

OBSERVER

VOL 14, P. 1



APRIL, 1973

OUR COVER - HOW IT GOT THAT WAY

Wally Oref

For sometime I have been chided by several of our employees about the drab, uninspiring, spartan OBSERVER covers. "Why don't you", they asked, "break with tradition and jazz up the April cover with something exciting and stimulating?" Really surprised I said, "Give me some idea of the kind of covers you have in mind." With this opening they then went into a very lengthy list of possible covers. Most of them I rejected immediately, but I consented to have Seth Shostak design and submit a cover for approval. He did and I decided to use it.

Seth had this to say about the April cover and I am quoting directly from his letter:

"This month's OBSERVER cover features the new home of the Electronics Division in Charlottesville. Located on Ivy Road, this elegant edifice is distinguished by its clean lines and visually appealing shape; a pleasing convergence of form and function. No wonder the sense of pride and purpose felt by electronics personnel as they arrive for work each morning. Also on the cover is Judy Moore, of Fiscal Division."

The OBSERVER is a bimonthly publication of the National Radio Astronomy Observatory, P. O. Box 2, Green Bank, West Virginia 24944.

A special thanks to all of those who helped assemble the OBSERVER.





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ELECTRONICS DIVISION - CHARLOTTESVILLE

Bob Haas

NRAO now has two locations in Charlottesville since the backbone of the organization, the Electronics Division, moved to its own building on Ivy Road. The move was made last November because of the expansionist policies dictated by the VLA. Since relocation, many new faces have been seen wandering the halls and inhaling coffee when not on a work break. Generally speaking there is more room to work at the new building although there are no carpets on the office floors. Moving away from the IBM 360 computer has been inconvenient but the purchase of a new HP 9830 has helped to compensate.



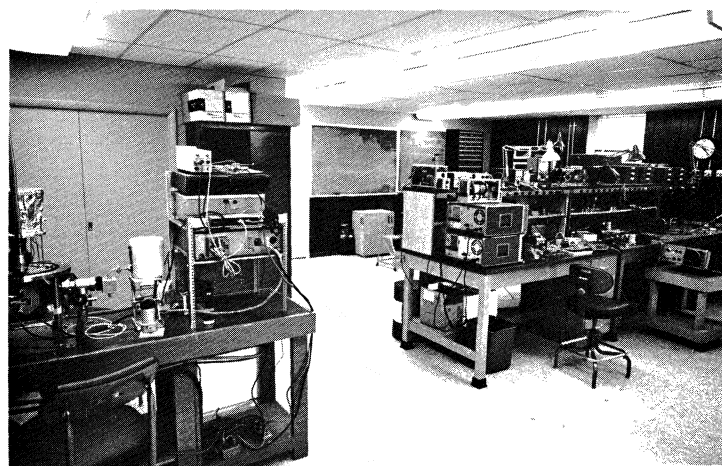
Peter Napier working out his income tax on the new 9830 calculator.

Head overseer of the division is Sandy Weinreb, who with the assistance of Jeanne Ray tries to insure that things run more or less smoothly. One contribution to increased smoothness has been the appointment of Bob Eskanazy as our own purchasing agent. This has saved considerable time since we no longer have to go through Green Bank as we did in the past.

Most of the current work at Ivy Road is VLA related. Front end development is being carried forward by Mike Balister, Skip Thacker, Bernae Pasternak and Gary Barrell. This front end will be capable of receiving in any of four frequency ranges: 1.3-1.7 GHz, 4.5-5 GHz, 14.4-15 GHz or

22-24 GHz and will be very low noise because of cryogenic cooling. The group's primary development will be cooled mixers for the X- and K-band ranges.

Read Predmore is evaluating components for the IF system including millimeter wave mixers and circular waveguide couplers. Working closely with Read is Harry Beazell, whose primary responsibility is the local oscillator system. He is trying to solve the difficult problems involved with how to ensure a phase stable local oscillator signal at each antenna. Ron Harris' work on the bench supports both Read and Harry.

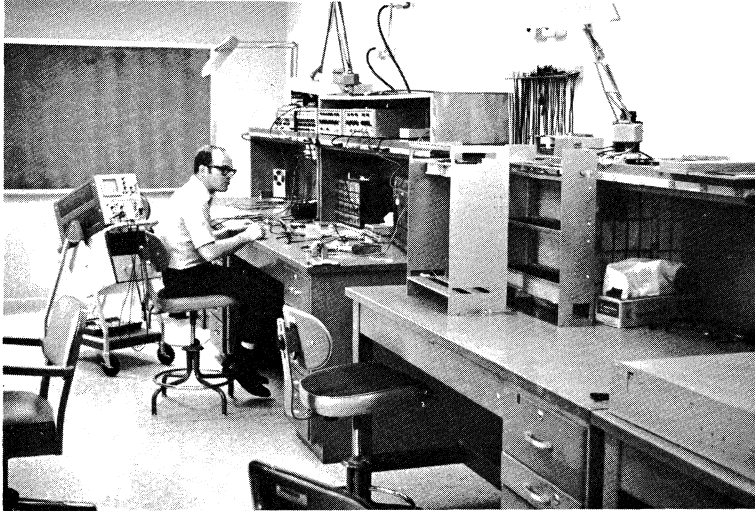


Busy activity in the front end lab.

The antenna feeds are the responsibility of Peter Napier who is studying cassegrain system designs for both the 140-ft antenna and the VLA in an effort to optimize performance of various subreflector and feed components.

