

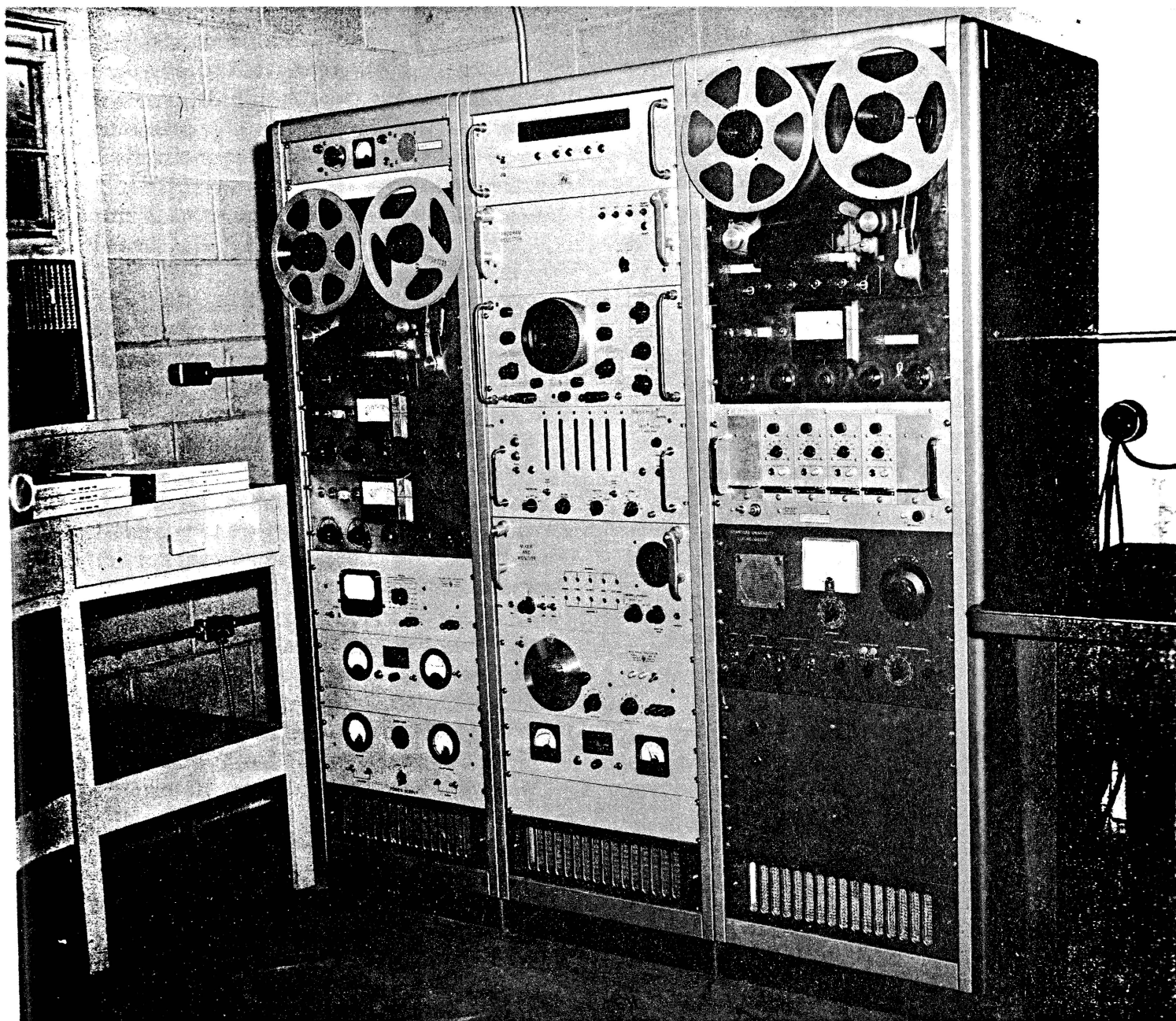
The O B S E R V E R

Published monthly by the National Radio Astronomy Observatory Recreation Association

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Page 1



RECEIVERS
STANFORD UNIVERSITY WHISTLER-VLF PROJECT

Stanford University Whistler VLF Project

If a sensitive audio amplifier is connected to a large antenna, you can almost always hear an irregular series of rather impulsive sounds called static. Most static is caused by electromagnetic energy radiated from distant lightning. Such signals of natural origin are called atmospherics, a term which is often abbreviated to "sferics". In most locations an appreciable amount of hum from nearby power lines will also be heard.

In addition to hum and sferics, there are frequently heard descending tones, of a somewhat musical quality, which last for one to two seconds and traverse virtually the entire audio spectrum. These atmospherics with descending tones have been called "whistlers" or "swishes". They are believed to result from the dispersion of lightning energy which is propagated through the ionosphere and guided by lines of force of the earth's magnetic field. Other types of unusual atmospherics can also be heard, particularly during periods of magnetic disturbance. These include a steady hissing sound, constant tones, and a variety of warbling sounds and short rising tones, generally called "dawn chorus". Their origins are not yet understood.

