Mt. AIRY V.H.F. RADIO CLUB, INC.

# CHEESE BITS

ARRL Affiliated Club

**W3CCX**
**CLUB MEMORIAL CALL**

**Volume LXIII** **December 2020** **Number 12**

## PREZ SEZ:

I hope everyone had a safe and enjoyable Thanksgiving with family and friends! It starts the winter holidays, rich in family traditions and brings many fond memories of loved ones who may no longer be with us. I wish all members and friends of the Pack Rats a meaningful Christmas, Chanukah, Kwanza, or other holiday/ celebration of your choice. Also a Happy, Healthy and Prosperous New Year!

We have some exciting times coming up here in Packrat territory. Thanks to our VP and program chairman Doc, W3GAD, the speaker for our December meeting on Thursday the 17th will be: Bob Heil, K9EID. Bob is the founder of Heil Sound, a legend in amateur radio, and "in demand" speaker at ham events around the world! We have also invited a few local clubs to attend this special night. **Do Not Miss** this WebEx virtual meeting!

Last month Mike, N2DEQ presented on January Contest Preparation-"Time to Make Hay"! If you missed it go to our website under the "Contest Info" tab. Do your part to make the "Haystack" the largest ever! All 2021 contest aids are there also. Thanks also to Jeff, K1TEO for his presentation on "Contest Tips to Improve Your Score". Go Pack Rats!

While you're on the website, go to the "Resources Program" tab. Take a look at the Technical Library document containing favorite working links that members have sent in. These links cover Equipment Suppliers, Antenna Info, Accessories, Modifications, Operating Tips, Tower Contractors, etc. Have you sent any of your favorite links to your Regional RRA yet?

Is the club developing new membership? Yes! The committee has 3 new prospective members that have had the first reading of their applications. Check out the applications of Steve K3WHC, Bob N2SCJ, & Chris K2QFA on the website home page under "Latest Articles".

Dues Increase: This year we have lost income from many sources including the Conference, White Elephant Sale, Mario Tickets, etc. These were opportunities lost forever. Our bank balance has also been trending downward for a number of years. After much discussion the BOD decided to raise the Dues by $5.00/yr. Regular members will be $25 and retired members $10 as of January 1, 2021. The approximately $500 extra for the treasury is not a lot of money, but is taking us in the right direction of fiscal responsibility. This increase was also passed unanimously by the members present at the November meeting.

I like to keep the Prez Sez "all about you", but

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**PACKRAT BEACONS - W3CCX/B**
Located at FN21be except 2304 which is at FN20dh
50.080 144.300 222.062 432.290 903.072 903.3 1296.264 2304.3 3456.200 5760.3 10,368.3 MHz ( red = temporarily off the air see https://www.packratvhf.com/index.php/on-air for details)

**MONDAY / TUESDAY NIGHT NETS**
**VHF/UHF Monday:**

| TIME | FREQUENCY | NET CONTROL |
|---|---|---|
| 7:00 PM | 224.58R MHz | WR3P FN20kb Ralph |
| 7:30 PM | 50.150 MHz | N3RG FM29ki Ray |
| 8:00 PM | 144.150 MHz | K3GNC FN20ja Jerome |
| 8:30 PM | 222.125 MHz | KB1JEY FN20je Michael |
| 9:00 PM | 432.110 MHz | WB2RVX FM29mt Mike |

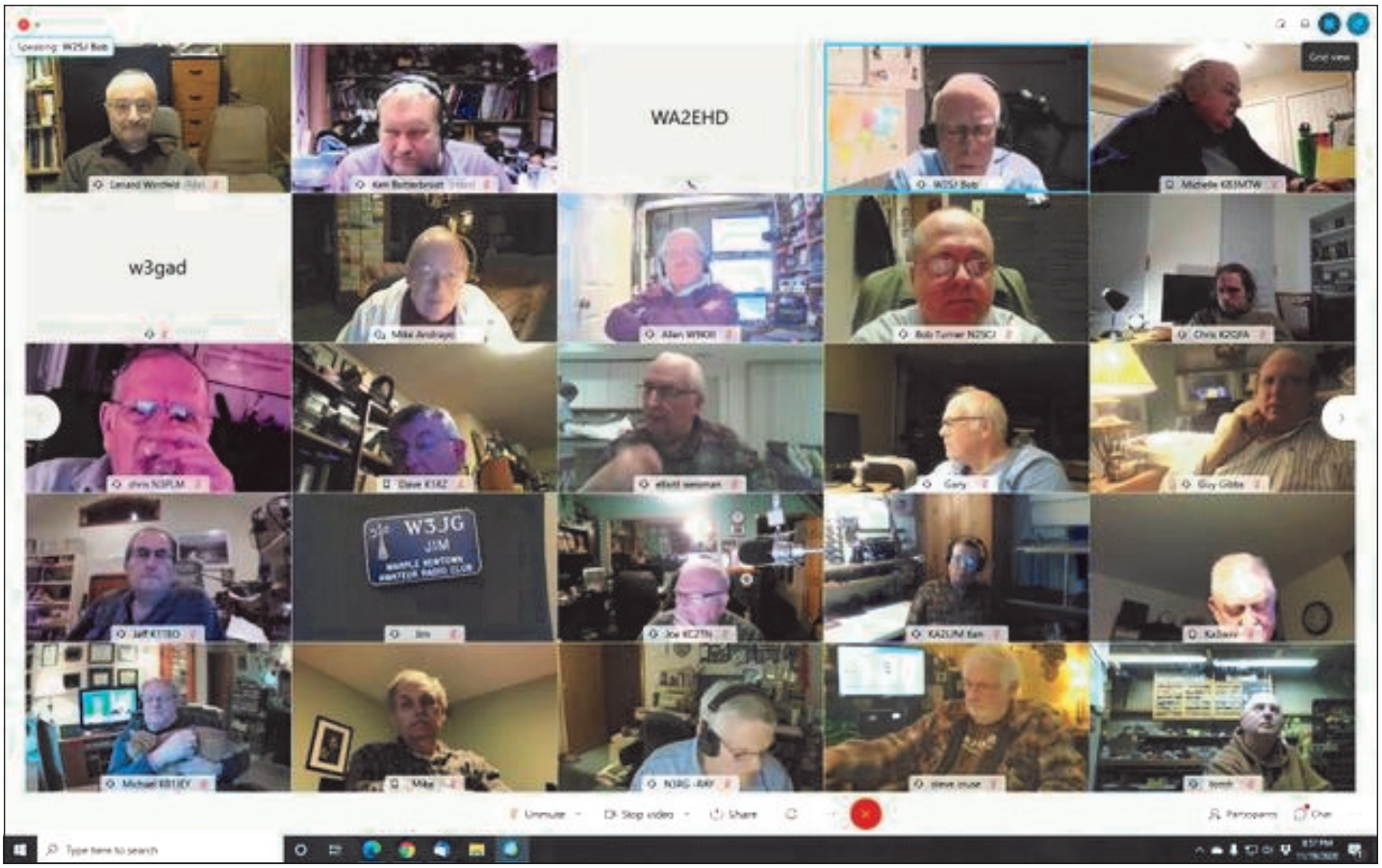
**Microwave Tuesday:**
7:30 Coordinate QSO's on 144.260 for all Microwave bands you'd like to work. Also setup Q's at w4dex.com/uhfqso or **Packrat Chat Page W3SZ.COM**
Visit the Mt Airy VHF Radio Club at: www.packratvhf.com or www.w3ccx.com

since many of you have inquired about my health, I will break another "Robert's Rule". My doctors have me on Eliquis to disolve a possible blood clot in my heart. Once they have verified it is safe, they plan to do a cardioversion procedure to get me out of Afib and back in sync. I feel fine otherwise, just a little tired, and I'm "taking it easy" for a while. Thanks for your support and see you all at the next meeting and on the Contest!

Meanwhile, finish a project on the bench, keep one ear "listening for the weak ones", and the other on the "Magic Band"!