At the other end of the frequency spectrum is Art Shalloway's digital group which includes Ray Escoffier and Gene Runion. They are currently developing the digital delay line and multipliers for the VLA. The system's 100 MHz bandwidth and 100 MHz clock rate will make it the largest and fastest in existence. The electronic circuitry will consist of more than 25,000 integrated circuits! In addition the group is also looking into computer system interfacing requirements for the VLA.

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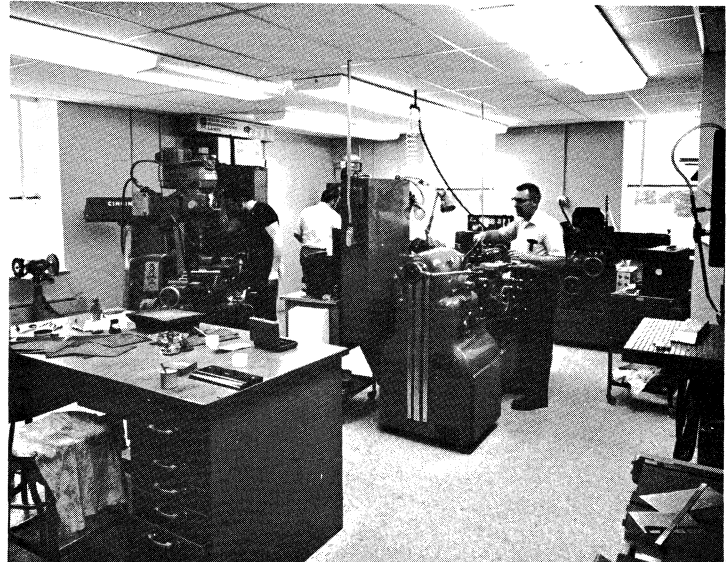
Gene Runion in digital lab -
"How long must I sit here?"

Both Jack Campbell and VLA Project Engineer, Dick Thompson are concerned with overall system problems. In particular Dick has been comparing analog to digital delay systems and also, determining how to minimize the system's sensitivity to external interference.

Some of the most diversified work is being done by John Payne with the help of Charlie Pace. In addition to his servo control systems for the 140-ft nutating subreflector, the 45-ft antenna, and the VLA, he is also building a 512 channel multiplexer for Tucson and a brand new standard receiver.

Besides VLA, the other main activity of Ivy Road is the work of the millimeter group consisting of Tony Kerr, Bob Haas, Jesse Davis, Jack Cochran and Neil Horner, Jr. All the astronomers trying to discover new interstellar molecules depend upon their work. Current projects are the building of a series of line receivers for Tucson spanning the frequency range of 75-116 GHz, an 85 GHz continuum receiver for the new Kitt Peak cassegrain configuration and development of very low noise, cooled mixer front end receivers, also for the cassegrain system.

An invaluable asset of the division is the machine shop run by "Lucky" Luckado. He, together with Garnett Taylor and Dylan "Matt" Dillon turn out, with astonishing speed, components machined to the exacting tolerances required for the development of millimeter wavelength devices.



Machine shop caught in the act of being used.

Facilities added since the move include the complete drafting capability of John Earnest, and the Chem Lab run by John Lichtenberger. The new HP 9830 calculator is being instructed in the ways of radio astronomy by Joe Greenberg who does an excellent job at programming the 360 as well.

Overall the division seems to be happy with the move; the biggest disadvantage being estrangement from the rest of the Observatory staff at Edgemont Road, but then it has eased the parking problem anyway.



Lucky making a new pin for his watchband

THE ECLIPSE CRUISE OF JUNE 1973

G. L. Verschuur

What is an eclipse cruise? Well at last I am able to reveal all. To start with I should state that being a radio astronomer sometimes has pleasant side effects, and the eclipse cruise and all associated with it are part of such side effects. It all started this way.

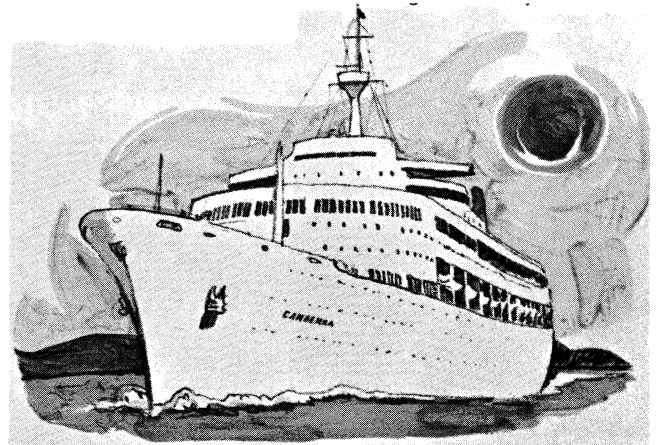
Last year there was an eclipse visible over the Eastern part of Canada and part of the North Atlantic. Many of you might have heard stories of the intrepid NRAO'ers who journeyed to Canada to watch a cloud layer instead of the eclipse (by the way, I'm talking about solar eclipses; that is, those in which the sun gets covered up and everything gets totally dark in the middle of the day, etc., etc.). Well, a couple of bright guys had this idea that perhaps people would pay to go on a ship and sail out into the ocean to watch the eclipse. In so doing the ship could more readily sail to a clear part of the ocean, thus guaranteeing the passengers a clear view. To make sure this was possible, they took along a meteorologist who was in constant contact with the weather bureau in Washington and they told him, after looking at satellite weather maps, where a clear bit of ocean was. And so it was, the ship sailed to a clear spot hundreds of miles off-shore, while the landlubbers cursed beneath the clouds.