Whistlers were first observed in connection with work of an entirely different nature. A German scientist, Barkhausen, was eavesdropping on Allied telephone conversations during World War I. He inserted two metal probes in the ground some distance apart and connected these to the input of a sensitive audio amplifier. At times the whistlers were so numerous and loud that detection of telephone signals was impossible. Since Barkhausen's discovery in 1919, much research has been done, and still continues, in this field.

In September 1956 Stanford University began a related project, using Navy VLF transmitters, to create man-made whistlers. This experiment offered such needed information as point of origin, pulse duration, and pulse amplitude, which are essential in determining the path of travel, attenuation, and phase shift caused by the earth's magnetic field.

The Stanford University Whistler-VLF project began at Green Bank in July 1959. For the first year observations were made at the Hannah House. In November 1960 the project was moved to a new building close to the 85-foot telescope. From July 1959 until August 1961 the U. S. Navy station NSJ transmitted the program. By this time station NAA in Cutler, Maine had been completed and transmissions began from there. Green Bank was the first station to observe two-hop echos from NAA.

More detailed information on the project here at Green Bank and other Stanford stations is available in the Library.

We Need Your Help

If the Observer is to be continued, we must have the support and help of all the NRAORA members. In the past, the Observer staff has had to depend on just a few individuals for their material. We are grateful to these individuals; however, we feel that each department should make some contribution, thus giving a better coverage of activities and projects on the site.

A breakdown of reporters in each department is given elsewhere in this edition. We would appreciate your cooperation, as well as your suggestions, which may improve the OBSERVER.

NRACRA - Asset or Liability

After several attempts the newly formed NRACRA had a successful past year, despite its shortcomings and much needed plugged loopholes. A good recreational program offered by the Observatory is necessary. At present our program is the best in Wocahontas County, regardless of whether this carries a merit or not. Adjustment processes of incoming employees are greatly influenced by our NRACRA, as well as a stimuli for the boredom and inactivity created by the need of varied activities. Certainly all people are not interested in the same activities; hence, it must be diversified so as to care for these people especially the womenfolk and children. The Association is governed by the employees for the employees and their families. Support to this program is not given by its participants and members. Why?

Using the basketball league as an example, which is probably the immediate backbone of our NRACRA, why do we have the problems at hand? The basketball league is a very good program, due to its capabilities and appropriate playing season, since winter merely increases this atmosphere of boredom in surrounding communities. The basketball games, added to the chatter of previous and future games, certainly reduces this air.

Getting down to a problem on hand -- team selection. Are the values for winning regarded so high that enjoyable participation is impossible for the mediocre ball players? The spirit of competition seems to stem from the competitive attitudes of the team captains, players who have competed for blood during their youthful careers, and much emphasis being placed on team standings

and individual honors. Grudges, according to Webster, are cherished ill wills and envy or maliced feelings. How can we prevent these feelings by having the same team year in and year out? Recruiting practices, accompanied with this attitude, are impossible to believe or allow.

As previously stated, the recreation program is necessary for our community, personal satisfactions, and relations with others. Why then is it not supported by its members when it is regarded as being so important? Would you rather its activities were governed by a Recreation Director or Personnel Department? Then its decisions are final, whether agreed to or not. Certainly this program could become one of the employee's biggest assets in securing a feeling of belonging, satisfying personal factors, and enjoying a sufficient amount of recreational activities. This idea pertains to other events such as the Christmas children's party, New Year's Dance, softball, and other activities -- not only basketball.

In regard to whether the NRACRA is an asset or liability only the future will tell. If our support is recorded and issued, it could be a major asset -- not defined in terms of monetary values, but in terms of personal relations and satisfactions. Why not support it then and attempt to help solve the problems at hand?

The foregoing was submitted by an NRAORA member. We would appreciate your written comments on this and other controversial subjects.

Observer Staff

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Electronics Division
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William Kuhlken, Lab
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Harry Wooddell
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140-Foot Telescope
Howard Lambert
Richard Grabe
Reber Telescope
Michael Waslo
Public Education
Wally Cref

Prize Winning Letter Received at the NRAO

Radio Telescope Laboratories
National Astronomers Association
Green Bank, West Virginia

Sir,

I am interested in astronomy and am particular in our own satellite, the moon. I have come to the conclusion that there is a flying-saucer base on the far side of the moon. Due to their appearance and structure when they were seen by people on this planet, I believe that the beings within the spacecraft are of a high degree of intelligence. Due to their intelligence they are most likely had invented a radio system similar to ours.

