

The O B S E R V E R

Vol. 11, No. 1

January 1971

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THE
CHILDRENS

XMAS
PARTY

1970



See story on next page.

CHRISTMAS PARTY 1970

The Christmas season started for the children of employees on December 20 with the annual Children's Christmas Party at Green Bank, Charlottesville and for the first time at Tucson.

Our cover pictures show better than words can describe some of the activities at the Green Bank party. An estimated 160 children were on hand, but to the parents attending the party there seemed more like 1000 happy, yelling kids.

Movies, cookies, candy, punch, and gifts handed out by Santa Claus rounded out the program for the children through 12. For the younger kiddies, talking to and receiving gifts from Santa was the highlight of the day.

A special thanks to the board of directors of NRAORA and to the volunteers who helped with the parties. Well done.

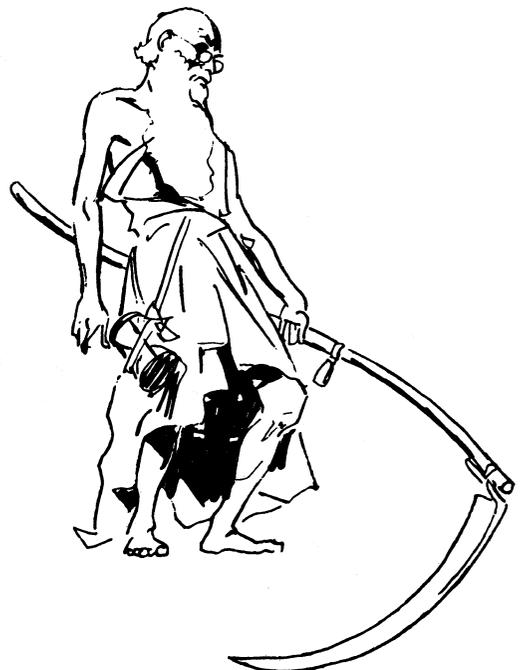
The older children, 13 to high school seniors, were given an evening dance on December 26. Music was provided by our own D J Ray.

For the children even older (17 and up) there was no party. Christmas week was a little of the usual. Some took their last few days of vacation, some showed up for work, some just showed up, and some did a little of each.

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

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



STELLAR RADIO ASTRONOMY

R. M. Hjellming

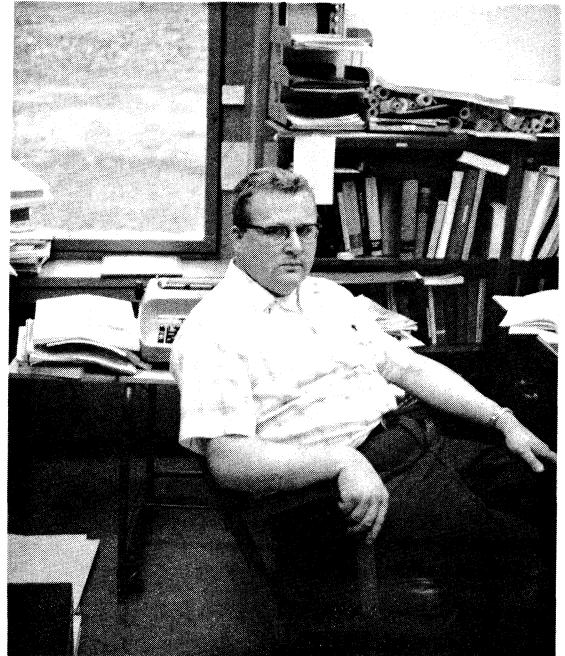
During the last nine months the three telescopes at Green Bank which patiently work together to study the radio sky have been observing stars. Although stars are the main preoccupation of most astronomers, they have seldom been observed by radio astronomers. The phrase "radio star" has often been used by radio astronomers, but usually they have not been talking about real stars.

The Sun is, of course, a radio star which has been studied for almost 30 years by many radio astronomers. However, even though the Sun is such a strong radio source that the Green Bank 2-foot was designed to observe it, it would be undetectable by even the most powerful radio telescopes now available if it were at the distance of the nearest star. Early in the 1960's, hundreds of days of observing time were used up in England and Australia to detect a few radio flares from nearby stars. Because of the few events observed and the problem of possible interference, some people have doubted these detections, but even those who did not doubt were not interested in observing such stars themselves because of the enormous amount of time that must be spent to catch a few events.

Pulsars are true radio stars. Unfortunately, only the pulsar in the Crab Nebula, which was discovered by Staelin and Reifenstein with the Green Bank 300-foot, has been identified with a star that optical astronomers can also "see." Therefore, only radio telescopes systematically study this extremely strange type of star.

The first clear detections of radio emission from "normal" stars that have long been studied by optical astronomers were made in the past several months by the Green Bank interferometer. During this time the three dishes have tracked stars with very familiar names: Antares, Betelgeuse, Mira, Rigel, Aldebaran, etc. The interferometer has also been "listening" for infra-red stars, magnetic stars, shell stars, hot stars, cool stars, red stars, blue stars, X-ray stars,

and the "new" stars long called novae. So far we have clearly heard from three different classes of stars. Of the cool and red stars we have detected Antares, a familiar star in the constellation of the Scorpion. One would expect Antares to have something unusual about it if it is the first of its kind to be detected, and indeed there is: It has the largest apparent diameter that has been measured for any star.