But to get back to the story at the beginning again. It turned out that not many cruise ship operators believed that anybody would pay money to go and cruise up in the North Atlantic and eight shipping companies refused to make their ships available. Finally the Greek line which owns the "Olympia" said that if the organizers could fill the ship in four months, they would let them use it. They did, with 800 passengers.

Now, an eclipse cruise is not just a question of getting on board and sailing away with passengers amusing themselves in the usual way that cruise passengers do (about which I might say more later, but then again I might not). Instead the organizers decided to enlist the aid of several well-known personalities and several less well-known ones who would give lectures on board the ship. Scott Carpenter was the best known on the last cruise, and lectures included astronomy, constellation recognition, oceanography, meteorology, environmental studies and

bird watching. (You'd be surprised how many birds one sees on a cruise!) In any case the ship was totally sold out, the first time it had ever been in fact, and the cruise itself was a tremendous success. (I wasn't on that one, by the way.)

Now we come to the eclipse of this year which will be visible along a path starting in South America and crossing the Atlantic and North and Central Africa. Overjoyed at their success last year, the organizers chartered the largest passenger ship in the world, in terms of the number of people it can carry, which is the SS Canberra. They



Canberra is a floating treasure-trove of food and drink: curries from India, steaks from Kansas, wines from France, Italy—even South Africa.

decided to sell only 1750 passages which they did even before the end of last year. In fact there is a waiting list of some 600 now, so they have chartered another ship which will carry the overflow to watch the eclipse off the coast of South America.

How do I get into this story? It turns out that they needed a radio astronomer for the Canberra lecturing staff and I was invited. After debating for some time whether I could afford to take off for 15 days, I agreed to go. This decision was made in about the time between two pulses from the Crab pulsar.

The Canberra will sail from New York on June 23 and head for the African coast, and the eclipse will be viewed off the coast

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of Mauretania. A stop will be made at Tenerife and another at Dakar and return on July 8. The eclipse itself will last about six minutes, which compares with the one minute for last year's eclipse. In fact, it is the longest lasting eclipse visible for another 200 years or so. The staff on this eclipse cruise will include Neil Armstrong, Scott Carpenter, Isaac Asimov, as well as Allen Hynek, Walter Sullivan and the directors of three major planetariums (and a fourth, about to be built--see next issue of the OBSERVER).

Each staff member gives about five lectures and, in addition, experience on the last cruise showed that staff members have very little time to themselves because they are constantly button-holed by passengers wanting to know more. The passengers are not all amateur astronomers either. Some are simply interested in learning more about things around them, including astronomy; some are addicted eclipse watchers, and apparently all bring cameras and tripods and nearly all bring telescopes with which to photograph the eclipse. A team of experts will also teach photography and the ship's darkroom will be used to develop pictures immediately after the event. On the last cruise, the first, and some said the best, pictures were produced by a woman passenger who converted the bathroom in her cabin to a darkroom. Apparently the sight of hundreds of tripods with cameras and telescopes covering the deck of the ship is quite remarkable. The Canberra has an enormous amount of deck space for eclipse watching, so every one of the 1750 passengers, the 100-odd staff plus families, as well as the crew, will have room enough to stand and gaze at the marvel of a six minute total eclipse.

I have just returned from a warming-up ten-day cruise to Grenada, Barbados, Martinique and St. Thomas on board the Canberra and met many of the staff of the eclipse cruise and know that the actual eclipse cruise is going to be quite a fantastic experience for all on board. During this trip I learned that the air in the Caribbean is as clean as it is possible to get anywhere in the world. Someone from the eclipse cruise staff monitored it every few hours!

Finally, courses on the Canberra include many on astronomy, birding, environment, history and philosophy of science, meteorology, modern exploration, navigation (for the crew?), oceanography, photography and art, and in addition a Broadway show will be produced on the ship!

Passages could have been had for as little as

\$450 to as much as \$1575.

The next eclipse is only visible in the South Pacific in 1974.

P.S. Further information about how cruise passengers amuse themselves may be had during consulting hours.

CRAFT STUDIO

Perryn Fleming

The Open House back in January was quite successful with about fifty people of sorts floating through during the afternoon. Demonstrations were given in silk screening and dried flower arranging in order to promote interest in crafts other than ceramics. We have ample room for small groups to use for any kind of craft projects that you may not want to do in your own kitchen.

Officially in our new home, we have had around thirty-five different people in and out with an average attendance on Sunday nights of about ten. We have had quite a volume of ceramic work in the front room with a few successful pots being turned out on the potters wheel.



Some of the ceramic work done at the new Hannah House Craft Studio.

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There is also evidence of other projects here and there as you can tell when you come to the Hannah House. For the past few weeks there has been candle making in the kitchen with some two or three of us at a time--we sort of have to work in shifts to fit in there. The smell of silk screen ink, melting parafin, kiln fire, wet clay and glazes blend into one and is coupled with the sound of busy, happy people. A new era has begun for a very old, notoriously well-used house. So, if you are ever down that way some Sunday night--stop in!

CHARLOTTESVILLE IN TWO HOURS

Rick Fisher

Allow me to use a few paragraphs to destroy a reputation as a soul bent on self-annihilation whilst tossing in a few random thoughts on the art of motoring.

One day last fall I strode in the door of the CV offices and commented to a local motorcycle freak that I had worked my GB-CV time down to 2:05. "What!", he exclaimed, "I drove that trip like a maniac once and did it in 2:15 in my Corvair. You must be crazy!" My "Not really" didn't exactly quench the latent rumor I could see stirring in his mind, so I have belatedly gathered some figures to prove my case.