According to what I have heard, the first man recorded to have the flying-saucers was Galileo in the 16th century when he thought he saw birds flying too high for birds to fly through his telescope (optik glass). If the saucers were seen then it would be a sure thing that they had radio communication between their space craft at that time.

So, the experiment which I would like for you to do is to focus your radio-telescope on the moon in such a way (if it is possible) to pick up radio communication from the far side of the moon. Also try to find out what type of communication it is; audio, dots and dash, et cetra.

I would like to know what are the final results of this experiment. So when finished with experiment drop me a line telling me the results.

I thank you,

Sincerely,

Christmas Book Sale

A Dipper Full of Stars. By Lou W. Page. Follett Publishing Co., 1960. A revised edition of an old favorite. General astronomy with illustrations. For ages 10 and up. \$1.90

Experiments in Sky Watching. By Franklyn M. Branley. Thomas Y. Crowell, 1959. Contains simple, easy-to-follow experiments that can be done without a telescope. Tells how to observe stars intelligently and how to tell time with a sundial. Illustrations by Helmut K. Wimmer. \$2.15

The Golden Book of Astronomy. By Rose Wyler and Gerald Ames. Simon and Schuster. Revised edition, 1959. 10 in. x 12 3/4 in. The latest theories about the phenomena of the heavens--stars, planets, comets, nebulae, the moon, seasons, stellar distances and possibilities of space travel. Profusely illustrated in color. For ages 8 to 14. \$3.20

Men, Planets, and Stars. By Clyde B. Clason. G. P. Putnam and Sons, 1960. A timely and much needed perspective on the science of astronomy for young readers. For ages 12 and up. \$1.90

Exploration of Space. By Arthur C. Clarke. Harper and Bros. Revised Edition, 1960. Astronautics for the layman indicating the engineering, medical, and exploratory problems of interplanetary flight. \$3.40

From Galaxies to Men. By John Pfeffer. Random House, 1960. The story of creation as it is constructed by the most scientific thinking. \$4.10

Amateur Telescope Making I. Scientific American. 4th Ed., 1955. Illus. 493 pp. Teaches the basics of glass grinding and how to complete the first telescope, preferably one of the reflecting type not larger than six inches in diameter. \$3.75

Radio Astronomy. By F. Graham Smith. From both the historical and the logical point of view, this book starts at the beginning of radio astronomy. It is aimed throughout at the interested layman who wants to know what is happening on one exciting frontier of science. \$1.35

NRAORA

At a recent meeting of the NRAORA Board of Directors, the following officers were elected for the year 1963: President, Wally Cref; Vice President, Bill Meredith; Treasurer, Harry Wooddell; Secretary, Phyllis Jackson.

The president appointed the following committees to carry on the business and activities of the Association the coming year.

Finance Committee: B. Meredith,
H. Wooddell, D. Ross, A. Davidson
By-laws Committee: W. Kuhlken,
M. Wimer, S. Smith
Entertainment: Phyllis Jackson
Women's Activities: Harry Wooddell
Men's Activities: C. Bowyer, Chair-
man, C. Davis, T. Carpenter,
J. Gallagher, B. Meredith.

The Director of the Observatory appointed J. W. Findlay, T. R. Riffe, and W. W. Pleasants to the Advisory Board.

Continued --

NRACRA (continued from page 5)

The following holiday activities are planned by the Board:

Children's Party -- The NRACRA is sponsoring a Christmas Party for all employees' children up to and including 12 years of age. The party is set for December 21, between the hours 6:30 and 8:30 p.m. in the Laboratory Conference Room. Santa Claus will be there, with gifts and treats for the children.

If you have not turned your child's or children's name into Phyllis Jackson, please do so, because Santa must know who will be there.

Holiday's Dance -- The NRACRA holiday's dance for members and guests will be held in the Laboratory Conference Room on December 29, between 9:00 and 1:00. Music will be furnished by the "Searchers" (which is the orchestra that played for last year's dance). Setups, potato chips, etc., will be furnished.

Tickets to the dance will be sold to members and one guest each between December 5 and 21. After Dec. 21, if there are still tickets left, they will be sold to employees for additional guests they may wish to bring on a first-come-first-served basis.

Admission to the dance will be \$4 per couple, or \$3 single. Tickets can be bought from Harry Wooddell, Carolyn Dunkle, R. Hiner, or Phyllis Jackson.

Get your tickets early so that you will be sure to be in on all the fun with your fellow employees.

Carl Davis was appointed purchasing agent for the NRACRA. Sporting goods catalogs are available in the lab stock room.

Jim Elliott, a former employee of the NRAC, who has been employed and living in Florida for the past 18 months, has returned to work at the Observatory, and is working in the Engineering Department as draftsman. We are very glad to have Jim and his family back with us.

