell by observing certain members of the staff of the 'Stronomy Plant.' The business office displays renewed interest in our well-being with searching questions like ". . .Well, uh, how's your lab; got plenty of room..?" The personnel people scratch furrows in their already sparse scalps. If we had parking lot attendants, I suppose they would walk to work. And many are reluctant to use their annual leave for fear their desk will be sub-letted.

Yes, tis summer, and NRAO prepares to welcome its annual guests - our summer students. To those of you who are reading this publication for the first time may we of the "Observer" offer to you our sincere "welcome aboard" as well.

It is probably appropriate to mention, at this point, before you read any further, a little about the "Observer." It's the official, social publication of The National Radio Astronomy Observatory. It is written and published within the Observatory, for employees and their families. Our policy is that we will use anything that is in good taste, unoffensive to anyone, and related to NRAO. The Editor reserves the right to delete, alter, or entirely omit any submitted material. All contributions should be directed to the Editor, Room 213, Charlottesville, Va., or you can phone in short ideas to extension 325.

So how about it? What with grammer, composition and literature still recent history, you student members are certainly capable, and you'll find NRAO quite an interesting experience. Why not share your feelings with all of us.

H.D.L.

Regarding Donald's fine welcoming speech, let me add a few words of my own. Students, if you haven't officially met me, I am the person who works? at the desk in the lobby - affectionately called the receptionist. I shall be glad to help you with any calls you wish to make. If you have any other questions that I may be able to answer please do not hesitate to ask. I know a few of your names now and where you are located, and I would like to become acquainted with more of you. In the event you run out of work to do, come on out and strike up a conversation. You can tell me what you know about Radio Astronomy, and I'll teach you how to work the switchboard. See you soon.

Sue Miller

73's

Anyone who has ever dialed the Charlottesville switchboard prior to April '67, was certain to have talked with Lil Van Liew. Well, after we decided that an Obstetrician and not Metrical was needed, Lil presented her husband with another son. So we offer our congratulations to the Van Liews, but we sure will (and do) miss you - 73's and 88's Lil - how about a letter to the Editor once in awhile?

Our new receptionist, Sue Miller, has already gotten used to us, and I feel that she is turning out some fine work - welcome and thanks, Sue.

A good friend of mine has left Green Bank and NRAO. Certainly everyone there knew and liked Larry Bowles. He may still be the only guy who can really tune up one of the original MPC paramps. We wish you great success, Larry, and would like to hear from you once in awhile. Who's next, George?

Last, but assuredly not least, is Ralph Burhans. Probably many of you never met Ralph, but he has been one of the few people who have borne the great burden of responsibilities for the completion of the 36' Millimeter Wavelength Telescope, in Arizona.

Imagine your own reactions if you were hired to go to a mountain top, on an Indian Reservation to manage a project which had virtually never been attempted before. Well, as far as we're concerned you did an admirable job, Ralph - and you can bet we're going to miss you. Thanks for everything, Ralph. And to your replacement, the Observatory's own George Grove, may I say - May the Great God E E Toy smile upon your dome.

IN THE LOBBY

by Sue Miller

What is that thing? How does it work? These are only a few of the questions I am asked each day as the Charlottesville Telephone Operator/Receptionist. The majority of visitors find my modern push-button PABX desk model quite intriguing. In fact it has been mistaken for a computer. In reality it is only one more giant step for the feet of progress.

Since I do place many of the calls for NRAO in Charlottesville, and try to report all telephones which do not work properly, I thought it might be helpful to pass on a few hints. One of the first ones concerns trouble with telephones. If you encounter any difficulty in using your telephone, it would be wise to call me immediately and report it. If this is done I can in turn call repair service and hopefully have the trouble cleared before anyone is inconvenienced. If you are unable to reach Green Bank please let me know so I can call Lynchburg and have them check our tie lines. Don't ever feel that anything is too minor to report. If you are cut off on a call, experience trouble in hearing, have static on your line, have to dial more than once to reach an outgoing line or a Green Bank line, don't hesitate to call me. As Ben Franklin would say, "It is better to yell at Va. Tel. & Tel. than your secretary!"

We've been discussing my duties as a telephone operator, so perhaps we should mention some of my duties as receptionist. Being located near the front door has many compensations. One of them is meeting the families of other NRAO employees. Naturally the most interesting members are the children. Recently I met Frank Bash's three-year-old son, Lee, who must have been quite impressed by the NRAO Christmas Party. When his father came out, the first thing Lee said was, "Hey, where'd the party go?"