Surprisingly strong radio emission has been found for two "new" stars or novae. Novae, which have been studied by optical astronomers for hundreds of years, are stars which once were very ordinary faint objects, but which blow up, become very bright, and throw parts of their outer layers into space. We have detected radio emission from a nova that appeared in the constellation of the Dolphin in 1967 and from another nova that appeared in the constellation of the Serpent in February 1970. Both "new" stars were easily observable to the naked eye when they first appeared. It has been particularly interesting to see the newest of these increase its radio emission at a steady rate as the size of the shell of matter ejected by the star grows in size.

The third type of star that has been observed is an X-ray star called ScoX-1

Continued, next page --

because it was the first X-ray source discovered in the constellation of the Scorpion. This strange star, which has been identified with the strongest X-ray source in the sky, is turning out to be one of the most peculiar and interesting radio sources in the sky. Radio emission from ScoX-1 was first reported a couple of years ago by Andrews and Purton in Canada; and Ables in Australia reported that its radio emission varied with time. Many people did not believe this, but it now turns out that they should have. The Green Bank interferometer, which excels at telling us exactly where in the sky radio emission comes from, has shown that there are three radio sources near ScoX-1, not just one. There are two companion sources, one to the NE of the X-ray star and another on the opposite side of the star. We would like to know, but cannot yet tell, whether these sources are off-spring of the star. The third radio source sits on the position of the X-ray star and turns out to be the most wildly variable radio source in the sky (except for the Sun and pulsars). We have seen this radio star vary by a factor of 60 in less than 24 hours. Frequently repeated observations show that the radio star is almost never the same. We have even seen it disappear a few times. It probably doesn't "turn-off" completely, but it becomes too weak to detect. We are only beginning to guess what this strange radio star might be. It could be a relative of a pulsar. According to one possibility, we could be seeing the effects of cosmic rays spewed out by the star; or it could be a rapidly rotating star with magnetic tentacles stirring up the surrounding gas and making it do strange things. There is no doubt that we are seeing strange things happening in the atmosphere of a star.

Whether they be red super-giants, novae, pulsars, X-ray stars, or new varieties of stars, the Green Bank telescopes will probably be spending a lot of time looking at stars in the future.

FORMER AUI SCHOLARSHIP WINNER

In 1965 the first two AUI scholarships were awarded to Carl Rose and David Hamed. We reported on Carl Rose in the last issue. In this issue we report on David Hamed, the son of Mr. and Mrs. Julian, "Tony", Hamed of Green Bank. "Tony" is employed in our Engineering Division.

After graduating from Green Bank High School in 1965, David attended West Virginia University. He graduated from WVU in December, 1969, where he received a B.S. degree with high honors in Aero-Space Engineering. In his senior year, he was named a President's Scholar. David was a member of Sigma Gamma Tau, national honor fraternity for aero-space engineers, and Tau Beta Pi, national honor fraternity for engineers. After graduating from WVU, he attended the University of Michigan on a graduate fellowship. He completed one semester before being called into the Army.

At the present time David is fulfilling his Army service at Ft. Rucker, Alabama, where he is assigned to USABAAR (United States Army Board of Aviation Accident Research). USABAAR is composed primarily of engineers who conduct analytical research on all crashes, accidents, etc., involving Army aircraft.

David is single.

OBSERVER ARTICLES WANTED

The Observer always needs articles for forthcoming issues. You don't have to be asked to submit an article. If you have something to write about and want to share it with the rest of your fellow employees, write it up and send it to the Observer. We're in the yellow pages.

FACTS FROM FISCAL

Filing your 1970 Federal Tax Return

Be sure and read your instructions carefully when filing your 1970 tax return. There are some new provisions which could be important to you.

Some of these provisions are:

1. You are allowed a \$625.00 allowance for each exemption for 1970, up \$25.00. (This is scheduled to go to \$650.00 in 1971, \$700.00 in 1972 and \$750.00 in 1973 and thereafter).
2. The form 1040 has changed in some respects and most of the changes are improvements. For one thing the "Schedule T" is no more; the computation of tax is on page 2 of the form 1040.
3. In certain instances (explained in the instructions) all you need do is enter the pertinent facts and the IRS will compute your tax and then either issue you a refund or a bill, whichever is appropriate. If you have older relatives who are receiving retirement income, this could also be helpful to them. The IRS has offered to compute the "Retirement Income Credit" for the taxpayer, and in the past the treasury has found that 75% of those who receive pension or annuity income have reported it wrong.

We have tax guides in the Fiscal Office which expand considerably the information contained in your tax form instructions. All employees are certainly welcome to use these guides and we encourage you to do so.