Naomi Daniels is busy remodeling the house which she and her husband recently bought in Campbelltown. They are hopeful of moving into their new home before Christmas.

A small town is a place where everyone knows what everyone else is doing, but still reads the paper to see if they have been left out.

Mrs. Phyllis Rader has joined the NRAC as Telephone Operator. WELCOME TO NRAC.

Sis Michael is recuperating nicely at her home after undergoing surgery at the WVU Medical Center in Morgantown. We all wish her a speedy recovery.

Mrs. Louise Ervine is working as Mr. Callender's secretary for temporary while Sis is off. Louise is from Winchester, Massachusetts and has recently joined her husband, Alfred, here in Green Bank. Welcome to Green Bank.

Carolyn St. Clair spent Thanksgiving in Pittsburgh visiting her fiancé, James Mason.

Large Antenna

Requests for proposals for Large Antenna Design Studies were sent out on Nov. 8 to about 25 companies. It was requested that the proposals be submitted by Dec. 17, and it is hoped that contracts for these studies can be awarded by mid-January. From all indications, most of the companies will submit proposals.

Speaking for "The Searchers" I want to take the opportunity to thank you for the invitation to entertain at the NRAORA dance again this year. Although we have reorganized since last year, the musical interest still lingers. "The Searchers" are as follows:

| | |
|-----------------|----------------------|
| Electric piano | - Les King |
| Electric guitar | - Randy Powell |
| Drums | - Stan Walker |
| Vocalists | - Mike Nunnally |
| | "Caroline" St. Clair |

If at anytime a group would be interested in private party entertainment, high school dance, etc., please feel free to contact "Caroline" St. Clair. "The Searchers" are always interested in social gatherings.

"The Searchers" say THANK YOU.

Joan Crampin moved back to the Residence Hall on Nov. 29th. She visited Charleston over the Thanksgiving holiday.

Joe Carter spent Thanksgiving at home -- Huntington.

Bill Lowman spent Thanksgiving at home -- Charleston.

Virginia Irvine spent Thanksgiving in Pittsburgh with her daughter and family.

CBS Reports -- Dr. Drake's interview will be heard Dec. 12, at 7:30 p.m., on Walter Cronkite's program.

Mrs. Letha Heltzel of Norwalk, Conn., visited her mother, Cleo Harper, over Thanksgiving holiday.

Report from Men's Activities Committee

In recognition of the current physical fitness program, and the natural desire for a friendly little game, the Recreation Association has been busily engaged in ways and means of organizing basketball for this coming season. To date all major details have been worked out and teams are in the process of being chosen. After an up-to-date list of new members, teams can be completed.

Four complete teams will be chosen. Captains and teams are: Carl Davis, Red Raiders; Arnold Davidson, Brown Bombers; Tom Carpenter, Blue Devils; and Ronnie Monk, Green Hornets. Teams primarily remain as last year, with some minor exceptions. Anyone desiring to transfer to another team should contact Omar Bowyer very early in the season.

It has been discussed if we should play one or two games per week. At this time, but it can be changed, each team will play once a week. See last page for schedule.

Archery

Another activity that might be of interest to members of NRACRA is archery. A work order is being processed to erect three targets at the recreation field.

It has been rumored that if Marvin Wimer's arm was twisted hard enough, he would give a few pointers on using the bow and arrow.

How about it, Marvin?

Mr. and Mrs. Ed Wilson were shopping in Richmond, Va., on Friday, Nov. 23.

Mr. and Mrs. Russell Clarkson spent Thanksgiving holidays in Washington, D. C., visiting their daughter, Jean.

Mr. and Mrs. Jack Daniels visited friends in Beckley, W. Va., on Nov. 25.

Mr. and Mrs. John Gallagher visited his family during the Thanksgiving holidays in Washington, D. C.

New Books in the Library

"Astronomy" by Hoyle, F.

"The Structure of Scientific Revolutions" by Kuhn, T. S.

"The Origins of Scientific Thought" by De Santillana, G.

"The History of Nature" by von Weizsacker, F. F.

"Life: Origins and Development" by Ehrensverd, G.

"Progress in Infrared Spectroscopy" by Saymanski, H. A.

New Books, continued

"Programming the I. B. M. 1620" by Germain, C. G.

"Tables of Sines and Cosines to Ten Decimal Places at Thousandths of a Degree" by Salzer, H. E.

For Sale

Savage Model 340, bolt action, 30-30 4-shot clip magazine. Recoil pad and sling. New condition. \$45.00. Call John Hensley on 456-4228.

One formal evening gown. Reasonable price. If interested contact Caroline St. Clair.

1957 V-8 Ford owned by Ruben and Emilio. See Paul Devlin.

Rent

Bill Vrable would like to rent a baby bed for the Christmas holidays. See Bill in the lab or call 799-6545.

60-foot trailer located in Green Bank. See Ed Gardner or call 799-4452.