The one-way distance to Charlottesville is reputed to be 120 miles, but at the risk of losing a dollar for everybody on the round trip, I contend it is only 115 going north out of Arbovale. The high road is worth 5 minutes even though it is twistier than the route through Frost. The 115 miles breaks down like this in terms of legal speed limits: 35 mph - 5 mi., 55 mph - 71 mi., 70 mph - 36 mi. These figures leave out 3 miles which go through Staunton's syncopated traffic lights and take about 10 minutes. All other 35 and 70 mph zones are negotiable at the legal limit save a light and stop sign in Charlottesville. For the hair-splitters in the crowd, the times and distances assume a standing start at the guard house to a rolling finish past Bill Meredith's office. (You've got to go that far to find a parking space.)

The 71 miles posted at 55 mph broken down in terms of maximum safe average speeds is

approximately like this: 35 mph - 5 mi., 40 mph - 5 mi., 45 mph - 4 mi., 50 mph - 2 mi. The rest is safely done at 55 or greater. Note that the above are average speeds. For instance, on the "shuttle stop" mountain there are a couple of turns requiring 25 mph or less, but the average speed for climb and descent is 35. These speeds were derived without the driver's knowledge, on a day of wet roads while riding shotgun in a Mercedes, so they are not hair-raising dry road speeds.

You can check my arithmetic, but if I add up the time for each stretch I get 2 hours and 13 minutes. If you'll allow me to cheat on the posted limits by 5 mph where possible, the time goes to 2:06. Finally, I maintain that on a dry day with a good car and sticky tires, this time looks like around 2:00. The 2:05 time mentioned at the start was done before the last section of I64 was opened, so I claim to have made the hypothetical 2 hours once.

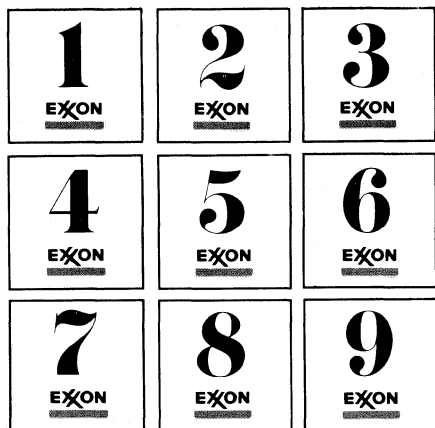
So, you say, if all this is true, why does everybody else say it takes at least 2:15 to 2:30? There are lots of reasons. A few are that you cannot get stuck behind any slow moving traffic -- my best time was in October after the camper season, and I spent less than 2 minutes below best speeds. The road must be dry and free of gravel -- it had not snowed by October so no cinders had been thrown yet. You cannot daydream and hold best speeds, and you must know the road and your car fairly well.

One item in the last sentence may be worth a little more comment. From my own experience I consider daydreaming one of my worst driving habits, and probably a lot of other people's, too. A few tricks to combat wandering attention concern themselves with precise driving; accurate speed control, best lines through corners while staying right of center, decisive and brisk passing, and even smooth stops. Try avoiding the lurch at a stop sign by letting up on the brakes just before they grab. There are a dozen more, but the idea is to think about driving while doing just that. It keeps the brain connected to the senses and makes for fewer "Where'd he come from?"'s.

The gist of all this is not that you can buzz over to CV in two hours more than once a year, if you're lucky, but that working at it actually makes it safer.

MATHEMATICAL PUZZLE

contributed by Don Stone



Fifteen in Every Direction

This mathematical puzzle, handed down over the centuries, is known as the magic square. The object is to rearrange the numbers so they add up to 15 in every possible direction: up and down, across, and diagonally. Good luck.

HELP FOR YOUR TAXES

Ed Fomalont

With April 15 fast approaching on the fiscal horizon, the OBSERVER in another of its dramatic and controversial journalistic stabs has contacted the firm of Fomalont Revenue And Underwriting Division. Just by reading this brief article we at FRAUD are positive that all of you will save hundreds of dollars in your tax returns. For over 150 years, we have helped Pocahontas County residents save on their Federal income tax, for a nominal fee. (In the old days when we handled accounts for local Indians the typical fee was a buffalo blanket. For a job really well done, a young squaw was wrapped inside-- those were the days.)

Before getting on with the details of how you can save money-money-money, FRAUD would like to tell you of some of our more recent tax efforts for our customers.

1) In a recent Frost appellate court test, Judge Taylor Sheets (or was it Sheets Taylor?) ruled that all expenses incurred inside the Redwood house were tax deductible. This includes the 163 decks of cards bought last year

for business "entertainment" purposes. In addition the 4 special decks with six aces and backs to match D. Hovatter's blue seer-sucker suit were deemed deductible.

2) In the classic 'creole' case of EVERYONE vs THE CAFETERIA medical expenses incurred after a meatloaf lunch is only tax deductible if at least one ounce of creole sauce was deposited on or in the vicinity of the meat.

3) In a special act of the West Virginia Legislature, with the enthusiastic lobbying of FRAUD, the shipping cost of 1536 cans of Coors beer smuggled in the bottom of a VLB terminal from Arizona to Green Bank is only tax deductible for those cans drunk in the first week after delivery. Ms. L. Madron who was unable to attend the signing of the bill, claims to have finished off 1314 cans after seven days.

4) The claim of Dr. D. Heeschen and Dr. H. Hvatum to write off the VLA as a \$76 million refund check was thrown out on a mere technicality.

5) Ms. J. Chestnut successfully defended her claim (with the help of FRAUD) of deducting transportation costs incurred when driving from the parking lot to the cafeteria. The claim for the fiscal year March 12, 1971 to February 17, 1972 was \$1.16 in gas, and \$0.33 in oil.