Increase in Social Security Tax

Effective January 1, 1971 the Social Security Tax withheld from your paycheck will increase to 5.2% (up from 4.8%). In 1970 the maximum amount withheld was \$374.00 (4.8% of \$7,800.00). Under the present law this will increase to \$405.60 (5.2% of \$7,800.00) in 1971. However, there is a bill presently before Congress which would raise the base to \$9,000.00 and the maximum amount withheld

would then increase to \$468.00 (5.2% of \$9,000.00).

SWITCHBOARD STATISTICS

Bev.

<u>October</u>	
Total FTS Calls Placed	1040
Total FTS Calls Completed	399
Total CV Calls	4370
Calls Placed thru Lewisburg	116
<u>November</u>	
Total FTS Calls Placed	660
Total FTS Calls Completed	341
Total CV Calls	3654
Calls Placed thru Lewisburg	100
Average No. Calls Placed/Day	47*
Average No. Calls Completed/Day	23*

As of November 28, Green Bank has been equipped with two more FTS lines which gives us a total of seven direct lines to Charleston. In the above tabulations, total number of FTS calls in November represents only calls placed on the first five lines, as we do not yet have meters for the new lines.

In October 233 purchase orders were typed and 209 in November. These figures do not include change orders and cancellations. This is an average of eleven original purchase orders per day.

* Does not include CV calls.

CAPITOL CHRISTMAS TREE

The sixth annual Capitol Christmas tree came from Pocahontas County. Selected for the honor was a magnificent 58-foot specimen from the Monongahela National Forest in Pocahontas County. The tree, delivered to the Nation's Capitol on December 4th, was decorated for a formal lighting ceremony on December 16th. John McCormack Speaker of the House, turned the lights on.

GREEN BANK BOWLING

Ken Anderson

After 13 weeks of bowling under our belts, our scores are beginning to improve considerably. High scores since the last writing were as follows:

Monday night -- Don Hovatter, 589 set, 228 high game. Don has had several 500 sets but this is his best. Jon Spargo has bowled 500 sets every night he has bowled.

Tuesday night -- Kermit Friel bowled 527 set and 204 high game; Ken Anderson, 518 set, 196 high game; Wendell Monk, 516 set, 203 high game.

On Monday and Tuesday nights, teams (five per team) leave Green Bank at 5:00 p.m. in good weather and 4:30 p.m. in lousy weather to arrive at Elkins in time to start bowling at 6:30 p.m. I would like to mention the names of those brave souls who travel across the mountains to bowl at Elkins. They are as follows:

Monday night -- Don Hovatter (captain), Tom Carpenter, Herb Hanes, Bob Nichols, Wally Oref, Jon Spargo, Ron Weimer, and Tom Williams.

Tuesday night -- Bill Vrable (captain), Ken Anderson, Kermit Friel, Wendell Monk, Rus Poling, Don Stone, and Leroy Webb.

In the future, we are planning a roll off with Charlottesville.

SPUDS

In Ireland years ago the potato was denounced by many as unfit for human consumption. Some of the denouncers went so far as to band together into an organization known as "Society for the Prevention of Unsatisfactory Diets." From the initials came the word "spud".



THE CENTENARIAN

Carolyn Dunkle

"If the dear Lord is willin' and the creek don't rise", my grandmother, Mrs. Laura Lantz, Circleville, will celebrate her 100th birthday on January 5.

She doesn't think of herself as old, even though she remembers four generations back and five forward. Although she was born after the Civil War, she remembers the stories told to her by her father and relatives who fought.

"Granny", as she has become affectionately known, breaks all the rules for eating properly -- never paying any attention to the doctors warnings of cholesterol. "Don't always listen to the doctor -- you know what's good for yourself."

She probably can "out" spell most of my co-workers and I'm positive her penmanship is better than most. And that's something considering she only attended 6-week normals for just a few years.

"Granny" passes her time by embroidering and she also reads quite a bit -- the Bible, newspapers, etc. She wouldn't miss a national election, and stayed up past her bedtime of midnight to watch the moon landing.

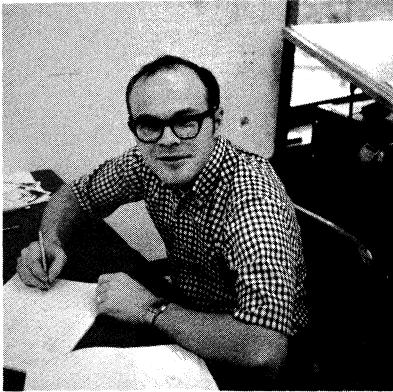
Her "big day" came in September of last year when she lead the Pendleton County Fair parade as Pendleton's oldest citizen. It may have been just another little parade to most of us, but it was a thrilling experience for her.

I'm proud of my grandmother, not only because of her remarkable awareness and ability, but also because she has never stopped being concerned for the welfare of her family and friends.

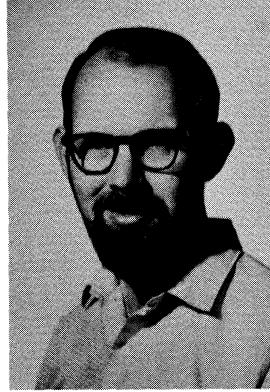
Her nephew, Henry Lantz, himself an octogenarian, lives in Green Bank.