Trade

Have 22 Magnum Model 61 Winchester will trade for Model 12 Winchester shotgun. See J. Dolan in lab or call 456-4218.

1 new water pump for 1955-57 Ford Mercury Edsel. See T. Zatta.

Civil Air Patrol

Anyone interested in joining a CAP squadron at Green Bank please contact Richard Skaggs or James Dolan in the lab.

The Civil Air Patrol is an integral part of the protection of the nation. It is a civilian auxiliary of the United States Air Force. The organization has 52 wings, one in every state of the Union and one each in the District of Columbia and Puerto Rico.

Originating during the last world war, the civilian organization of flyers worked in close cooperation with the Air Force.

The members are all voluntary, and serve without pay, and most of the aircraft operated by them are owned by the individual members, although there are some which have been purchased by the squadrons. Much of the equipment, such as communications and other items used in training, have been obtained through Army surplus.

The training of the CAP members and of the teen-age Cadets, who may be either boys or girls from 15 to 18 years old, prepares them for aiding in rescue and treatment work in any type of emergency. The best known activity of the CAP is its participation in the searches for missing aircraft, although communications and aerospace education are very important.

The CAP has a squadron at Marlinton under the leadership of Captain Richard Skaggs. The squadron consists of 18 senior members and 4 Cadets. The cadets are given special training in many subjects such as aerospace and its related fields.

The NRAC will lose two of its employees in December -- Mr. and Mrs. Lyndell Brooks. Lyndell has accepted a position with the General Electric Company and will enter their Manufacturing Training Program around December 10 for a period of two years. He doesn't, as yet, know the area in which they will be located, but he believes it will probably be upper New York State. Lyndell is presently employed in the Engineering Division, and Jo Ann is employed in the Scientific Services Division.

Dr. S. von Hoerner and son, Roland, from Germany will arrive in Green Bank on Saturday, December 8. The remainder of the von Hoerner family will arrive in the spring of 1963. All Observatory personnel who remember the von Hoerners will be happy to welcome them back.

Dr. Heeschen has been in Australia for the past two weeks on a business trip. He was accompanied on the trip by Dr. Tape, AUI President.

Bob King, draftsman in the Scientific Services Division, will leave the Observatory on Nov. 30. Bob will enter into a new position of employment with the Hass Instrument Company in Maryland.

December Birthdays

4 Paul Devlin
12 Naomi Daniels
13 Frank Callender
15 Bob Uphoff
26 Carolyn St. Clair
29 Fred Crews

Progress at the 140'

During November the work area adjacent to the 140' pedestal changed completely in appearance. A huge circular assembly of heavy aluminum sections has been fitted into position atop the ground level superstructure foundations built last month. Also, more concrete foundations to hold the yoke and counterweight have sprung up in odd shapes, some of them five feet high, with "sway-back" and notched contours to fit the pre-fabricated yoke sections which Sun Shipbuilding Company will send here for assembly and erection by Pacific Crane & Rigging Co.

The fabricated aluminum sections now being fitted up comprise the main ring truss of the superstructure which, when completed and erected, will support the 140' dish of the telescope. These sections are now temporarily bolted into place pending protection of this assembly area with a 115 ft. diameter by 40 ft. high heated air tent. When the tent is erected around December 1, welding of joints of this heavy aluminum will begin. For this purpose, Pacific Crane & Rigging Co. has been testing welders, and their subcontractor, Davis Elliot Co., has been extending electric service to the assembly area.

More "baby" news at the 140' telescope informs us that John Ralston's wife presented him with a second daughter, Amber Dee, born Saturday, November 24. John was busy handing out cigars with one hand and eating aspirin with the other all day last Monday -- and he made no complaints about his thermos of coffee because he had made it himself.

Reloading

More people should join the ranks of the reloaders. Active people so far have been John Parker, Warren Wooddell, Bill Meredith, John Hensley, Maxie Gum, and Fred Crews. Quite a few others are interested in reloading, but are too busy now to do so. The above-mentioned people will no doubt assist newcomers in the reloading game.

Those who have reloaded have been quite successful in improving their shooting accuracy and have developed a new zeal for the sport. Some of the people are muttering about 3/4 inch groups at 100 yards, which is very good shooting.

As of now, no one has tried shotshell reloading, but the equipment is available.

The rifle range is greatly appreciated and seems to be getting a lot of use. At least two of the reloaders have been known to eat an early breakfast and get in a half hour of target practice before work time.

It might not be a bad idea to check the zero on your deer gun this weekend -- a little time spent on the range may mean the difference between venison and pork on your table after deer season, and a nice rack of horns to pop buttons over.

Estella Lambert will be leaving us Friday, Dec. 2. She has been with us as a telephone operator since Sept. 18. Estella will live in the Phillippi vicinity and says she looks forward to catching up on knitting, sewing, and sleep. We all wish her the best of luck.