In closing let me say that since I have been with NRAO everyone has been quite helpful and friendly. If I can do anything in assisting YOU either concerning telephone calls or numbers or anything else please call me. Don't feel slighted Green Bank people, I mean you too. If I can't help you, I'll try to find someone who can.

THE KITT PEAK STORY

by H.D.L.

The next 6 pictures you are about to see are real, only the story has been changed to protect the Observatory.

The 36' (432 inch if you're an optical type) Telescope is in Arizona. One gets there by airplane. Once there it will be noticed that a computer drives the telescope, in theory at least. Now computers, unlike people, are relentless in their pursuit of the completion of a task. But! They're basically stupid, (computers, that is, or is it?) and one must tell them every little thing that must be done. There is a special breed of Computer Tutors called programmers, who do this. You can always identify a programmer by the great profusion of punch cards that they necessarily engulf themselves with. (A punch card is the "I told you to" device needed to initiate a computer-job.)

Now when programmers travel they usually take a toothbrush, a few articles of clothing, their reading material (example: "All the Way from Zero to One" by I. B. Machine or "Up and Atom" by I. M. Gone), and at least 371 billion Yep, you guessed it . . . punch cards - frequently in pastel colors, as is the case in this instance.

Now the Airlines look upon this with some misgivings. You know you just can't have Robins Egg Blue punch cards blowing out the plane window when you're 3 miles above Alberquerque, New Mexico. People will either think it's an invasion, or if they're color blind, think it's some new great society program. So, Emily, our 36 foot programmer (what I mean is...36 foot telescope programmer... sorry about that Em.) enlisted the aid of Dr. Hvatum to help her truck her wares to and from the straining airplane. Because of the slight overweight, they had to fly a not-so-familiar, non-scheduled, airline. But the dollar-savings realized by flying "The Grace L. Papagogo Aero Plane and Storm Door Company" are substantial. The Grace L. company keeps costs low by eliminating the expensive frills, like radio, co-pilots, maintenance, and rest rooms. See fig. 1.

Of course, even the Grace L. Papagogo airline was a bit worried when they saw the first of 17 boxes of punch cards arriving, since they print their tickets on the backs of discarded, but perfectly reusable magazine subscription punch cards. Boy, I'll bet they thought every astronomer in the world, er...I mean galaxy, was going to fly that day.

But by and by H. H. got the last of 39 boxes on board. ("on board" is an airline term - it refers to the wooden floors in the plane). Take-off was slightly delayed, because the tow-rope between the Volkswagen and the plane's front wheel broke.

See Airplane and H. H. and 57th box of cards, fig. 2.