6) With our financial guidance, Schinkula Von Hoerner did not pay a single penny in tax between 1961 and 1972. Admittedly our task was made easier by her 362 dependents. (Relax, it's only a cat.)

We are sure the above has instilled confidence in FRAUD's ability to serve your tax needs. Now on to the details of filling out your form.

First, unless your gross income was more than \$1000 last year, no tax return need be filed. Fortunately this includes nearly all NRAO salaried employees so most of you can forget about the rest of this article and read about the electronics division in CV. The best way to explain the details of filling out a tax return is not by the lengthy explanations kindly supplied by the U. S. Government in Traditional Middle Babylonian Sanskrit but by scrutinizing a real life return of a person whose financial empire encompasses a wide horizon. We thus thank Dr. W. E. Howard, III for supplying his tax return so that others may learn from his economic wizardry.

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FEDERAL INCOME TAX FORM

1. NAME: William E. Howard, III
2. Sex - Check only one
 male
 female
 none of above
 all of above (you may claim two exemptions)
3. Exemptions - Enter Number
 Regular
 Additional Spouses
 Kids
 total (round off to nearest number)
4. Wage, salaries and tips (do not include money won in flipping for coffee) \$8,473.16
5. Dividends and interest (list below) 470.45
6. Itemized deductions (list below) 2,065.23
- If Line 4 is less than \$10,000 and you want the IRA to figure your tax, send your forms to the IRA (by including a \$20 bill wrapped in plain brown paper, certain irregularities may be overlooked by our office).
- If the sum of Line 4 and Line 5 less the sum of the product of the number of exemptions by \$750 upon which only the non-excludable part of Line 5 has been added and which only includes those items comprising legitimate business expenses on Line 6 has been subtracted--is less than \$16,000, please use the tax table printed on page 116 of the February issue of PENTHOUSE - you know, the issue with the girl having those enormous - well, er, nevermind.
7. Calculated tax \$6,127.63
8. Tax withheld 4,622.47
9. If Line 7 is larger than Line 8, enter twice the difference (BALANCE DUE) 3,010.32
10. If Line 8 is larger than Line 7, enter half the difference (REFUND DUE) -----

Send check or money order to R. M. Nixon
 c/o Mafioso
 Washington, D.C.

DIVIDENDS AND INTEREST

Associated Cyclamates, Inc.	\$0,000.02
Winchester Little Cigars, Inc.	462.18
Farmer Fanny's Fabulous Fish Food (Fortified)	8.22
The Glass House Restaurant Entrepreneurs of Virginia	0.03
Penn Central Railroad	sob
Annaconda - Chile	sob,sob
Bon Vivant Soup Co.	Oy Vay

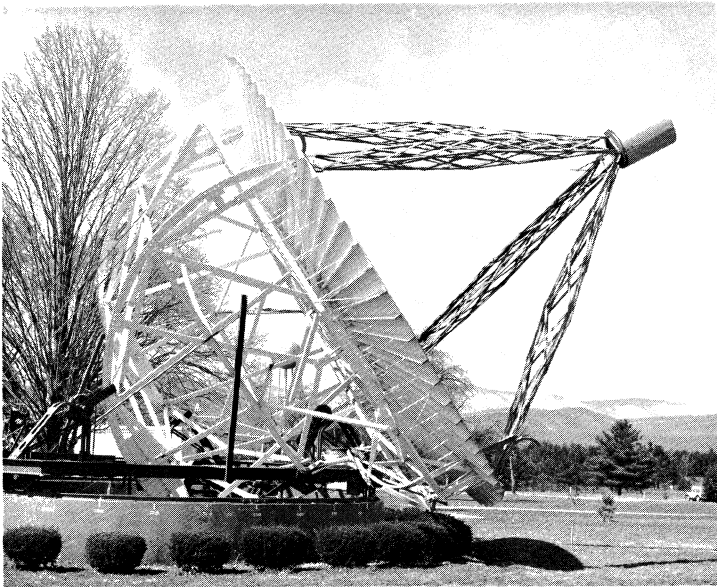
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ITEMIZED DEDUCTIONS

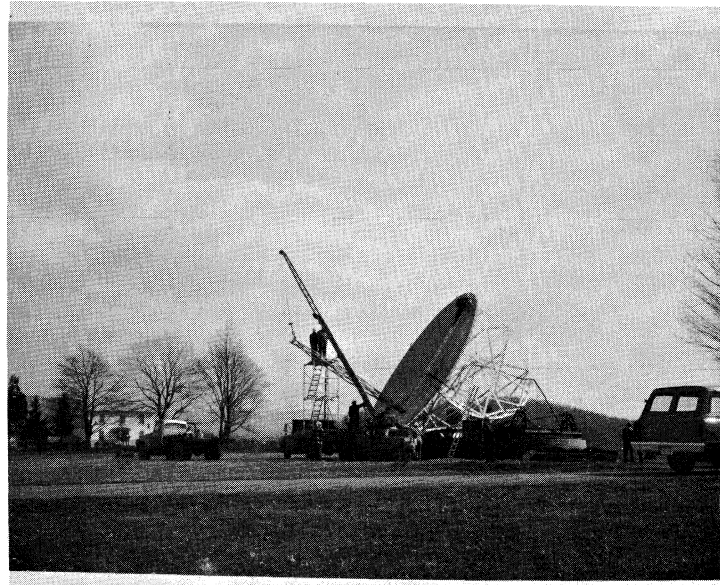
16 gross graph paper (including 3 boxes of 13 by 11 lines per inch elliptical grid)	\$1,476.22
247 ping pong balls used for business entertainment	95.55
Money lost at NRAO canteen vending machines	86.15
Medical expenses incurred during Diplomacy games	1,186.57
Political donations - please specify (Shirley Chisholm)	200.00