**Vy 73,**
**Bob W2SJ**

# November (WebEx) Meeting Pics





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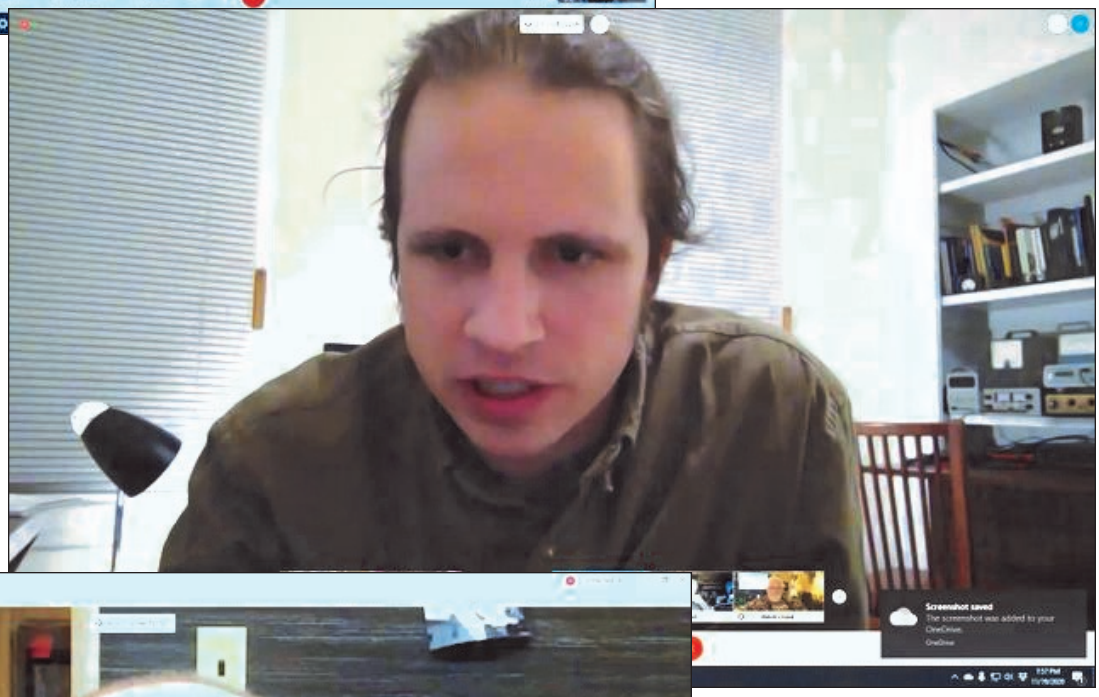
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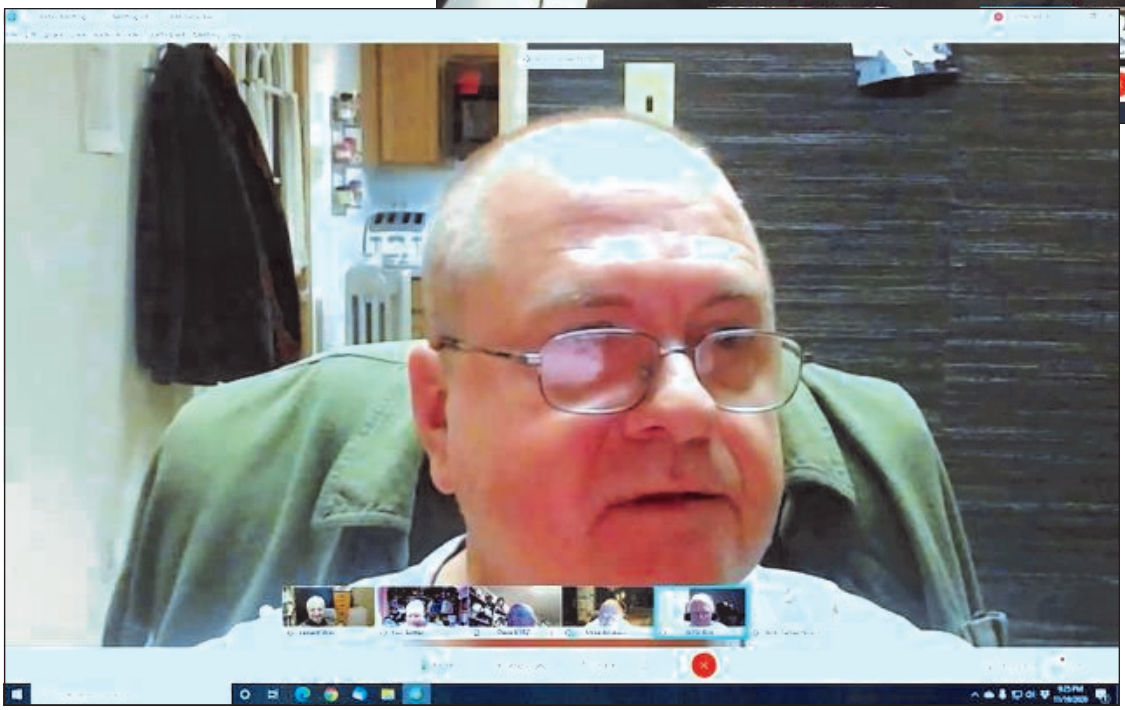
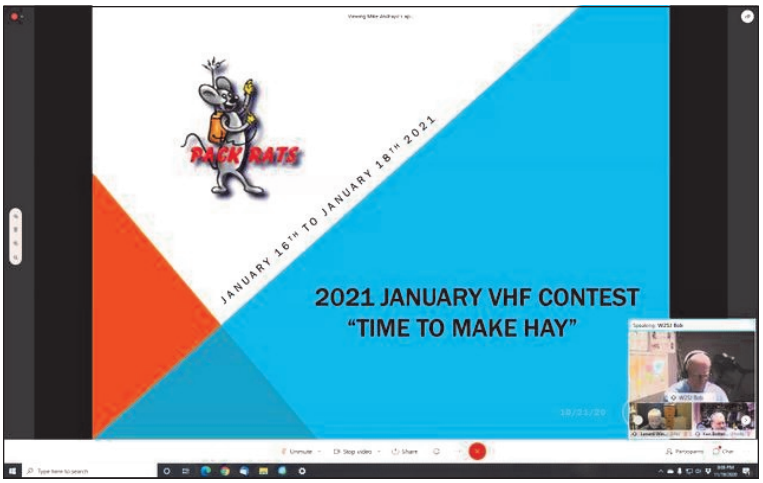
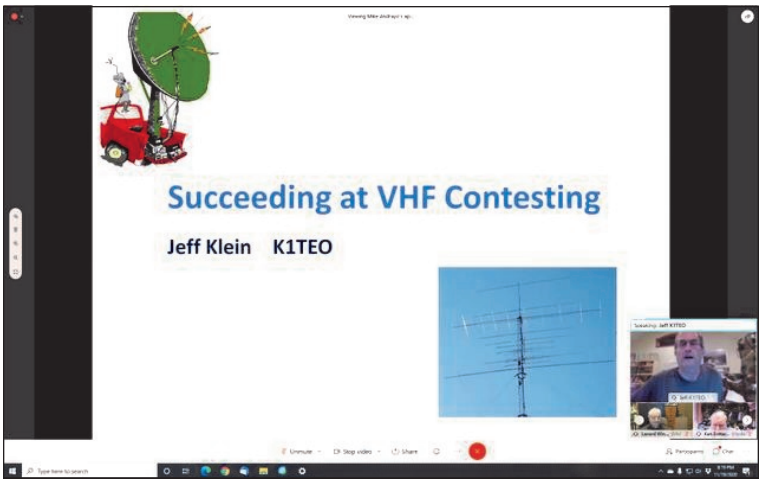



PACK RATS
JANUARY 16TH TO JANUARY 18TH 2021
2021 JANUARY VHF CONTEST
"TIME TO MAKE HAY"


Succeeding at VHF Contesting
Jeff Klein K1TEO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Speakers (Realtek High Definition Audio)
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# MY FIRST SOTA ACTIVATION

**Bill WS3O**

I have been wanting to do a Summits on the Air (SOTA) activation for many years now, but there has always been some reason or another that prevented it from happening. Everything finally aligned for me to try it over Thanksgiving weekend 2020. I was going to be in the Poconos with family, my daughter loves hiking, and the weather was going to be clear enough. So on Friday the 27th, the two of us went to Big Pine Hill. The SOTA identification is W3/PO-009.