You've come a long, long way, Granny.

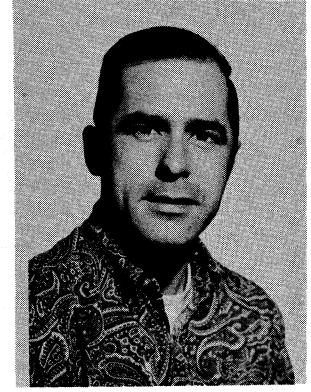
NEW EMPLOYEES



Mervel E. Runion
Electronics CV



John D. G. Rather
Basic Res. Tucson



John D. Smith
Tucson



Francois Biraud
Basic Res. CV



Donna P. Beemer
Dir. Office CV

Terminations

William J. Webster, Jr.
Frances M. Copper
George K. Miley

Return from leave of
absence: Bev. Workman
Welcome back, Bev.!

On leave of absence:
Billy J. Daniel

CARTOON IDEAS

The Observer needs ideas for cartoons. Cartoon ideas of general interest on some aspect of NRAO are the kind we are looking for. If you have an idea for a cartoon, why don't you submit it to the Observer?

"PATHWAY" FEATURES N.R.A.O.

Pathway Magazine, a magazine for West Virginians, had a four page feature story in it's November issue on the N.R.A.O., radio astronomy, and our current research on molecules. The cover of the magazine was a full page, color shot of the site - the same photograph used in our Observatory booklet.

SCIENTIFIC JARGON

One of the more valuable pieces of literature handed out at a recent seminar for newspaper people was A Glossary of Research Language. It is reprinted here as it appeared in the Charleston Gazette. We thought perhaps it might be of help when you read your next article.

"It has long been known..."-- I have not bothered to look up the original reference.

"Of great theoretical and practical importance..." -- Interesting to me.

"While it has not been possible to provide definite answers to these questions..." -- The experiments did not work out, but I figured I could get some publicity out of them.

"Three of the samples were chosen for detailed study..." -- the results of the others did not make sense.

"Typical results are shown..." -- The best results are shown.

"Presumably at long times..." -- I did not take the time to find out.

"These results will be reported at a later date..." -- I may get around to writing them up sometime.

"The most reliable values are those of Jones (1967)..." -- He was a student of mine.

"It is believed that..." -- I think.

"It is generally believed that..." -- A couple of other guys think so, too.

"It is clear that much additional work will be required before a complete understanding is attained..." -- I do not understand it.

"Correct within an order of magnitude..." -- Wrong.

"It is hoped that this study will stimulate further work in the field..." -- This paper is not very good, but then neither are any of the others on this miserable subject.

"Thanks are due to Joe Glotz for assistance with the experiment and to John Doe for valuable discussions..."-- Glotz did the work and Doe explained to me what it meant.

"We were able to demonstrate..." -- Our experiment was clever enough to give us the data we wanted.

"The primary aim of the present experiment was..." -- It wasn't originally, but these are our best results.

"In conclusion, the evidence indicates the soundness of our basic hypothesis..." -- we stated it sufficiently vaguely in the first place to assure confirmation regardless of the results.

"The final choice must be made by the body politic..." -- The problem is too complex for me to suggest a solution, so someone else will have to decide priorities.

If it had been at N.R.A.O. instead of Cambridge:

"But Miss Bell, you can't have discovered pulsars; it wasn't in your observing proposal."

PUPPY

Half Beagle, Male, Born 26 July, 1970. Free to good home. Contact: Bob Nichols, 140', Ext. 345, or Home: 456-4662.

SAFETY SUGGESTION WINNER

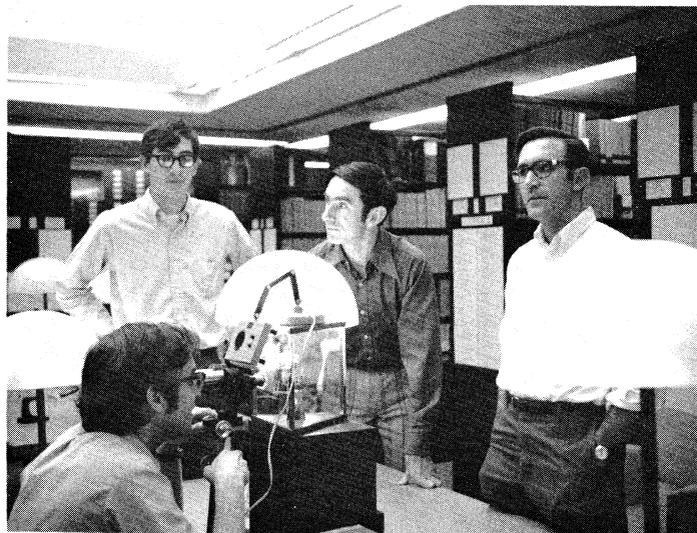
Charles Sutton's suggestion was voted as the \$25.00 winning Safety Suggestion for the 1970 prize.