FIGURE 1

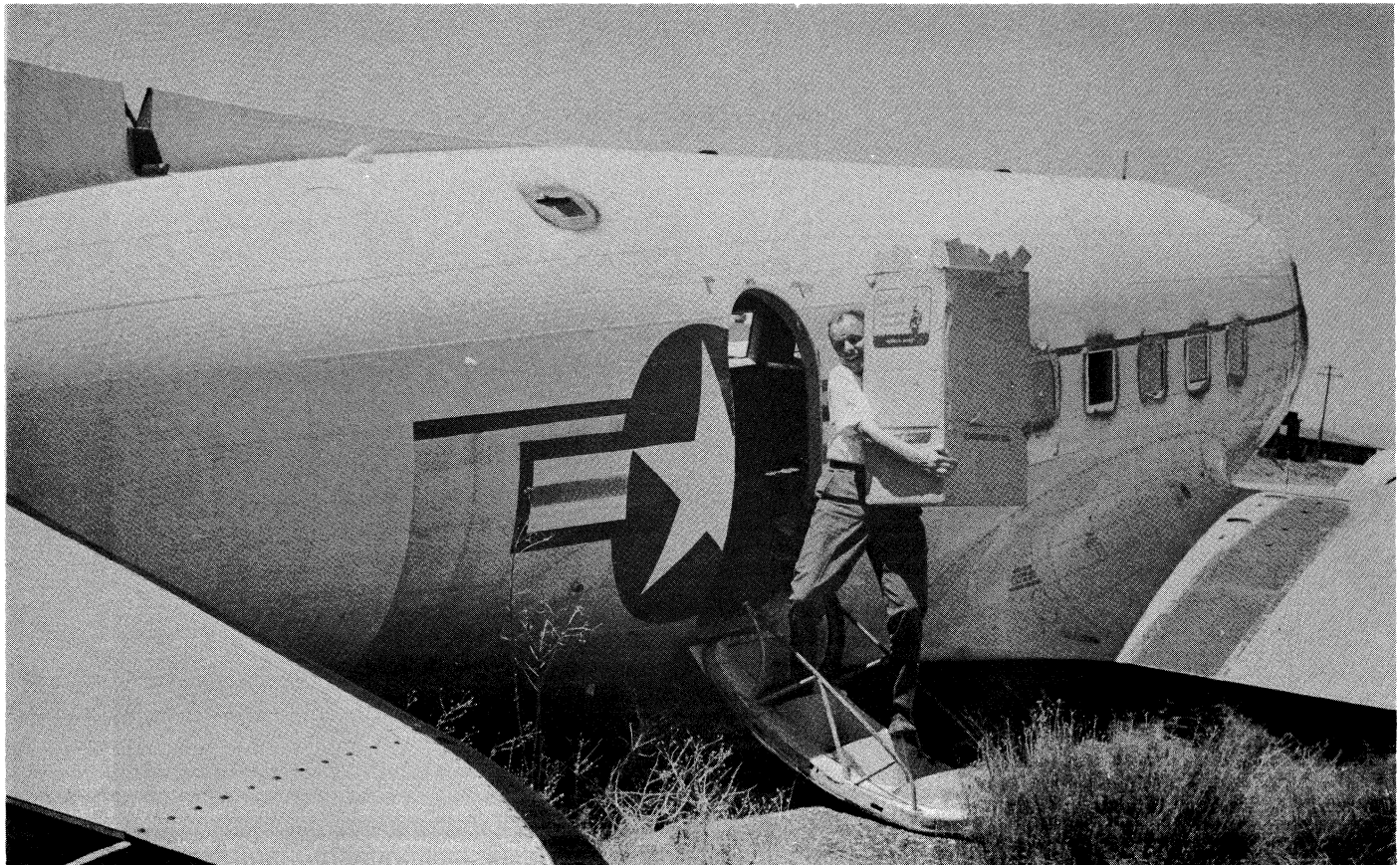


FIGURE 2

Of course, I had arrived in Tucson a month earlier and was just about ready to put a receiver on the telescope (I got permission from the computer first, however.) when I discovered that Jim Dolan hadn't given me the Tunnel Diode Amplifier. So there I was, left mounting an empty receiver box. I rushed to the telephone, picked it up, and holding the Dixie Cup firmly in my hand so that the string would make good contact, called Neil Albaugh, my partner. Neil answered after awhile, and immediately said, "Hello." Then he told me it was a nice day there, and that he couldn't talk long because he was welding a transistor on a piece of boiler plate, because he figured the transistor might overheat otherwise. I got him to get Emily to hand-carry Jim Dolan's Tunnel Diode Amplifier to me on the plane and all. Grace L. didn't want to let her on the plane at first, but she explained that Dr. Hvatum really was her boss, and that thing in the box really was a Tunnel Diode Amplifier, and not an altimeter. I guess they had some trouble with people wanting to bring altimeters on board (see previous note on "on board") previously.

See Emily with altimeter, I mean Tunnel Diode Amplifier, in fig. 3.

I met Emily at the airplane parking lot, in order to get the amplifier right away. I had a rented car, but I was still worried that all those punch cards would wreck that Model T Ford. Driving from the plane Em said she was having trouble getting used to the sound of an engine running. She also mentioned that the pilot looked like me, but only his name was different. He was apparently reading a magazine about rabbits, and one page near the middle was longer than the others, and we figured printed from side to side, because he kept turning the whole thing sideways. Of course, at the time Em didn't know the longer page was printed sideways and she simply concluded that he couldn't read. This worried her and she decided to do something about it. See Pilot and Emily in fig. 4.



FIGURE 3



FIGURE 4

But when the motor fell off the Port Wing (so named because it's where the wine is kept) everyone decided it was all right; the pilot really could read, because he found the instruction book and read a paragraph to them. Something from the "What To Do in Case of Emergency" section. And in a very short time all concerned were quite confident that they could safely achieve ditching in the ocean. Em says she remembers it was halfway through the flight when they began drilling because they were then over Wichita, Kansas.

See fig. 5.

Right after everyone was prepared to bail out, the pilot remembered the other motor was still operating. He was sure of this because he still had pressure in the starboard boilers. So they continued on to Tucson. It's a good thing too, because I found out later that they had no parachutes. Notice fig. 4 again.

So now we were all in Tucson, and each was interested in having dinner, so we went to a lively place called the Ghost Ranch, which is secretly run by Lufthansa Airlines. We were met there by the two organists who work there and soon forgot our need for food; all were actively engaged in humming "Theme from the High and the Mighty" in German. It caused a lump in our throats - which when later was swallowed - filled our stomachs, and thus we made out pretty good on the per diem that day.