I am not a hunter, however, I have a vague notion that Pennsylvania's deer hunting season is about the same time. So I checked into it, and found that it started on Saturday the 28th. Since we were going on Friday, there shouldn't be any hunting yet, but we decided to play it safe and wear orange. The problem was we didn't own any blaze orange. A quick scramble around the stores turned up nothing in the way of orange hats or vests. We did find some neon orange fleece remnants. Good enough. I fastened some around my hat, tied some strips to our backpacks, and my daughter wore it as a bandana.

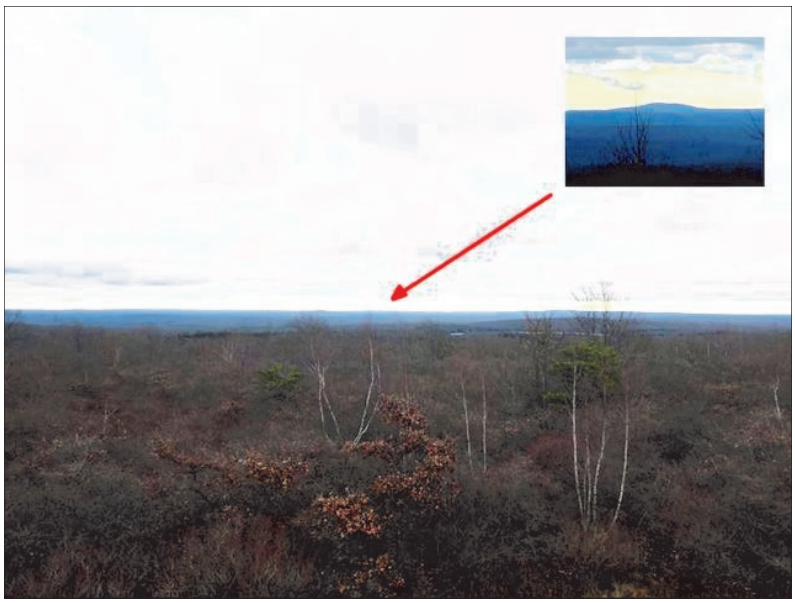
Big Pine Hill is located in what used to be called Lackawanna State Forest, but has been renamed to Pinchot State Forest. (I am no fan of renaming things, and will likely continue to call it Lackawanna.) The six-digit grid is FN21ef. The elevation is listed as 691m above sea level. Fortunately, we didn't have to start our hike at sea level.

We entered the forest from Bear Lake Rd, and followed a reasonably well maintained dirt road called Pittson Rd for about a mile and a quarter. At the intersection with Pine Hill Rd there is a wide parking area.

We parked the car here, put on our backpacks, and started up Pine Hill Rd to the peak. The gate was open, and it turns out there was another parking area further up the road. But we were there for the hike also. So on we went. The hike up was straight-forward, and the road continued to the top, so no bushwhacking was necessary.

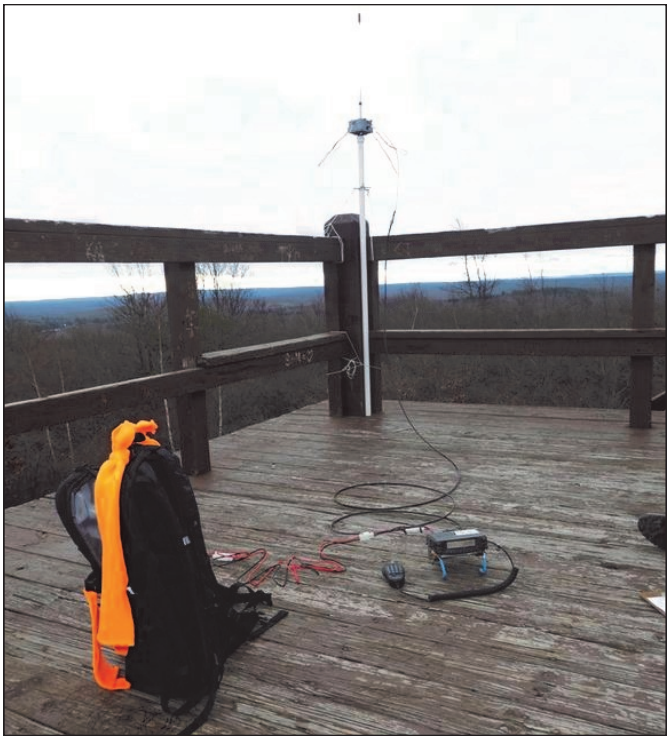
I have to say, lugging a 22AH sealed lead acid battery up a hill is not the easiest thing to do. The unit starts out weighing 10 pounds, but seems to get heavier as you go. It is the only battery have that is capable enough. I need to put one of those lightweight LiFePO4 batteries on my wish list.

So we got to the top, where there is a viewing platform. As I read the rules, there is nothing that precludes use of such a platform, other than being a nuisance to other people in the area. Since my daughter and I were the only people there, we setup on the platform.



This is the view towards Camelback, which is at the horizon. I am amazed that this hill qualifies for SOTA, yet Camelback does not.

Now to get down to business. I had made an antenna mount using a plastic electrical junction box from Lowes. I put a mobile antenna on the top, and added some ground radials to the sides. Then I used a threaded plumbing flange, which happens to match threads with a 3/4" PVC adapter. The other half of the adapter is a slip joint, which I glued to a 5 ft piece of PVC pipe. This assembly was lashed to the railing of the observation deck.



The radio was my Yaesu FT-8900R that I keep in the car, so this was going to be an FM activation on 2 meters. The specs on this radio state that it draws at most 8.5A on 2m. Given that I had this 22AH battery with me, I could probably have spent the entire day up there. Note that I could have also operated 70cm with the antenna I had with me. But you do not get additional points for multiple bands, and there were likely less people listening on 446.000 than on 146.520.

I know I should have submitted an alert on the SOTA website, and I also could have contacted more people to let them know what I was planning to do. However, I was not 100% sure I was even going to make it up there, and I did not want to make a lot of claims and then not follow through. So, advance planning was only made with W2RES and KR1ST. Since W2RES is my father, I knew he was going to be available, as I was visiting him for the holiday. I also knew that this summit is in KR1ST's backyard, so it made sense to arrange with him. Those two contacts were made right away. Both reported my signal as S9+++. Sitting on top of a mountain helps a lot.

Then nothing.

There was no one else listening on 146.520. I admit that I am not the most ardent caller of CQ. I would call a couple of times, and then talk with my daughter for a bit. Call a couple of times. Then walk around the area, looking at the view. W2RES reminded me that I should call out a lot more. KR1ST then posted an email to a local group, and four more operators came on the air. Just in time too, as my companion was getting cold and asking if we could leave. It was a little bit breezy up there, and the temperature wasn't too bad. But there was no sunshine.

In the end, I logged W2RES, KR1ST, KG4KFV, N3SRO, N3RN, K2CZH, and WB2UFF. Enough for me to get activator credit. I really enjoyed this outing, and plan to do more in the future. And with better advance notice.

# W2DRZ and the Mighty Six Meter Array

**Russ K2TXB**

In the spring of 1980, Tom and I decided to build up a killer six meter station. We already had the transceiver and amplifier, so what we needed was a better antenna. Up until then we had been using a single Cushcraft Yagi on a separate tower about 50 feet up.

Tom had gotten ahold of a nice 50 foot section of Rohn SS tower and already had it installed in a concrete block and guyed at the top. It was out in the field in front of the house, so quite a ways away from all the other antennas. After kicking around a number of ideas, we decided to mount a rotating tower at the top of the SS and build up an H frame for four Cush Craft 11 element Yagis. The Yagis were 26 feet long, so we decided they needed to be spaced 26 feet apart, both horizontally and vertically! We used a 3 section length of Rohn 55 as the rotating tower. I had access to a huge bearing from a damaged hydraulic crane that my Dad had, so we mounted that at the top of the SS tower by fabricating a 5/8 inch thick steel plate with a huge hole in it to hold the bearing. Once that was in place, we mounted a prop pitch motor in the SS tower and used a short army truck drive shaft to turn the tower. (That was the first of a number of motors and drive combinations we had to use with that monster.)