WINDS DAMAGE HISTORICAL TELESCOPE

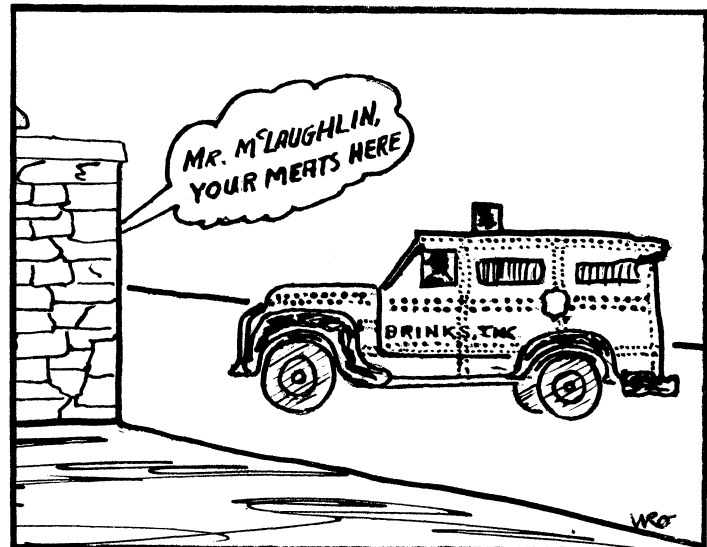
Winds during the night of March 17 severely damaged the Reber Dish. Sometime during the night gusts of wind reaching 75 miles per hour shook the antenna loose from its hold downs and severely damaged the back up structures. The following picture, taken several days after the damage, shows the extent of the damage to this historical telescope.



Repair work to the antenna began on March 26 with disassembly of the telescope by workers from Maintenance and Central Shops. After the telescope is disassembled, all structural parts will be checked for damage. Since most of these components are not shelf items, they will have to be made by the carpenter and machine shops at NRAO. No time has been set for the completion of the repair work.



Maintenance and Central Shop personnel dismantling the Reber Dish.



HOW RIGHT ARE YOUR REACTIONS?

Your first reaction in an emergency could be deadly. Spur-of-the-moment-action could be a decisive factor--for better or worse.

In most, the reaction is wrong. In a few, the instant action taken is proper. Underscored passages indicate the action in question. See if you recognize which are correct and which are incorrect actions. Do you know the reasons why?

Answers on page 15.

1. A man was awakened in the middle of the night by the smell of smoke. He found his living room sofa burning. Getting a fire extinguisher, he began using it on the fire.

2. A woman found her husband, who had been cleaning up broken limbs around their farm home after a severe windstorm, lying in the yard with a downed service wire touching him. She ran back into the house, grabbed a broom and used it to move the wire away from her husband. She then gave him mouth-to-mouth resuscitation.

3. When a woman returned from putting a load of clothes into a basement washing machine, she found a skillet of grease in flames. She grabbed a pan of water from another burner and poured it on the fire.

4. As a man approached a stop sign, he felt his car start to skid. He immediately applied his brakes, releasing them after an instant, then braked again, then released them. He repeated this on-off braking process several times.

5. A woman found her young daughter coughing and a bottle of some kind of cleanser lying open on the floor near her. The woman knelt and stuck her finger down the girl's throat to induce vomiting.

6. A hunter was bitten by a snake. Before attempting any kind of first aid, the man's companion gave the victim a slug of whiskey.

7. A woman was choking on a piece of meat in a restaurant. A waiter saw what was happening, hurried to her and firmly slapped her on the back several times.

8. A picnicking couple saw a girl strugg-

ling in the water a short distance from the shore. They emptied their large thermos jug and replaced the lid, then threw it to the girl.

9. A man driving on an icy road felt the rear of his car start to slide to the right. He quickly turned the steering wheel to the left to whip the car out of the skid.

10. A skater fell through the ice. He immediately grabbed the broken edges of the ice and tried to hoist himself up.

11. An elderly man stumbled on a broken sidewalk and fell. Two passersby rushed to his aid and lifted him back to his feet again.

12. A driver felt his right wheels slip off the pavement onto the gravelly shoulder. Instantly he turned hard to the left and accelerated to get back on the road.

13. A man in a fourth floor hotel room awoke to find the building on fire. He wet some towels and stuffed them into openings under the door. Then he raised the window and stayed near it.

14. A man was driving about 65 miles an hour when his right front tire blew out. He immediately slammed on the brakes.

15. A gasoline explosion in a garage set a mechanic's clothes on fire. He started running, shouting for help.

16. A woman's feet slipped out from under her on an icy sidewalk. She tensed her muscles and tried to break the fall with an extended arm.

The cynic is one who never sees a good quality in a man, and never fails to see a bad one. He is the human owl, vigilant in darkness and blind to light, mousing for vermin, and never seeing noble game. The cynic puts all human actions into two classes --openly bad and secretly bad.

--Henry Ward Beecher

GREEN BANK OPEN HOUSE

Ross Jeffries

On Sunday afternoon, March 4, 1973, some 280 visitors toured the Green Bank site during an Open House sponsored by Site Director, Dave Hogg and the Green Bank division heads. Displays and demonstrations were manned by approximately 30 NRAO employees at various locations including the electronics lab, computer room, central shops, maintenance shops, and all three of the major telescope control rooms.

This was the second public open house to be held at Green Bank. The last one was in early June, 1962.

The largest attendance was recorded at the auditorium where three films, "The Observatory", "The Erection of the 140-Foot Telescope", and "The Universe" were shown on a rotating schedule throughout the afternoon.