Archery - by "The Old Archer"

No one knows who made the first bow and arrow. Somewhere back in the vast dimness of time one of our ancestors tied a piece of leather thong to the opposite ends of a stick, fitted another smaller stick on to the thong -- and the first archer came into being. Considering that our recorded history covers the short span of approximately five thousand years, the bow is certainly part of man's oldest inheritance. Here on our own continent, the Folsom man, who roamed through the southwest twenty-five thousand years ago, was a good archer. The proof of his accuracy is to be seen today in the flint and stone arrowhead imbedded in the ribs of a now extinct buffalo.

Actually, the date of archery's invention is comparatively unimportant. What really counts is the fact that the use of the bow is without question one of the big factors that gave man the place he occupies in today's world. It may seem difficult to see how man, with his long range bombers and their cargoes of atomic powder, can owe anything to the simple bow and arrow. Yet it was this same bow and arrow which helped to raise man above the rest of the animal kingdom, which set him on the path of progress.

The staid Encyclopedia Britannica ranks the discovery of archery as one of the three most important cultural advances in the history of mankind equalled only by the discovery of fire and the development of speech. Other authorities rank archery with fire and the wheel. Without speech man was only an animal unable to communicate with facility; without fire, he remained an animal; but without the bow man might not have survived at all. In comparison

with the other members of the animal kingdom, man is an incredible weakling. Given the bow he became their superior -- able to protect himself and able to feed himself, all in comparative safety. It was more than a weapon.

Without realizing it, man was using stored energy when he used his bow. Some of the greatest problems that man has faced and is facing, have to do with the holding of energy. The bow was the first instance where he met and solved the problem; for no matter how briefly, man holds stored energy in his hands when the bow is at full draw. In reaching full draw the energy is gradually gathered, stored temporarily, and then released in a fraction of a second.

MORE NEXT MONTH --

Ceramics

The regular Wednesday night ceramic workshop has been having very good attendance. With everyone busy with Christmas gifts it looks like Santa's workshop. Many beautiful items have been made, such as: holly dishes, Santa mugs and Christmas trees.

We plan on having a new line of greenware after the first of the year. Also a new line of stains for figurines and wall plaques will be available.

It is never too late to start in the ceramic workshops. If you have not already participated in the classes, you are missing a lot of pleasure.

For Sale

1951 GMC Dump Truck, One Ton. Contact John Matheny, Jr., at the Works Area.

One good deer rifle. Contact Basil Gumm at the Works Area.

One good pony. Contact Pat Hall at the Laboratory Building at 1600 hours.

Telescope Operations by Fred Crews

Dick Bird has been very ardently pursuing deer with his bow and if perserverance counts will have one before the season ends.

George Grove just returned from a trip to the Boston area with a tape recording of the Boston Symphony.

The Department of Terrestrial Magnetism, Carnegie Institute of Washington recently utilized the 300-foot telescope in connection with their multichannel receiver. Results looked good and they plan to return on or about the 1st of December.

One of the unique features of the DTM experiment was a tracking feed which enabled them to track an area of the sky for approximately 5 minutes.

The 300-foot is currently observing at 22 cm and 40 cm. The 40 cm is using a Joe Carter preamp, with the 22 cm receiver using a tunnel diode ahead of the mixer. The tunnel diode improves noise figure by a factor of 2, and gives about 15 db gain.

The 85-foot is back on 10 cm, after having done a 22 cm experiment for Bruce Gary from the Naval Research Laboratory.

The Works Area Boys are having an Annual Bear Hunt. The one this year was held on Shavers Mountain, with no luck. Anyone interested in next year's hunt should contact one of the "HOUND MASTERS".

Paul Devlin and Merritt Gum went to Brookhaven National Laboratory, on company business, the week of Nov. 25.

Mr. and Mrs. C. W. St. Clair attended the Thanksgiving Day Football Game at Roanoke, Va., VPI vs. VMI.

Mr. and Mrs. Richard Hiner visited Washington, D. C., over the holidays.

European Vacation by Lillian Ness

Since there is neither space nor time to give the more interesting details of my European vacation, I shall confine myself to the routes over which I traveled.

I debarked at Gothenburg, Sweden, where Mr. Orhaug very generously took me on a tour of the city; I later visited his home in a very pleasant, modern apartment. I spent two weeks in the Scandinavian countries, at Stockholm (Sweden), Oslo (Norway) and Copenhagen (Denmark). I also flew to Gotland, an island in the Baltic Sea, which is a part of Sweden.