With rotation, and some servo motors installed for direction indication, we could now proceed to build the H-Frame. The cross boom was a 30 foot length of Rohn 45 tower, and the uprights were each 20 foot lengths of Rohn 25 tower, extended at the tops and bottoms by a few feet of 2 inch aluminum tubing, to give the needed 26 feet of vertical separation, and room for the antenna support wires at the top.

In the meantime, I located a piece of copper tubing, 5 feet long and 3 inches in diameter, for the 1/4 wave power divider. The center conductor was 2 inches in diameter to provide the 25 Ohm impedance needed to match the four paralleled 50 Ohm antennas to the 50 Ohm transmission line. The end caps were made from ¼” copper plate, machined on my Dad's lathe to just fit into the ends of the power divider, and soldered tight after the divider was completed. With four type N connectors at one end and one at the input, we had our six meter power divider. I believe that power divider is still in Tom's basement. You can see it in some of the pictures.

All of that preparation and building took us into late autumn. We wanted to be able to use the antenna for the upcoming January contest, so we continued working on it through the end of the year and on into January.

By the evening of January 16, 1981, we had the H Frame fully assembled and laying in the snow near the tower. Now, Tom always would work on equipment if something needed fixing, even if a contest was in progress. He liked contesting but he liked working on equipment even more. So, on the 17th, by the start of the contest, it was no surprise that he wanted to complete the installation. It was a very cold day, fortunately with little wind, but we had to wear heavy winter coats and gloves for all outdoor work. Finally, late in the

afternoon, we had everything ready to raise the H frame. The frame was hoisted into the air high enough to install the four antennas and feed lines. The top antennas had to be mounted and aligned from the tower but the bottoms we could install from the ground. The ropes holding up the assembly were attached to Tom's pickup truck and the whole thing was supported from the gin pole at the top of the rotating tower.
The picture shows the arrangement as we were just starting to raise the H Frame, but before attaching the antennas.
Finally, we started raising the completed assembly. I was the tower man so up I went with my heavy winter coat, hood, gloves and heavy winter boots. It was a slow process. We had enlisted several area hams to help out with manning the ropes to hold the assembly away from the tower, and maneuver the antennas past the guy wires while raising. Tom manned the truck while I guided things from the tower via Motorola HT (this was before cell phones!)

Just before dark, we had the frame raised to the mounting position half way up the rotating tower. I had to attach the mounting plate to the tower using special clamps that we had built. I had to remove my gloves for this operation because I could not start the nuts onto the clamps with them on. The temperature at this time was about 15 degrees above zero and I could only keep the gloves off for a few minutes at a time. With much jockeying around to get the frame positioned so that each U clamp would slide into proper position, we finally got the H Frame mounted and secured. We had an assembly of portable lights on the ground, shining up to the tower to give us the ability to work in the dark. Once the H Frame was mounted, the Yagis had to be aligned and tightened down. We had to pull up the feed line and get it strapped to the tower and connected, and weather proofed. The support stays for the cross boom also had to be connected.

Finally, at 10 PM, it was all done. I was barely able to make my legs work as I climbed down the tower. I had been up there for six hours. When I got into the garage, I was unable to remove my safety belt due to my stiff fingers and the belt itself being stiff and hard from the cold. I had to get one of the guys to remove the safety belt for me. It was +6 degrees!

But we had done it! After us all getting warmed up, we went down to the shack to see if it worked. The SWR was good and it looked like we were on the air! But then we discovered that the selsyns to show the antenna position were not working. Tom had made up a nice display, a frame holding a world map, with the selsyn swinging a pointer over the map. But something was wrong with the wiring. There was no way to see the antennas from the shack in the basement, so we were unable to use the rotator. We operated the rest of contest with the antennas pointed west. Conditions were not good and since we had missed half of the contest already, we did not bother turning in a score. I wish we had, as I cannot remember anything about how well we did on six, or on other bands. I did look up the scores for January 1981, and saw that the single operator high score was Ron, WA3AXV, whom I did not know yet at that time. Ron had 80,770 points on the 50, 144, 220, 432, and 1296 bands.

Below are some pictures of the completed array, and some close-ups of some of the parts.

: Cross boom and power divider

Completed array, morning after installation

Afterwards: Of course we eventually did get the selsyns fixed and we found this array to be a 'Band Opener'. We worked everything there was to be worked. At that time a popular way to discover six meter propagation was to get on 10 meters, on 28.885, and then transmit on six to see who was hearing you. I will never forget the thrill of calling on a 'dead band', and suddenly hearing the 10 meter speaker come alive with "We Have Propagation", and hearing our CQ coming back to us, loud and clear, from South America, on 10 meters! We were often the first ones heard when the band was opening. With that antenna I completed my WAS on six meters, and we worked a ton of DX.
But the array was a huge wind catcher. Our setup was on the top of a 1920 foot 'mountain' in western NY (now known as FN02LA), near the town of Frewsburg, NY, and just above the Pennsylvania state line. Thunderstorms would form in the valley below and come roaring up over the top very fast, and often with no warning.

One fine summer afternoon I was up the tower and had climbed out the cross boom and part way up one of the vertical H Frame sections, to do some work on the 432 MHz array we had put there. Suddenly I heard a sound like 'crack', or 'snap'. I thought about it for a few seconds and decided I better get down off the tower - it sounded like a static discharge to me! I had barely made it to the ground when the storm came sweeping up from the valley below, Lightning and rain and huge booms of thunder. That time there was no damage to the equipment, but other storms did cause the driveshaft from the prop pitch motor to the antenna to twist up like a pretzel. And it was very difficult to keep water and ice out of the gearing and the selsyn drives during the winters. We ended up putting stronger and stronger drives on, but nothing could stand the tremendous forces that the wind applied to the array for more than a year or so. Finally the antennas themselves started falling apart and the array was done.

But what an experience building and using that antenna was for us. I really feel very happy and fortunate to have had Tom Mott, W2DRZ, for my best friend. If not for him and his way of trying for almost impossible achievements I would never have accomplished as much as I have in my life. Tom Mott, W2DRZ, passed away on September 15, 2020. Rest in Peace Tom

# Alright Already. Just Make Some EME QSOs

By Rick K1DS

It's the third weekend of the ARRL EME contest this year and I anticipated making some QSOs on 1296 using my single 76-element long WIMO Yagi and my 275-watt SSPA. I made some changes to the mounting arrangement of the Yagi so that it would clear the ground when aimed at 80° and above as the moon comes almost overhead. I planned to use only 18' of coax and improved the ease of setup by adding a switcher power supply for 28VDC @ 25A rather than the 50-pound linear supply I acquired a while back. I was careful to set up the mini-tower and AZ-EL rotor and align the antenna to the sun. As a plan B, I put my 12-element long 2m Yagi on the other end of the mast and set up the 350W TE SSPA. The moon rose here in Florida at 3:30 PM and the contest started at 7PM or 00:00 UTC. There is a big palm to the east of my antenna, so I have to wait until the moon is 35° above the horizon to start to see any signals. I searched for two hours, using the HB9Q logger to check who was calling CQ. Some of the loudest stations have large (5-8 meter) dishes and run a kilowatt. They should be easily seen on the JT65C mode screen, but I saw nothing and heard nothing in either digital or CW modes. Convinced that I had a problem, I moved to plan B on 144MHz and had exchanges with OK1DIX and PA5Y, but it seemed that their signal strength as recorded in JT65B was lower than expected. Traces seemed quite faint. Once the European window was closed, I hit the hay, thinking what I was going to do for the second pass. I wrote a quick note on the EME reflector and decided to leave 1296 and go back to 432.