The accompanying photographs verify the success of the 1973 Green Bank Open House:



The photo above shows some of the displays in the central shops area. These included engraving, milling machine, and lathes in the machine shop and metal shearing and forming, welding and gold plating in the sheet metal shop. In addition, an assortment of finished products produced by both sections was shown.



Visitors watched NRAO staff observers in action at the 140-ft, interferometer, and 300-ft telescope control rooms. Above, George Liptak mans the 300-ft control console while Seth Shostak explains the observing program.



Bob Vance and Buddy Cate demonstrate the IBM 1403 printer producing the now famous "Snoopy" calendar, a slight deviation from normal output.

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Ken Kellermann learns a new skill demonstrating closed circuit TV to the merriment of the children and Dave Hogg takes his turn as the "Answer Man" discussing radio sources transparencies displayed on the light table.



This photo shows visitors in the digital section of the lab trying their skill on some of the devices built especially for the occasion: reaction time tester, a "tic-tac-toe" game and a binary adder. Other displays here and throughout the lab

included demonstrations of a medium speed printer, oscilloscope patterns, a visual and sound presentation of the Vela Pulsar, a band pass monitor, and a cooled front end box.



To complete the tour, visitors enjoyed refreshments in the Observatory cafeteria.

STUDENT EXCHANGE PROGRAM

Bob Viers

Pocahontas County High School has been chosen as one of seventy schools in the United States and the only school in West Virginia to participate in a Student Exchange Program sponsored by the National Association of Secondary School Principals in conjunction with the Council for International Education Exchange. Locally the program is sponsored by the Social Studies Department of the high school of which Mr. Steve Barksdale is chairman.

On April 8, nine British students will arrive in Pocahontas County from Hayes School in Bromley, Kent County, England (Bromley is a suburb about twelve miles southeast of London). These students will be staying with Pocahontas County families who have

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children in 10th and 11th grades. Four of the host homes are those of the following Observatory employees: Sidney Smith, Troy Henderson, Edmund Gardner and William McLaughlin. Other host homes in the county are: Mr. and Mrs. Richard Eddy, and Mr. and Mrs. Hunter Hiner, of Marlinton; Mr. and Mrs. Marion E. Hill, and Mr. and Mrs. Sherman Beard of Hillsboro; and Mr. and Mrs. Warren Rosencrance, of Durbin.

On April 7 the British students will arrive in New York City, visiting that city before flying on to the Greenbrier County Airport on April 8 to begin their three weeks stay in Pocahontas County. During these three weeks, they will attend daily school, visit local and state places of interest, and participate in activities organized by the high school. Hopefully, the most important experiences for these nine students will be their daily, personal contact with the host families. Host families will strive to give these students an understanding and feeling for an average American life.

On or about July 1, a group of fifteen Pocahontas County High School students selected from the 10th and 11th grades will depart for England. Our students will stay in Bromley and attend Hayes School for three weeks and afterwards spend one week touring England before returning home. Three of the fifteen students selected to go to England are from Observatory families: Lloyd Coleman, son of Herman Coleman; Cheryl Oref, daughter of Wally Oref; and Susan Viers, daughter of Bob Viers. The other twelve students from Pocahontas are: Penny Cosner, Dunmore; David Moore, Hillsboro; Connie Mullens, Minnehaha Springs; Vicki Killinger, David Eddy, Genny Mitchell, Marsha Gibson, Sharon Kellison, all of Marlinton; Sarita Lantz, Green Bank; Charles Hausser, Edray; Sara Howard, Buckeye; and Melissa Rittenhouse, Frost. Mr. and Mrs. Steve Barksdale will travel as group leaders.

This is the first venture of its kind for PCHS and if this exchange is successful, another one will probably be arranged next year. At least for a few years the Hayes School in Bromley will be the primary exchange school; however, there are hopes of expanding the program to include Germany, France, Japan, and possibly some countries of Central America.

D. J. RAY SAVES THE DAY

Richard Fleming

Some 106 people braved the blowing and snowing to come out to the NRAORA St. Patrick's Day Dance Saturday, March 17. It seems that everybody made it except the band. The Great Cheat Mountain struck again: twelve inches of snow on the road and high winds allowed only one of the three cars carrying the band to cross; however, the one car that did make it was involved in a slight wreck on top of Cheat. "The old saying 'Keep it between the ditches' would have worked if you could have seen the ditches", said one of the two members that made it.

One drum and one guitar were not enough, so a quick call was made to our local DJ who agreed to come out "on a night like this". Several vehicles and strong backs later, Ray Hallman started setting up his maze of speakers, turntables, amplifiers and miscellaneous electron handling and processing equipment. In a few minutes the "band" was in full swing; I do mean swing. With all kinds of music, all kinds of people were soon all over the place. Much fun was had by everybody and things did not start winding down until 2 AM. The high-light of the night came shortly after when an official of NRAORA announced that tickets would be returned. Someone shouted, "You mean we had this much fun and now we get our tickets back --hey, that ain't bad."

For you folks who were there, hold on to your tickets; they will be good for the next dance (to be announced in two weeks). Only very few tickets can be sold for the next dance, so if you won't be using your tickets, you should arrange to sell them to somebody who can go.

Three new NRAORA Bulletin Boards have been installed on the site. One is in the cafeteria, one in the lab lobby, and one is located in the works area. Check these boards weekly for notices concerning dances, concerts, movies and other activities as well as sports and Rec Area happenings. The minutes of the monthly NRAORA meeting will also be posted about a week after the meetings that are held on the second Tuesday of each month.

Answers to

HOW RIGHT ARE YOUR REACTIONS?