The next day we went "up the hill," as they say on Kitt Peak, to the telescope. I mounted Jim Dolan's Tunnel Diode Amplifier in the Receiver, John Hungerbuhler called the contractor and ordered some more castor oil for the elevation bearings, to loosen them up, and Emily and H. H. immediately went to work with the computer. They were amazed to find that the core memory unit now was performing at twice its rated capacity. This thoroughly baffled everyone until Ralph Burhans chased a rat out of the rack. By the time we finished cleaning out the nest, H. H. noticed that the memory unit was back to specifications. So Bill Terrel spent the rest of the day trying to coax the rat back into the machine. He even enlisted the aid of Swiss Cheese.

Figure 6 shows a view looking to the West in the control room. The computer and rat are directly behind Em who is sitting with her feet and legs up off the floor. To the right is the console and behind it are windows which look out onto the telescope, which right now still isn't looking at much of anything.



FIGURE 5

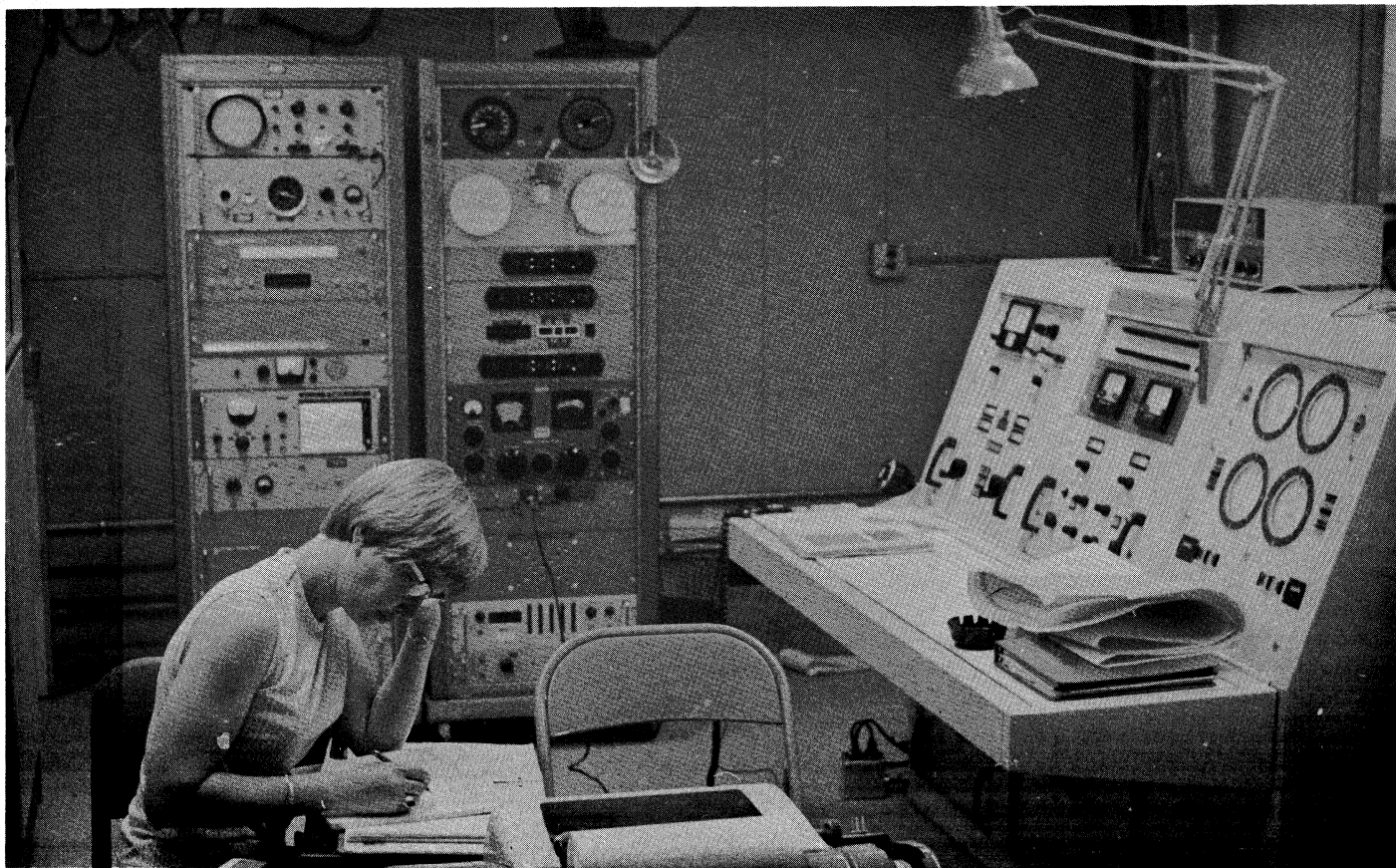


FIGURE 6

We were all eager to have the contractor turn the telescope over to NRAO and finally, my last week there, it happened. All systems were go, (that means if you're the contractor you can leave at last) the installation was ours. As the last employee of Rohr frantically dashed out the door screaming, "My babies, my babies daddy's coming home - Oh they must be so grown up now - gulp - blubber -...!" we of NRAO gathered around in a Gaussian distribution, and emotionally whistled the "Theme from Picnic."

But all was not well. By the time of midday bread, next, we discovered that we had neglected to find out how to operate something (the control console, I think it was) and couldn't move the telescope. Of course, Ralph and Bill knew how, but they were out of town trying to buy rat food. When we telephoned Rohr, it took some time to get any information out of the noise of weeping, teeth gnashing, and swearing; but we finally discovered the oversight and soon were in control.

At this writing the 36' is still not on the air, but it is not too far in the future, when in the true spirit of NRAO there will emanate the steady flow of ". . . oh, no, not again . . ."

INTERFEROMETER FRINGES

by Moleman

It has been some time since we've had a few minutes to spare to write a little about one of the most ambitious and gratifying projects at the Stronomy Plant.

More would have been written sooner, but after coming up out of the base line ditches and manholes the sunlight is blinding. The doctor says I'll be alright in a few months.

I came up out of the "hole" and was surprised to see a new building, a new 85-ft. dish, and a bunch of new people around. I knew the names of every gopher and ground mole in the baseline trough, but now I have to get used to people again.