I decided to remove the WIMO Yagi and replace it with my single K1FO-25 for 432MHz. I received a call from K2UYH explaining to me that there was a problem in my receive line and the WIMO Yagi should be quite capable of supporting many 1296 QSOs. He suggested going through an exercise to evaluate my preamp. As the moon came into view over the palm tree, I quickly worked DL7APV and then NC1I. Both of their signals were easily copied, but the program was showing decodes at -20 and -24, much weaker than previous encounters with them on this band. I even tried to swap out the preamp in the TE 432 SSPA for a WD5AGO cavity preamp, but the signals were the same. I got a strong signal report from NC1I, but his signal had a weak score. I ran this through my head and then realized that the preamp inside the TS2000x was off! There is a small push-button that toggles it on and off for use on the VHF and up bands. I must have accidently pushed it at some time. I pushed it again and voila! Stronger traces and better reports on stations I was working. I wound up with a meager 9 QSOs, 1 dupe and 7 multipliers. I am already thinking about how to improve my QSO totals for the next EME contest.

One more thing that I learned is that there is a third site for assisting EME 2-meter QSOs by mapping out the stations and their calling frequencies. Thanks to AI1K who sent me the link when he noted that I was asking several stations what their calling frequencies were using the N0UK EME logger. That site for anyone interested, is LiveCQ.eu. The info is manually input from MAP65 users and filtered for ONLY CQ QRZ and QRT messages. It can be used for WSJT, CW or whatever you want. It's made by PA9RX. I have great appreciation for all the fine work that was put into the making of the latest version of WSJT-X. It's so exciting to see my call highlighted in red as the signal is coming on an almost half-million-mile trip from a station in Russia or Europe to the moon and down to me.

73, Rick K1DS

Artwork by Lexie, W2SJ's granddaughter

# Member Spotlight!

**By Phil WF3W**

## I′m a Travelin′ HAM

1st Licensed: 1980
Favorite Activity: Roving — by far
Favorite Mode: Always been a CW Op but… tough call
Honorable Mention COVID-19 Survivor

Additional claim to fame: HAM Talk - Episode #1 - YouTube

As befits a consummate Rover, Andrea lives in New Jersey and Texas, has children, grand-children and parents from Utah to Tennessee, which all come with a great reason to Rove as well as travel. She began with Hamming hardware comprised of an HW-16 – tube + VFO – and a dipole. According to Andrea, getting into Amateur Radio *just happened* but, behind that is a great story of parental guidance and confidence in what your children can accomplish.

Andrea had been under her father's tutelage for some years — beginning at age 8 — learning electronics, e.g., soldering, cutting wires to size. Seeing her innate abilities, at the age of 12, he offered Andrea her first job, over summer vacation. She jumped at the prospect, before realizing $25/week for 20 hours, is $1.25/hr, knowing minimum wage was $2.50. Being a model for precociousness, she realized the upside, familiarizing herself with electronic know-how-to-do, as in fully qualified electronic technician. The first lesson was using a dial caliper to scribe aluminum to accurately, make center-punches, which immediately morphed into prowess at the drill-press. She recalls being fascinated by the RPM of a spinning piece of aluminum, somewhat out of control. As summers came and went, Andrea picked-up facility with an o-scope, reading schematics and how to do PCB lay-out. Skills mastered before graduating high school.

Her father had made the decision to join the ranks of our most fabulous hobby, when an employee apprised him of a Novice class his club was beginning. Her father attended, inviting Andrea to accompany him. It promised to be a memorable experience as the class was in a fallout shelter, populated with two archaic, education tools: a totally black hunk of slate on which one wrote with a white stick - turning instantly into a powder of recognizable alphanumeric symbols. Second was a somewhat noisy apparatus for showing moving pictures, sporting 2, circular structures not unlike the ears of Micky Mouse. In the film, extolling the virtues of Amateur Radio, was a Senator from Arizona, Barry Goldwater, **K7UGA** {SK}.

Andrea says she found the presentation interesting, but on a conditional basis. Her father asked if she would like to pursue it further and she acquiesced.

Member cont'd .. Her father reminded her – dare I say "warned" – she had to triumph over Morse Code. Into the her undecided ruminations, popped *Gilligan's Island*. In one episode, the "Skipper" – played by Alan Hale, Jr – dreamed about converting the shipwrecked boat's receiver into a transmitter. As "The Professor" – Russell Johnson – hypnotizes the Skipper, into remembering his war-time radio skills, Andrea experienced a defining FLASH! {somewhere in the neighborhood of 500W floodlights}. To wit, "would not it be nice to be able to transmit"? She recalled her generation's love affair with AM radio, especially "Seventy Seven WABC" from her listening post in northern New Jersey.

Talking with people around the world and getting QSL cards, to commemorate contacts, was most intriguing. From a perhaps introverted mind-set, Andrea posited Amateur Radio was not the same as "reaching out to people" while, also, not getting too close. She took the classes, struggled with Morse Code, but already comprehended Ohm's Law. At 15, she had the stamina to read "all" of Part 97. She found class very rewarding, due mainly to being quite practical, e.g., IDing at specific times into a QSO.

Problems with CW were simply not knowing which letters she didn't know, remedied by sending the alphabet, in sequence, quickly learning with which letters she needed more proficiency. Test day found her pumped and ready to pass. Andrea credits the multiple-choice/guess option as working to her advantage: what she <u>did</u> copy enabled her to discern the correct choice, er, guess. Andrea went on to teach classes, one which Included her younger sister!

Andrea twice confronted the ultimate QSO-killer, when her entire antenna system was "grounded". This, the <u>second</u> tower failure, engendered a certain "disgust" in fate or atmospheric dynamics, lessening the impact of being prevented from transmitting and receiving. Her rotator housing failed, by cracking, and without a thrust bearing above… the entire complement of aluminum plummeted as far as gravity and ground would permit. The tower, however, remained totally intact, to the top of its 60 feet. This forced Ham inactivity did have a positive side allowing Andrea to concentrate even more on her children. Attempting to inspire the kids toward Hamming, she orchestrated impromptu *Field Day* in the front yard, which fascination did not persist long enough to hit 100,000 points.

There is a life-long lesson here, though Andrea admits the lesson is far more respected in her "more mature Ham years", namely doing things the correct way the FIRST time. Overbuilding of the **Redoubtable Rover** is a prime example. Contributing to this design philosophy is ability to service antennas arrays at 6-7 feet, as opposed to 60. Andrea envisions this unique artistry as a "tower-in-miniature"; "baby contest station"; "miniature contest station".

Motivated by the desire to visit the family diaspora, realizing she never ventured that far cross-country, with the brood moved out of the house, her Amateur Radio sparks started to reignite, in 2015. Andrea got into roving as all great ideas are born, by serendipity, or more accurately, by happenstance. Again, astute observation enabled her to find two more interesting facets of our most fabulous hobby, roving and weak signal work. Armed with an FT-736, resting comfortably on a shelf, doing its best to effect maximum dust collection, plus an, almost, empty nest - 2 daughters now living out-of-state - she wanted to go on a road trip. Equipped with HF, in the car, she would:

Visit friends in Minnesota
Visit her daughter in Utah
Visit her sister in Texas
Visit her father in Tennessee

over a 2-week sojourn. Here begins Andrea's discovery and subsequent, literal journeys. She heard - on a repeater 10 days before departure - there was a VHF contest the week she planned to leave. Noting limitations, and hassle, of mobile HF, remembering the slumbering 736 and bands added by her IC-7000, Andrea mounted horizontal dipoles to the tire rack at the rear of her, classic, Bronco-2. Of course, Andrea consulted contest rules — remember: she actually read <u>all</u> of Part 97 — and noted the category **ROVER**, with a sub-head of LIMITED Rover, meaning only four operating bands. PERFECT! She had <u>exactly</u> four bands. Instantly, Andrea became a ROVER. Her object, of course, was FUN, making some points but

signing as **/R**. Let the fun begin, and it did, the night before the contest.

Having read rules of the 'test, Andrea appreciated the importance of grid corners. And she found a good one in western PA. She arrived there, sort of, sort of not, and had a couple QSOs with PA stations. Better luck followed in the Buckeye state but no one was coming-back to her CQ entreaties. In retrospect, she feels most stations had people scheduled or had contest "regulars". She also was experiencing significant QRN as well as ignition noise. After dark, near Dayton, Andrea pulled-over and started searching for that noise-blanker on the 736 – somewhere in the forest of controls. At last, VOILA! But not much improvement. Then discovering AGC on FAST was mandatory. Keep in mind this is SSB. It all paid-off as she now had her first 4-band sweep.