MOON ROCK VISITS CV

Joanne Nance

Last month Dr. Laurence Frederick (chairman, University of Virginia Astronomy Department) obtained on loan from NASA one of the lunar rock samples collected by Astronauts Conrad and Bean during the Apollo 12 Mission. While in Charlottesville, the rock was seen by approximately 1000 interested visitors attending open house at the University's Leander McCormack Observatory. The specimen was also briefly displayed in the Astronomy Department's library.

On November 5th, Dr. Sieg Kutter (University of Virginia Astronomy Department), exhibited the lunar rock sample in the NRAO-CV library during the Users Committee coffee break. For approximately an hour almost all work in the building came to a standstill as everyone went to view microscopically the heavily insured specimen which was encased in lucite and under an atmosphere of nitrogen.



Looking "the rock" over. Seated: S. Gottesman. Standing: left to right: Gross, Miley, and Kutter.

NASA describes Apollo 12 sample 12006,1 (180.720 grams) as lunar olivine basalt, formed by igneous processes, probably as a surface lava flow or near surface intrusion on the moon. Meteorite impact at some time in the past deposited the rock on the lunar surface where it has endured considerable weathering from micrometeorite bombardment. This type of rock weathering is not found on the earth because the earth's atmosphere burns up tiny micrometeorites before they reach its surface. The lunar rock is well-rounded (top and sides), contains numerous glass-lined pits and many vugs (irregular cavities), filled with plagioclase crystals. The rock's crust, formed by crushing of the mineral grains on its surface, is lighter than the interior material.

Mineralogical analysis:	
olivine (greenish grains)	15%
pyroxene	25%
ilmenite	5%
plagioclase	55%



Woon - Yin Wong looks at lunar rock.

N.R.A.O. ON ETV

The N.R.A.O. will be the subject of a science show to be shown throughout South Carolina on educational television (ETV) sometime in January, 1971. The show hosted by Dr. Ronald Edge, a physics professor at the University of South Carolina, Columbia, South Carolina, regularly features one of the sciences. The purpose of the show is to explain science to the general public.

Professor Edge and a crew of four were here on November 18 and 19 and in Charlottesville on the afternoon of November 19. Besides the usual filming of telescopes, electronics, and control rooms, several of our staff people were filmed and interviewed. Among those interviewed were D. Hogg, K. Kellermann, D. Buhl, L. Snyder, and W. Oref.

PUBLIC SERVICE ANNOUNCEMENT

Since the last issue of the Observer, Will Webster has been, to use a cherished NRAO phrase, terminated, and has gone on to greener (in more ways than one) pastures at Goddard Space Flight Center in Maryland. It is pointless to say that his wit will be sorely missed and so in order to prevent us all from having severe withdrawal symptoms until his next visit, we herewith print a segment of the soon-to-be-published, "Quotations of Chairman Will." Each of the following has been certified by a panel of anonymous interferometer operators as having a humor content in excess of a hundred milliwebsters:

1. You do and you'll clean it up.
2. Right in the old Labonza.
3. Who knows what evil lurks in the hearts of men.

4. Only the innocence has been changed to protect the guilty.
5. Lions four, Christians nothing.
6. dot, dot, dot,
7. question mark, question mark, question mark
8. exclamation point, exclamation point exclamation point
9. It isn't worth a ding-dong if it doesn't give a fringe.
10. NGC7027 can be hazardous to your health.
11. You miserable bunch of people.
12. Why should I contribute to the entropy of this system?
13. Same to you, fella.
14. It does not compute.
15. CENSORED



GARDEN CLUB

Kay Williams

Since the last issue of the Observer, the three main activities of the Green Arbor Club were the November meeting, the December meeting and the Christmas bazaar.

Hostesses for the November meeting were Mrs. Curtis Moore, Mrs. Ray Robertson and Mrs. Thomas Williams. After usual business in the morning, and luncheon, the rest of the afternoon was devoted to a workshop. During the workshop members displayed and demonstrated items for the Christmas bazaar.

The Christmas bazaar was held on December 4th and 5th in the Arbovale Community Center. The bazaar was well attended by the local community and many of the member's handcrafted items sold. We considered the bazaar very successful and hope to make it an annual event.



Bazaar at Arbovale Community Center

At the December 8th evening meeting, Mrs. James Dolan, Mrs. Harry Fox and Mrs. Jack Ervine served as hostesses. The speaker for the evening was Mr. Curtis

Moore of Durbin, forestry technician with the Forest Service. His subject was "A Live Christmas Tree." He told us how to select a live tree, and how to plant and care for it after the holidays were over. Mr. Moore donated a live Christmas tree for the door prize. The lucky winner of the tree was Mrs. James Dolan.

Following Mr. Moore's talk, Mrs. Dave Hogg showed and narrated colored slides on "Christmas Trees Around the World." After the meeting was adjourned, a delightful social hour with refreshments was enjoyed by club members and guests.

ALLIUM TRICOCCUM

Allium tricoccum Ait. Hort. Kew. I:428,1789.