While visiting the upper world I heard a big discussion going on. It seems that the 85-ft. scopes are run by computers now. The trouble seems to be that no one can figure out how 85-1 and 85-2 swapped places. Not only that - some of the records they got the other nite are real weird. Seems like Turkey Oliver hooked up a bottle of laughing gas to the cable system instead of dry nitrogen.

In answer to Herr D. Logan's letter: First you'd be surprised what happens when No. 8 is dialed. The other day I dialed 8 and somebody on the other end, in a heavy Russian accent, wanted to know if I wanted to speak to Breshznev or Mrs. Kruschnev!

As far as the library is concerned, who misses it? You ought to see the collection of cultural material at the various telescope establishments. Ha!

In case you haven't heard we have a new machine shop organization, and as they say there, we've never had it so good.

So maybe this ain't too good a job of reporting, but when I finally get to take off my dark glasses, watch out.

Seriously tho - the interferometer group is about to honor the main lab with their presence again. After a prolonged absence, we will be hard at work in our own little cubicle again, where everybody will probably get claustrophobia after the immense area of the warehouse.

There is a new project afoot, whereby they can at least get rid of Bill K. and his bagel Honda for awhile. A 42-ft. dish is to be used to determine feasibility of a micro-wave link for the large antenna array to be built way out west. I think that's a few miles west of Charleston.

There have been a series of conflagrations in the county lately due to one reason or another, but I wouldn't be surprised to hear that "It's them durn stronomy scopes magnifying the sun's rays, etc., etc."

So until next time, I remain Bill - μ^v link - K, who says, "It don't mean a thing(e) if it ain't got that fring(e)."

It's not news to anyone that Ken and Ivan are working on the same research program. But that young lady in the room with the skylight in CV says that it's getting to be a joke: every time one orders a DDC document, the other one does, too, and each NRAO reprint with one name on it has the other one, too. And they both order lots and publish lots, it seems. While ordering the documents nowadays, she can be heard chanting: Tweedledum and Tweedledee/K I K and I P T.

Has Shelton finally learned how to project himself, or is it a frame-up?

If the new group name for the Auto Correlation Receiver is Correlator Research And Production - what does that make Art, who is the head of it?

Is Merrit Gum running competition with the regular shuttle?

Does being a member of the Standard Back-end Lab mean one is a conformist?

The trouble with the 36' apex is, we're trying to put a square box in a round hole.

Good-Grief - George Grove! You're actually abandoning the Rural Life, and adopting the urban . . . whatever it is you call residing in the city!

Will Mike Byoric better Art Robichaud's Jaguar ownership, endurance record?

Is Mort Roberts thinking of signing a contract with Peter B. Good?

Well, I see by the old clock on the wall that the power is off again, so until the next issue -- write if you get word -- but don't leave us in the dark.

H.D.L.