I then joined a motor tour of the Western European countries, leaving from Paris, through Brussels (Belgium), Amsterdam (Holland), Cologne (Germany) and, following the Rhine River, down to Heidelberg - where I met the Von Hoerners and the Uphoffs. The following day we drove through

Continued --

European Vacation (Continued)

the Black Forest and crossed the Rhine River into Basle and Lucerne (Switzerland). Innsbruck (Austria), via the Arlberg Pass and the valleys of the Tyrol, was our next stop. We then crossed into Italy over the Brenner Pass (site of the historic meeting between Hitler and Mussolini), through the Dolomites and Cortina d'Ampezzo to Venice, Florence and Rome were our next stops. From the latter city we turned north and followed the western seacoast of Italy, through La Spezia, the Italian and French Rivas, Genoa (birthplace of Columbus) and Monte Carlo to Nice, where we had a warm, sunny day on the Mediterranean. Avignon (France), Nevers and the chateaux country was on our route back to Paris, our starting point over three weeks earlier, having covered a distance of over 3,000 miles by motor. We then flew to London, returning to New York four days later by the Pan American Airlines.

My return to Green Bank from New York was beset with more difficulties than I had experienced in all of Europe.

Willard D. Warner, Jr., was employed Nov. 5, as a draftsman working with Vincent Scott. Bill, as known to us, is from Charleston, W. Va.

Harry Wooddell, Fiscal Division, enjoyed a three day vacation prior to Thanksgiving. Harry visited in Pittsburgh and Akron. She reports she thoroughly enjoyed her four hour "visit" to a ceramic shop in Pittsburgh.

For Sale

4 rooms of furniture. See Bob King or call 456-2207.

Need a Christmas Tree?

Anyone needing Christmas trees -- white pine -- see Mrs. Tennis Arbogast at Dunmore.

Observatory Wives

A new card mailing system will go into effect for the December meeting. All regular attendants of daytime meetings will receive cards monthly. Evening and summer attendants will receive cards only for those meetings.

In the future a notice will appear in each monthly "Observer" when the next meeting will be for those who do not receive cards.

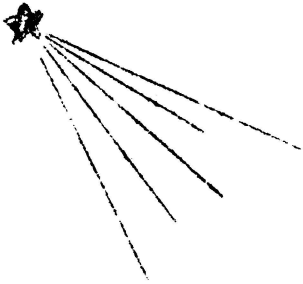
Each regular meeting is the second Wednesday of every month in the Residence Hall Lounge, 1:30 p.m. - 3:30 p.m.

Lab Gab

Partitions were installed on the south side of the lab and more are on order for the north side. These partitions separate groups according to projects. There is a rumor circulating to the effect that there may be a contest for the best window display during the Christmas holidays.

Christmas holidays begin at 1200 on Dec. 21 and end 0800 Dec. 26.

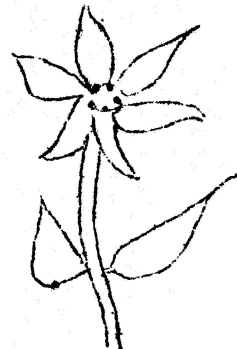
More than 16 million peanut butter sandwiches are consumed daily in the U. S.