Bulbs ovoid, cluster, 1"-2" high, seated on a short rootstock, their coats fibrous-reticulated. Leaves oblong-lanceolate or elliptic, appearing early in the spring, but withering before flowering time, 6"-12" tapering into a long petiole; scape 4"-15" tall; bracts of the umbel usually 2, at first enclosing the flowers, acuminate, deciduous; umbel erect; pedicels becoming rigid, 1/2"-1" long; flowers white; perianth segments oblong, obtuse, 2-4mm long; filaments lanceolate-subulate; ovule 1 in each cavity; capsule deeply 3-lobed, about 6 mm thick, 3-4mm high, its valves not crested; seeds globose, black, smooth.

In rich woods, New Brunswick to Minnesota, North Carolina, Tennessee and Iowa. Often grows in large beds.

This botanical description identifies a plant common and dear to the hearts of many West Virginians and is picked by many Pocahontas Countians. Can you identify this plant? Name of plant appears on page 12. Don't peek!

USING THE POTTER'S WHEEL

Jean Davis



At Clay Day II, Michelle Fomalont practices centering a pot on the Potter's Wheel



Here a pot is being opened up. Clay Day II (Nov. 19 and 21) resulted in several rather professional pots by the adults and a great number of Christmas ornaments by the kids.

LOST SCOUT FOUND

Bill DelGuidice

A dramatic call for help before midnight on Saturday, December 19, brought a dozen volunteers from Green Bank to search for a lost boy in the rugged country north of Durbin.

Steve Cvechko, a 15-year old Boy Scout became lost west of Wildel Saturday morning, while hunting with fellow scouts. Shortly after dark his companions notified the district ranger, Gaylord Yost, that they feared Cvechko was lost. Eight forest service men undertook the hazardous job of searching all night in the dark, but it was obvious by 11:00 p.m. that they would need help and they called the Durbin Fire Company for additional manpower. Among the fifty volunteers who showed up at dawn on Sunday were a dozen people from the Observatory.

By 7:30 a.m. parties of two to ten men were out combing the hills. As noon approached Ranger Yost decided it was time for an all out effort and more volunteers were called in. A bloodhound was sent from the Huttonsville Correctional Center and firemen from fifty miles away were called. In addition, the National Guard was alerted and they began rounding up pilots and aircraft. Just as mobilization was going into high gear, a radio call from the southernmost search party announced, "We found the boy!"

The group of Dr. Hogg, Richard Fleming, Bill Brundage, Fred Cooper, Clarence Wright, Terry DeHaven, John Simmons, and led by Forrester David Tucci were walking the railroad when Cvechko hailed them. He was found several miles south of the main search area in excellent shape, and very hungry. So ended thirty hours of drama in the hills of Pocahontas County.

The plant described on page 11 is our loveable ramp.

CAVING

Mike Balister

For several years we have known that a long cave runs south along Back Mountain road from Troy Moore's farm to Roaring Springs, a total distance of nearly three miles. We have made three unsuccessful attempts to get in by digging in sink holes above the cave on its assumed route to the spring.

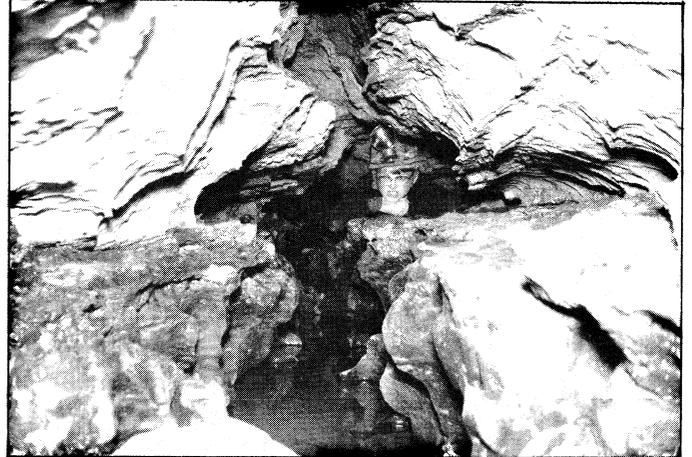
This summer we started another dig in a sink on the Balister/Williamson property which is about a half mile north of Roaring Springs. This particular hole was selected because it had been observed blowing warm air in winter, usually a sign of a cave below. Several people have assisted during the summer including students Shawn Donley and Gary Bonebrake. The sink had been filled with rocks during the last ice age and these had to be dynamited and removed by hand. We went down about ten feet between the larger rocks and were able to see a pool of water on the other side of a narrow slit in bedrock.

After squeezing through the slit we found a small stream passage running in a North-South direction. The photograph shows the passage close to the entrance; about 100 feet past this point the passage becomes impassable — even for the author.

Down stream the cave looked as though it was also going to become impassable; however, by moving rocks as we negotiated the passage we were able to clear a path into a miserable stream crawl.

The cave then improves a little and has been pushed over 1000 feet to the South by John Payne and Doug Williamson (W. V. U.). The passage was continuing when they turned back. We are waiting for the water level to drop before we continue exploration since there is considerable evidence of flooding.