"*That's cool*!" was Andrea's, unalloyed reaction. She really enjoyed band-hopping. 70cm was harder to work, QSO-wise, and 2M seemed more productive. She confesses to always loving 220 FM. At 3AM, in proximity to being pooped, she entered a new grid for which a multiplier was needed. 52.525 FM was the magic, as she pulled into a motel.

Arising at 7AM, the new contest day, greeted her with snow. Undaunted, she put the Bronco in 4WD and started calling **CQ**. She worked Wisconsin stations and soon discovered other stations were excited by this Rover and began asking what grids she WILL be in. Arriving at her friend in Minnesota, rigs went silent. But after the night's adventures, back in her car, she worked her last QSO, **K2DRH**, virtually to the time limit of the contest. She did not think it a valid contact but when one of the top, low-power operators says he heard you, you begin to have faith.

On this, her first roaming-as-ROVER, she activated 18 grids. Here was established the precedent for Andrea's future, chasing grids; plus she enjoys car travel. The longer the run, the more enjoyment she derives. 7,000 points is a good reason for pride for a first outing. Perhaps not a full reincarnation of Amateur spirit but a big difference from her vantage.

Not long before the contest, Andrea started to shed her shyness of the microphone. Rising to the next echelon of excitement, was the prospect of the next contest/road trip/grid chase. For a while, she pictured the more elaborate Explorer - planted thick with loopers and Yagis - as the source for dying of embarrassment, i.e., looking up, at all the wires hanging across the road, at least 13 feet, then processing that as "dying of embarrassment". To be fair, 18-wheelers make it through toll-booths In contrast, living things, like tree branches, have never respected these limitations, mandating Andrea to be *semper vigilins*. Fortunately for the Amateur community, she has gone way past embarrassment and any hint of cessation of vital functions, e.g., heart & lungs.

Under the mien of another contest, it occurred to Andrea to start where the North American continental landmass begins, i.e., C*a*pe Cod, **FN51**, a rare grid to be sure. The down-side: it's a terrible place – point-wise. To her chagrin, no one points antennas out-to-sea.

Cruising through MA, someone snapped a picture of the portable antenna farm, sent to the 80M cabal, asking if "this" was one of "your ilk". The photo found its way to Andrea, proudly displayed as one, of five, shots of her roving vehicle in motion. The next, obvious, step, is melding with The Packrats.
As Andrea's above listed video can attest, major upgrades were instituted in 2016. She was now in a position of strength to extend previous short,12-grid roves into a L O N G one. Living in Texas, Andrea decided it was sensible she rove from the northeast to a Texas termination.

With the wisdom of experience, to maximize grid squares, she knew other stations had to know she was "out there". Studying scores, and who made them, in previous contests, Andrea communicated with every top-gun via email. Near the top of the list was **K1RZ** who quickly replied with an extreme measure of

Member cont'd ..

Elmering — Dave is always maximizing rover performance. **K5LLL** and **K5QE** wanted phone confabs. Others responded with "good luck, I'll be listening"; so, at least, a major sub-population of Hams between this part of the country and Texas, assured her "they knew a rover was coming down", without knowing it was our *Queen Rover*.

Andrea started in McConnellsburg, PA, well known rover spot in **FM19**, ~2600 feet, enabling **K1RZ** to function as contest-to-Packrat conduit.

Through **K1RZ**, Andrea was "introduced" to the Packrats, although she was familiar with the name, as well as *Mt Airy VHF*, from the 90s. She was familiar with the club monikers via attending Hamarama. Through **W3CCX** and the plethora of Packrats, she made a solid connection. Reading of the super-conference in QRZ, Andrea met the minions within which to thrive even further.

For Andrea, there is an addiction, of which getting-off can be problematic namely hill tops. Once "they" know you're there, you are enveloped in seduction of log, or fog, of the quest for of 5-figure scores. Steeped in the lore and reality of roving, Andrea made two, stick-out, discoveries: Navigating to & through New England, for multipliers, scores must decline when grids are located within the coverage area of a home-team playing the SuperBowl! Game over, score up.

**REMEMBERING…**

| | | |
|---|---|---|
| Ken Harrison **W3CPT** | Charter Member [5 15 56] | SK {March 1966} |
| Matt Gelardi **W3CCX** | Member since 1956 | SK {Feb 1958} |

## Old (and dangerous) Technology

Do you remember a flouoroscope in the local shoe store that the salesman would use to help fit your feet to the shoes? It used X-Rays and exposed you to 5-25 Roentgens of radiation per measurement. The safe exposure standard (even in the 1940's) was 0.1 R per day. In the '50's our local shoe store had one but they had ceased using it. Here's an article with more details: https://spectrum.ieee.org/tech-history/heroic-failures/when-xrays-were-all-the-rage-a-trip-to-the-shoe-store-was-dangerously-illuminating (you may need to the click through a "skip ad" link to get to the article. —W2BVH

## The Greatest Vacuum Tubes You've Never Heard Of

Here's an interesting article on tubes even more bizarre than TWT's or Magnetrons: https://spectrum.ieee.org/tech-history/space-age/the-11-greatest-vacuum-tubes-youve-never-heard-of Most of them generated or amplified micro-waves, but there are a fe others too.

TNX K2UYH for the link

## Oldest Known US Radio Amateur, Cliff Kayhart, W4KKP, SK

Charles Clifford "Cliff" Kayhart, W4KKP, of White Rock, South Carolina, died on October 26, a few days past his 109th birthday. An ARRL member, he was the oldest known US radio amateur and possibly the oldest ham in the world.

First licensed in 1937 as W2LFE in New Jersey, he also held W9GNQ. According to his obituary, Kayhart built his first radio at the age of nine. After working for New York Telephone Company as a young man, he became enamored with engineering, so he headed off to Tri-State University in Indiana, graduating with a degree in aeronautical engineering. Afterwards, he went to work for RCA in New Jersey, becoming a quality control manager. Positions followed at Philco Radio and Bendix Aviation.

Kayhart was also the oldest surviving Iwo Jima veteran and eighth oldest living US male.

—Reported by WF3W

# Tips and Tricks: Snaking Wires and Ethernet

By that Snake, Ham, and Packrat Michael Davis KB1JEY

**Introduction**

So why write an article about snaking wires through floors and walls for *Cheese Bits*? First, while I am not a licensed electrician, I wish to demonstrate that nearly anyone who can operate a ham station can safely snake Ethernet, telephone, and antenna cables within their home's interior walls. What they may need for success is some additional information and techniques. While this article describes my adventures snaking an Ethernet cable between rooms via my attic, the techniques used are similar to those used when the wires are coaxial cable for antenna feed lines or for low voltage control lines. Ironically, the Ethernet network cable standard is older than you might think. It was invented nearly 50 years ago! CAT5 / CAT6 Ethernet local area network (LAN) cables terminated with RJ45 modular connectors (see illustration) are in common use in the amateur radio world.


As personal background, after about a year of unemployment, I was offered a six week temporary assignment on behalf of Optum (United Healthcare). It was a work-at-home (WAH) engagement where Optum supplied a laptop. While scheduled for only six weeks, this temporary full-time engagement paid about four times what I was making per hour at my part-time job at a local home improvement store (Lowes). My preferred home work location was a spare bedroom (now my "office") but the internet-protocol (IP) switch to my cable modem was in the adjacent ham shack, separated by a couple of walls. For an engagement that might end in only six weeks, it did not seem worthwhile to snake an Ethernet cable into the office. Wifi is okay for home computer applications but for data-intensive work applications, a wired connection is better.

As it turned out, six weeks engagement was extended to over three months, followed by my current employment at Horizon BCBSNJ, starting in March 2020. After a week of commuting from Ambler PA to Hopewell NJ, I received a message to WAH. I am still working from home and will probably continue to do so for the foreseeable future. A year later, my temporary solution of stapling the Ethernet wire under the doors and into the carpet along the wall was getting old. It complicated vacuuming the carpet and was perhaps an attractive nuisance for my companion, Mr. Drake, the orange tabby.