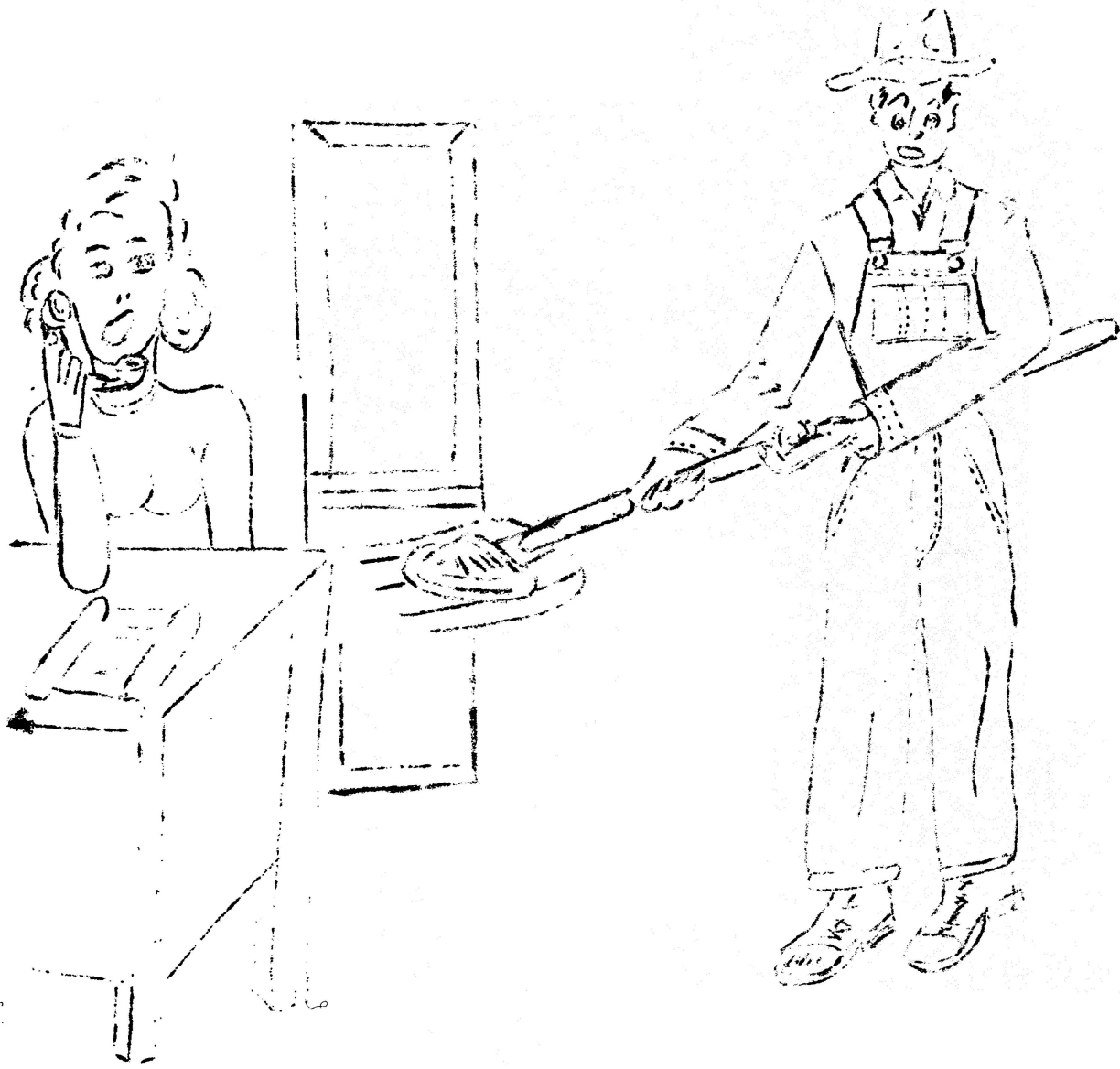


FROM THE OBSERVER TO YOU

Here is a wish from us to you,
For Christmas nineteen sixty-two;
We wish you joy without a pause,
And lots of gifts from Santa Claus.

For all departments, every one,
In sixty-three we wish you fun;
And when that year is nearly through,
Come back, we'll wish again for you.





"FARMER wants you to check this
meteorite. says he saw it fall in his field."

BASKETBALL TEAM LISTING

| <u>Davidson's Bombers</u> | <u>Monk's Green Hornets</u> | <u>Davis' Red Raiders</u> | <u>Carpenter's Blue Devils</u> |
|---------------------------|-----------------------------|---------------------------|--------------------------------|
| S. Smith | J. Shears | J. Rader | J. Cliver |
| J. Elliott | B. Vance | F. Crews | J. Simmons |
| M. Waslo | W. Warner | Brown Cassell | R. Bird |
| W. Terrell | J. Dolan | M. Wimer | Chester Cassell |
| R. Perry | G. Crist | R. Grabe | C. Johnson |
| H. Lambert | W. Cref | J. Ralston | D. Hovatter |
| W. Meredith | Del Cassell | H. Coleman | Basil Gumra |
| F. Drake | T. Henderson | J. Gallagher | B. Horne |
| John Cassell | J. Parker | M. Barkley | E. Brown |
| M. Gum | G. Grandon | D. Hoge | T. Hamed |
| J. Arbogast | R. Clarkson | W. Vrable | J. Flunkett |
| T. Zatta | | L. Howell | N. Horner |

TENTATIVE BASKETBALL SCHEDULE

| <u>Date</u> | <u>Brown Bombers</u> | <u>Red Raiders</u> | <u>Blue Devils</u> | <u>Green Hornets</u> |
|-------------|----------------------|--------------------|--------------------|----------------------|
| Dec. 13 | Raiders | Bombers | Hornets | Devils |
| Dec. 20 | Devils | Hornets | Bombers | Raiders |
| Dec. 27 | Hornets | Devils | Raiders | Bombers |
| Jan. 04 | Raiders | Bombers | Hornets | Devils |
| Jan. 11 | Devils | Hornets | Bombers | Raiders |
| Jan. 18 | Hornets | Devils | Raiders | Bombers |
| Jan. 25 | Raiders | Bombers | Hornets | Devils |
| Feb. 01 | Devils | Hornets | Bombers | Raiders |
| Feb. 08 | Hornets | Devils | Raiders | Bombers |
| Feb. 15 | Raiders | Bombers | Hornets | Devils |
| Feb. 22 | Devils | Hornets | Bombers | Raiders |
| Feb. 29 | Hornets | Devils | Raiders | Bombers |