Dye tests have shown that the cave stream reappears as a spring behind the Seabolt house which is about 500 feet from Roaring Springs. Consequently, any connection with the cave leading to Roaring Springs is unlikely, although the vertical and horizontal separations can only be a few hundred feet.



Philip Balister near cave entrance.
The passage gets smaller after this.

THE QUADREELERS

Ed Gardner

In response to our guest editor's request for an article and his suggestion that there are a few, new employees that might be interested in square dancing and country music, I was asked to write a short article about our musical group, "The Quadreelers".

The present "Quadreelers" started as a get-together group back in 1967. We were four country musicians who played together two or three times a week for our own entertainment. It was not long after this that word got around about our sound and we were asked to play at local parties and for square dances. As the word spread, we were invited to play at larger events such as The Cherry River Festival, Pioneer Days, The Treasure Mountain Festival, and the now famous Dunmore square dances.

Continued, next page--

It was in between the jump from local bookings to the big time that we took the present name of the "The Quadreelers". Before this name was selected, we tried out many others. Most of the names hashed over were the ones that would honor Dunmore, since most of the band members were from Dunmore. Some of the rejected names were the "The Dunmorons", "The Dunless Notes", "The Poca Dots", and "The Sitlington Creakers". Eventually, though, we picked "The Quadreelers" because we felt that the name suggests four musicians playing reels. The sound of the name was developed from the Spanish word "quadrille", meaning a square dance.



Left to right: J. Lovelace, B. Lovelace,
E. Gardner and J. Dolan.

Three of the musicians are NRAO employees. They are: Jim Dolan (five string banjo), Bill Lovelace (electric base guitar), and Ed Gardner (rythm guitar). June Lovelace, Bill's brother, plays the mandolin and lead guitar. Guest fiddlers include Bert Dodrill of Richwood and Woody Simmons of Mill Creek.

Our speciality, of course, is square dance and country, but we also play some rock

and pop at each performance.

Come to the next "Quadreelers" event. If you don't dance, listen; dance if you can. Either way, you'll have a good time.

THE ONE THAT DIDN'T GET AWAY

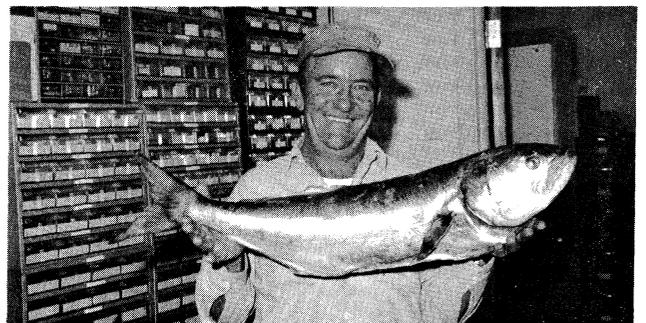
Carolyn Dunkle

While fishing off of Virginia Beach the day after Thanksgiving, Gene Moyers (Plant Maintenance) got a bite that shook his teeth. He began tugging with a big blue fish that was anxious to be on his way in the 80-foot deep saltwater. But after 20 minutes of fighting the battle was won, and Gene reeled in a 16-3/4 pound "citation" Blue. A fellow fisherman told Gene the record was 22 pounds, but this is unofficial.

A 15-pound fish is considered a citation one, and so Gene is the recipient of a plaque from the Virginia Saltwater Association.

His wife, Deannie, caught two sharks— one 30 inches and the other 42 inches long. Although sharks are not edible, Deannie insisted on bringing the 42 inch shark home to prove her story. When Gene gutted it, he found four babies inside — just about ready to be born.

While Gene was proudly showing his Big Blue to the envious fellows in the lab. Gene Crist (also an avid fisherman) took the photo shown below. If you want to see the shark, you'll have to visit Deannie's Beauty Salon at Bartow. Who knows, Deannie, you might be getting quite a few male customers with the excuse that they want to try on a wig?



Gene Moyers with Big Blue

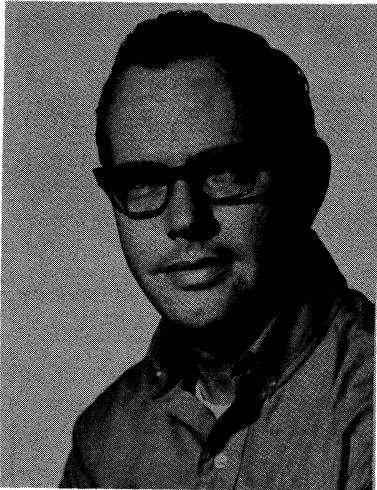
36-FOOT NOTES

Bob Hogarth

Tucson is growing by leaps and bounds. As a result of our expansion program, we've acquired two new people.

Dr. John D. G. Rather is in Basic Research, working primarily on the lmm system. John comes to us from Lawrence Radiation Laboratory in Livermore, California, along with Bess, his wife, two daughters, Gray and Dana, and son, Rick. There's also a BIG dog and a small cat in there somewhere.