Quiz on Page 11

1. Wrong. You should fight a fire only after you have first gotten occupants out and called the fire department. Houses have burned down while homeowners have attempted to put out fires that could have been handled easily by the professionals.

2. Right. The woman might have been electrocuted if she had touched her husband without breaking his contact with the wire. She properly used a dry piece of wood--the broom handle--to accomplish this. A dry rope or some other dry, nonconductive material could have been used.

3. Wrong. Pouring water on a grease fire will cause the fire to splatter and spread.

4. Right. The most effective way of stopping on icy or snowy surfaces is to pump the brakes (hard, rapid jabs on the pedal).

5. Wrong. Serious damage could be done to the victim's throat and mouth if the poison contains petroleum distillates, caustics or alkali. Induced vomiting is also taboo if the victim is unconscious or convulsing. Best action--summon medical care. Consider inducing vomiting only if you're sure the ingested poison will cause no further damage.

6. Wrong. Alcohol speeds up blood circulation, thereby speeding up the circulation of the venom. It's a dangerous remedy for a snakebite. Best thing to do is have the victim lie quietly. Summon medical aid as soon as possible.

7. Right. This is a recommended measure in a choking incident.

8. Right. You should never dive in after a floundering swimmer. A struggling swimmer might pull you down too. Throw something that will float and is large enough to give support until the victim is rescued.

9. Wrong. Experts recommend that you steer in the same direction your car's wheels are sliding.

10. Wrong. Trying to hoist yourself over the broken edge will probably cause the edge to crack off each time. It's best to extend both arms along the surface of the ice to spread your weight, kicking your legs vigorously. This will lift your body up to the surface, help propel you forward and make it easier to slide onto solid ice.

11. Wrong. This could complicate the man's injuries. It would be better to let him lie until the extent of his injuries can be determined.

12. Wrong. There's always the possibility that you will lose steering control. It's best to slow down gradually, braking intermittently. Then, pull two or three feet to the right and come back on at about a 45-degree angle.

13. Right. Block as best you can the entrance of smoke, stay near a source of fresh air, and resist the strong urge to jump (unless it's a reasonably safe drop).

14. Wrong. This could throw you into a spin or out of control. Keep a firm, steady grip on the steering wheel. Brake gradually and smoothly.

15. Wrong. Running is the worst thing you can do. If it's not practical to remove clothes and there's nothing like a rug or blanket handy to roll up in, it's best to roll on the floor or ground.

16. Wrong. If you're relaxed, you're less likely to suffer broken bones. It's best to crumple like an empty sack and try to roll on the fleshy parts of your body.

"Some minds are like concrete - they're all mixed up and firmly set."

--Millard Collins

I AM CONCERNED ABOUT POISON TOOTHPASTE

A REBUTTAL

Jon Spargo

Before I begin, I would like to state that, although I am a member of the editorial board of the OBSERVER, this article is intended to in no way reflect the feelings or thoughts of the board nor in any way reflect on the editorial policy of the OBSERVER.

The recent article "Toothpaste is Poison" which appeared in the OBSERVER, to me, is a prime example of how misleading information can be made to appear to be factual, when in fact it is almost devoid of any truth at all. The first clue to this is that the author was so sure of his information that he felt it unnecessary to sign his name. If one carefully examines all of the examples given by the author, to proclaim the dangers of "sodium flouride" a completely different picture emerges. Briefly I will try to point out the inaccuracies in each of his points.

1) The flouride compound found in toothpaste is "stannous flouride" not "sodium flouride". (Note: The rest of his article contains no more information about toothpaste.)¹

2) Sodium flouride is an added ingredient to, and not a by-product of, the Hall-Heroult process of making metallic aluminum. The only dangerous by-product is flourine gas.²

3) The reason the solution for etching glass is dangerous is that the ingredients of the solution, when mixed together, produce hydroflouric acid, which does the actual etching.²

4) The active ingredient in the "roach powder" is the substance called Pyrethrum or more accurately Pyrethrins are natural insecticides found in flowers. They are not harmful to humans and other animals.³

5) We are also told that "sodium flouride" is accumulative in the body and causes sterility in rats. But, we are not given any further information beyond those statements.

In short each and every point in the article can be reflected or at least seriously doubted for one of two reasons. First, it is obvious that the author did little or no research for his article.

And, second, for the information he did provide he gave us no sources of reference to substantiate his statements.

In conclusion I would like to say that my original draft of this article was seven pages long and, in detail, outlined what I considered to be the truth about each of the statements in the previous article. Needless to say, I spent a fair amount of time doing research to back up my statements, and I will gladly furnish my original draft and sources of information to anyone concerned enough to want to find out more about the subject. What it all boils down to is that if someone wishes to tell us of a subject that could possibly effect our daily lives, it behooves them to make certain that their facts are as accurate as possible. This was definitely not the case with the article "Toothpaste is Poison". I do not wish this to be taken as a personal attack on the previous author or anyone else. In fact I think it is to his credit that he at least took the time to try and inform us of something he believed in. His only mistake was that of the lack of thoroughness in preparing his subject. I also think that more of us should have the courage to come forward and do the same thing when necessary. Therefore I would like to invite further comment on this subject since I will be the first one to admit that what I have been able to find out isn't the last word on the subject. As Sgt. Joe Friday so aptly puts it: "All we want are the facts, nothing but the facts."

The distance between two ears is a block.

The first forty years of life give us the text; the next thirty supply the commentary on it.

--Schopenhauer

¹Crest toothpaste

²Chemistry, Sienko & Plane, McGraw Hill Book Co. 1957

³Carefully read the label on a can of "Raid" insect killer.