Working seven, then six days per week, I never seemed to find the time to attend to properly wiring a permanent RJ45 LAN jack. But a four day holiday arrive this past Thanksgiving. With COVID-19, I celebrated Thanksgiving at home. The weather was temperate so working in the attic was comfortable (versus the heat of summer or cold of winter). I had anticipated undertaking this project and had already purchased a 500 foot box of CAT5 "riser" cable, a RJ-45 wall jack, a "punch-down" tool and an insulation stripper for Ethernet cables (see illustration of the punch-down tool and insulation stripper). I also bought a single gang low voltage mounting bracket to secure the RJ45 wall plate to the plasterboard wall (see illustration of low voltage brackets). Because the bracket is designed for low voltage use only, the bracket is open

Wires cont'd .. in the back unlike a typical outlet box. I had plenty of RJ-45 modular connectors and the crimper to attach them to the CAT5 cable. I was ready to snake that cable.

**Planning**

My next step was to figure out how to best route the Ethernet line. I had previously run some cables from the ham shack into the attic so I could use an existing cable to pull the new CAT5 cable into the attic. The next decision was where to drop the CAT5 into the office and where to locate the RJ45 jack and wall plate. The wall between the office and the hall looked promising. I could measure the location of the studs on either side of the wall. I could work comfortably by standing on the folding ladder to the attic while drilling into the wall. I decided to mount the RJ45 wall plate relatively high (above the file cabinet) to make the installation easier.

A safety caution is in order. You don't want to drill into existing 120 VAC wiring. In this installation, I was pretty sure that I was clear of any 120 VAC wiring. If you are not sure, there are a couple of easy ways to help protect yourself. First, you can purchase a non-contact voltage tester, such as the Fluke VoltAlert 1AC II for about $25 at your local home improvement store or online (see illustration). It will blink and beep when the tip is anywhere near live wiring. Also, after you carefully cut out the rectangular hole for the low voltage mounting plate, you can inspect inside the wall with a flashlight and "dental mirror" to see if there are any previously undiscovered cables or obstructions.


Speaking of creating the rectangular hole, there are at least three good ways to cut the rectangle. For those inclined to use power tools, a popular tool to cut rectangles is a "Rotozip" spiral saw (see illustration). I recently replaced my budget spiral saw with a reconditioned Rotozip saw purchased for $50 online. You can also use a jab saw or a handle that accepts reciprocating saw blades to cut the rectangular hole (see illustration of hand saws) With a jab saw or other hand saw, you will need to drill some starter holes to insert the saw. The low voltage mounting bracket will have instructions regarding the size of the rectangular hole needed for insertion.

**Drilling the Hole from the Attic**

The first step is to carefully measure where to drill the vertical hole from the attic into the wall. With most residential construction, the studs to which the dry wall or plasterboard is secured are typically spaced every 16 inches. A stud finder makes short work of locating the wall studs. Inexpensive stud finders can be had for as little as $10. For myself, several years ago, I invested in a Franklin Sensors stud finder (see illustration). They typically sell for $50-$60. The Franklin Sensors stud finders have a series of LEDs that make it really easy to see where the studs are located as you slide it

along the wall. Repeat your measurements a few times because few things are as annoying as making unnecessary holes in your wall.

To get successfully from the attic into the wall, I use two different types of drill bits. To make initial hole, I use a wood-boring spade drill bit. However, the spade bits I have will only drill about six inches and there is usually a bit of additional wood to be penetrated beyond that depth. One could use a drill bit extension but I have an inexpensive set of 12 inch brad-point drills to finish the job. It is best to make the vertical hole that you need a bit wider in diameter than you think is required. It makes the snaking of the cable a lot easier.

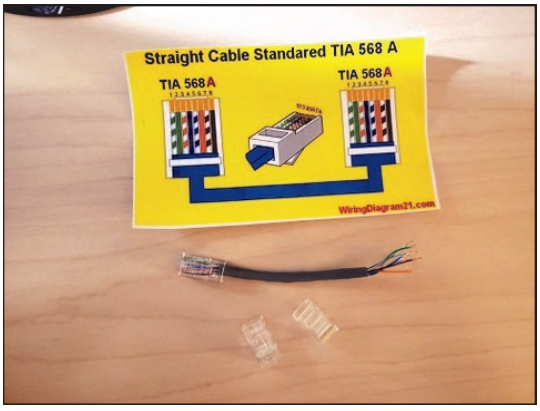
**Snaking the Cable**

Perhaps biggest misconception associated with snaking cables is that you can use a flexible tape or plumber's snake to probe for the destination rectangular hole. Flexible snakes work fine if you are snaking through a length of conduit. They won't work if you are snaking a cable in an open wall, especially if your measurement for the position of rectangular hole is slightly off. Invest about $25 in a wire and cable installer fiberglass "fishing rod" kit (see illustration). The assembled length is about 8 to 12 feet and consists of three pieces that screw together and have a couple of different tips. If your rectangular hole is off a little bit, you can swing the fishing rod to the side to find the rectangular hole.

In the age of COVID-19 pandemic, finding helpers to spot the snake from the rectangular hole is s a bit more difficult. Mr. Drake tries but he is not all that helpful on this task. So the alternate route to success is careful measurement. I dropped my fishing rod from the attic down to the bottom of the wall. I retreated to the office and luck was with me. The fishing rod was dead-centered in the rectangular hole. I taped some string to the fishing rod, pulled it back up through the hole and the tricky part of snaking the office end of the CAT5 cable was finished.

**Ethernet Jack Did Not Work At First**


In my inventory is a LAN cable tester (see illustration). I will not tell you how old this tester is it but as a hint, it tests both CAT5/CAT65 RJ45-terminated cables as well as the now obsolete 10Base-T LAN cables. The battery-powered half of the cable tester generates signals that light up the four LEDs on the remote half. Each LED represents one of four pairs of wires in the CAT5 /CAT6 cable. Green is good, red is trouble. The RJ45 jack that I purchased had a color-code key to indicate which wire should go to each punch-down terminal. There was no indication as to which number wire (1 through 8) that the terminal represented. One other brand of RJ45 jacks, available at my favorite electrical supply house, does indicate the RJ45 pin numbers. On the brand I had purchased, one series of color codes may have represented the T568A standard, the other code might have been T568B color code standard for a crossover cable application. Regardless, the tester indicated that I had miswired the RJ45 wall jack.

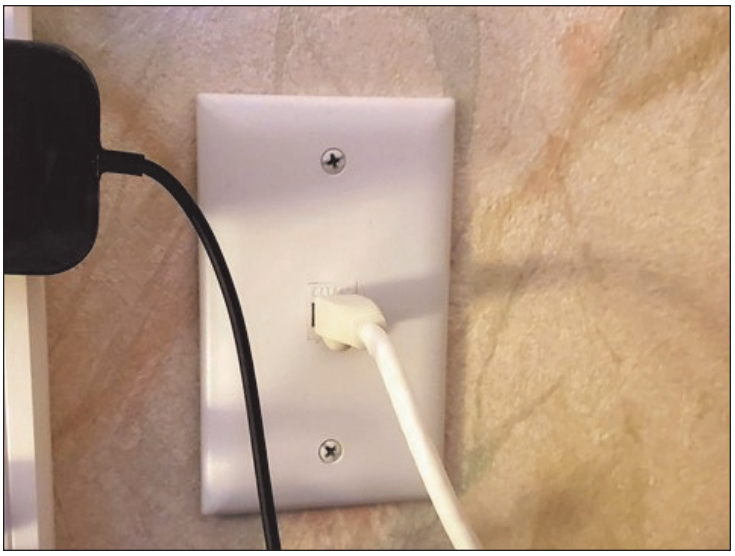



As a test, I cut off the cable from the RJ45 jack and crimped on a RJ45 modular connector. The snaked cable now tested fine. So I cut off the RJ45 connector, stripped the insulation off the cable to which the RJ45 connector had been crimped (see illustration) and used the cut-off RJ45 connector plug to "ring out" the push-down

Wires cont'd .. terminals on the RJ45 jack with a ohm meter. I reconnected the CAT5 cable to the RJ45 jack following the code codes used for the RJ45 modular connector. This time the new cable from the IP switch to the office jack tested ok.