There's a fourth operator with us, now; would you believe -- John Smith. "Smitty" recently left the Air Force, where he was an instructor in synchro-servo systems. He'll be a valuable man on our team. John and his wife, Sondra, are from Hannibal, Missouri.



Marty Tester

Marty Tester was written up in the last issue of the Observer, but his photo didn't make it. Sorry about that, Marty--better late than never.

One of the results of expansion is promotion, and Don Cardarella is now our Chief Operator. Don says his biggest problem is how to cut down on that hour's drive to and from the mountain every day.

Our long-awaited additional building--Dewey Ross' Labor-tory -- is under construction. It will add about 400 sq. ft., and should be done shortly after the first of the year. Dewey finally has a place to put all that equipment he's been horading out here.

We are also replacing our rickety old service platform with a rickety NEW one that will make it much easier to change front end boxes. The new one will allow the operators to use BOTH hands to work.

Such progress!!

And as the sun sinks slowly in the West, we say "Adios" till next time. Hope you had a HAPPY Holiday Season.

MINI-NOTES FROM THE LIBRARY

Virginia Van Brunt

With the holidays over it is time to balance your checkbook and begin to think of settling your account with Uncle Sam. To make the burden easier, we have available in both the Charlottesville and Green Bank Libraries a copy of the government handbook entitled: YOUR FEDERAL INCOME TAX 1971 EDITION FOR INDIVIDUALS. This publication is designed to help you in preparing your Federal Income Tax Return. It explains basic tax situations and illustrates how to handle them in completing a return. The various chapters cover such topics as what exemptions, deductions, and contributions are allowable, and what constitutes wages, salaries and dividends. If you are interested in obtaining your own personal copy of this booklet, it is available by prepaying 75 cents to the Government Printing Office, Division of Public Documents, Washington, D.C. 20402.

If you have any money left and want to spend it on books, we have just the directory. Both libraries have received the 1970 edition of BOOKS IN PRINT. This publication lists books which are available from American publishers and provides information concerning the publisher and price of the book. If

Continued, next page--

you are looking for books on a particular subject, from Appalachians to Zeta Functions, you can find it in the SUBJECT GUIDE TO BOOKS IN PRINT.

SOME APPALACHIAN COAL AND CARBONATES: MODELS OF ANCIENT SHALLOW-WATER DEPOSITION, is a collection of seventeen articles covering theoretical, practical and economic aspects of coal measures geology of northern West Virginia as well as some ancient carbonates in the Eastern panhandle of the state. This publication is available at \$6.00 from the West Virginia Geological and Economic Survey, Box 870, Morgantown, West Virginia 26505.

LATITUDE AND LONGITUDE
OF THE
140 FOOT RADIO TELESCOPE

S.C. Smith

For a five week period in the fall of 1970, six U. S. Air Force personnel were on the site at Green Bank surveying. Since they spent half their time working off the site and using our vehicles, some of the local people thought we had some kind of tie in with the military. However, in this case it was the military working for us. The Air Force party was from the 1st Geodetic Survey Squadron from Francis E. Warren Air Force Base in Wyoming.

Their mission here was to find the first order position of our 140-foot Radio Telescope. Recently they sent us a copy of their work. The first order Geodetic position of the 140-foot telescope is Latitude N $38^{\circ}-26'-15''$.409 and Longitude W $79^{\circ}-50'-09''$.613 and the Astronomic position is Latitude $38^{\circ}-26'-12''$.448 and Longitude $79^{\circ}-50'-07''$.365.

From 1963 up to this time we used Latitude N $38^{\circ}-26'-15''$.54 and Longitude W $79^{\circ}-50'-09''$.47 for the Geodetic position of the 140-foot. Before 1963 we used Latitude N $38^{\circ}-26'-15''$ and Longitude W $79^{\circ}-50'-10''$.



B. Howard and G. Westerhout

When Bill Howard is talking with an astronomer [Gart Westerhout in this case (photo above)], two assumptions might be made: (1) they are talking about astronomy, or (2) they are discussing Gart's observing schedule. It you assumed either one, you're dead wrong! This photo was taken shortly after Bill Howard signed Gart Westerhout up for "fish feeding detail."

The aquarium, which is located in the CV library, can be seen behind and to the right of Gart Westerhout. If you look real close, you can even see the little fishes swimming around.

[Ed. note: I wonder if the "fish feeding" schedule is anything like the telescope observing schedule?]

ZERO
in

FEBRUARY SLIDE SHOW

Craig Moore

A group of NRAO spelunkers and the Recreation Association are sponsoring a showing of slides taken in Cass Cave and Overholt's Blowing Cave, both in Pocahontas County, West Virginia. The slides shows are distributed by the National Speleological Society, a national group concerned with all aspects of caving. The Cass Cave slides provide "a thrilling account of the extensive and long range explorations and survey of one of the outstanding caves in West Virginia" according to the NSS, which conducted several field trips to the cave in the 1950's. Among the many features of the cave shown in the slides is the 130-foot waterfall into the Big Room and the beautiful portions of the mile of passages beyond. These slides will be shown in February, watch for the announcement of time and place.