**That Pesky Latching Tab**

My cable modem is located in the attic. The RJ45 connector on the end of the CAT5 cable from the attic that plugged into the IP switch had a broken "latching tab". I had ignored the missing latching tab until the present time. Without the latching tab to secure it, the RJ45 connector would pop out of jack on the back of IP switch without much warning. I attempted to crimp a new RJ45 connector to the bad end of the cable twice but the LAN cable tester did not like the results. Perhaps the cable itself was faulty? Finally, I had a revelation. A new Ethernet cable at a home improvement store costs less than $20 ($35 when I upgraded to CAT6 for increased bandwidth). I was able to snake the replacement cable up to the attic and to the cable modem in 20 minutes. Please see the illustration of the installed RJ45 wall jack.



**Conclusion**

The techniques described are applicable to a variety of low voltage cable snaking applications. With the right tools, a modest amount of patience, some careful measurement, and the right test gear, you can put cables where they are needed and puzzle out connection issues that may arise.

## *Life on the Moon*

There is life on the Moon at least in my flower garden. Those tiny dots on top are real frogs. I did not put them there. It was a photoshot that just happened. 73, Paul, WA3QPX

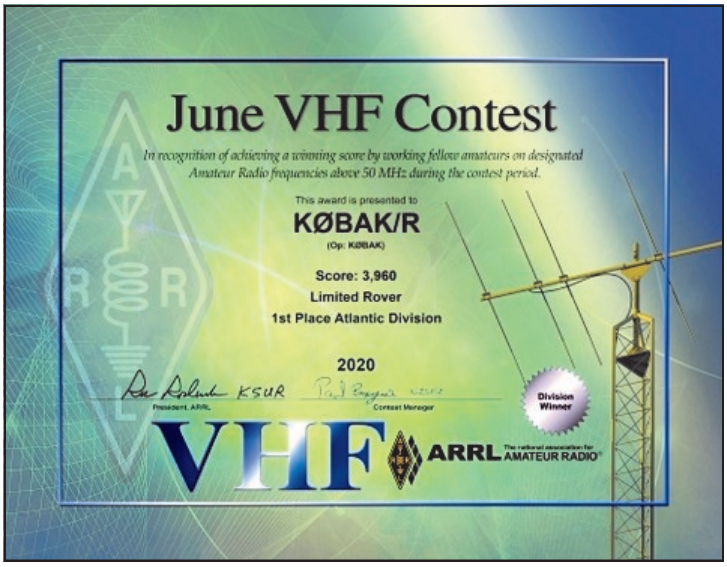
## Deep Space Network Dish Upgrade

The deep space network 70 Meter (230 Ft) dish in Canbberra Australia is being pgraded with n X-Band feed. It's used to communicate with mission equipment beyond Earth orbit (The Voyager 2, Mard and Moon missions) A nice rticle on this super transceiver can be found at https://www.nasa.gov/feature/jpl/nasas-deep-space-station-in-australia-is-getting-an-upgrade
(Tnx K1DS for the link)

## Brief History of the Cavity Magnetron

From World War II radar to microwave popcorn, the cavity magnetron was there. Read about it at: https://spectrum.ieee.org/tech-history/dawn-of-electronics/from-world-war-ii-radar-to-microwave-popcorn-the-cavity-magnetron-was-there —W2BVH

## K0BAK/R First Place Limited Rover, Atlantic Division




***Congrats Pete!***

## Arecibo Radio Telescope Collapse

There's plenty of coverage on the internet of the uncontrolled collapse of the Arecibo Radio Telescope's 900 ton feed structure into the 1000 foot dish reflector. So far the best reports I've seen are:

1. From remote monitor camerashttps://youtu.be/b3AASKr_iHc
2. Brief narrated analysis including slo-mo of the cables parting https://youtu.be/59WQIRvezzI

This instrument should be rebuilt. Once Covid is behind us and the politicians can start focusing on other matters, I'm writing to my Congressman and Senators about funding a rebuild. —W2BVH

## Contrarian (Optimistic) Views on Sunspot Cycle 25

Conventional wisdom is that Cycle 25 will be similar to Cycle 24 (pretty lackluster. But here you can read some much more optimistic predictions: https://www.amateurradio.com/solar-cycle-25s-fast-progress/ and <https://www.spaceweatherlive.com/community/topic/1775-new-research-suggests-solar-cycle-25-could-be-strongest-in-50-years/> —W2BVH

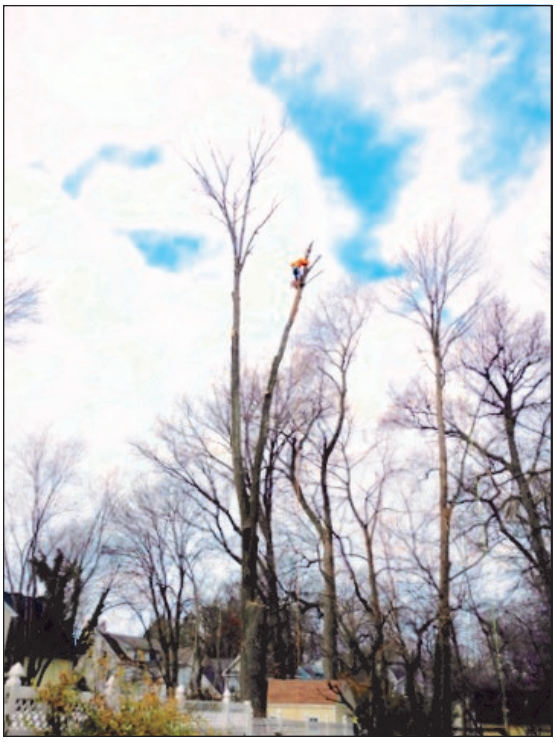
## Video Interview with K2EZ

Andrea, K2EZ/R was interviewed during the first 43 minutes of episode #1 on the YouTube channel "Ham Talk". She did a great presentation on what its like to develop a rover station and how she does long distance contest roving. Find it at https://www.youtube.com/watch?v=M5KItPKJXxs TNX WF3W and K1RZ for the link

## MRF101 and MRF300

NXP semiconductor has some inexpensive LDMOS RF power transistors available in tabbed packages. They go to around 250 MHz and the cost per part is in the $25—$35 range. Very reasonable; if you blow one up it's not a tragedy. The MRF 101 will make around 100 watts and the MRF 300 will make around 300 watts. They come in "mirror image" packaging to make it easier to build push-pull amplifiers. Ham band pallets and pallet kits using these parts are available on eBay, though they're from Russia. Hard to tell from the pictures what the quality is. If someone gets one, please drop a line to Cheese Bits and let us know how it worked out. —W2BVH

Here is an arborist taking down a **dead tree** in my neighbors yard, right on my fence line. I won't go on a tower; I'm scared of heights. But this is truly terrifying. Next time you're "up there" think how much more dangerous things can get! Work safe!! —W2BVH



# *The Wayback Machine*
# In CHEESE BITS, 50 Years Ago

Nibbles from December 1970. Vol. XIII Nr. 12
de K3IUV Bert
(*author's comments in italics*)

"**Our Prez Sez"**. Prez El, **K3JJZ** (*also editor at the time, and our current auctioneer*) reported on the contest preparations "There isn't much time left. The contest is a severe test of man and machine. Can you and your gear take it?" (*Apropos right now. The 2021 test is upon us. Are you ready for new modes, new bands, and all else working*?) He also noted that "The hardest part of my job is getting this column out on time!" (*Probably still true, as Lenny will attest)*!

**Tidbit**. Bert, **K3IUV** (*that's me*), reported on an extract from Electronic News magazine, as follows: "We're watching with interest the possible entry of Japanese Firms into the higher price ($2,000 and up) market. The question Signal One is seeking to answer is whether the Japanese can compete in cost and performance in the top-dollar equipment market." (*We've now seen the answer to that question*.)

**Technical Article** Nice article by Walt**, K3BPP,** titled "Waveguide below cutoff Signal source." Subtitled "The strong and the weak signal you have been looking for to peak your converter." Walt described how to construct such a signal source, using one-pound coffee cans, plus a few other common items. He included the theory, parts list, schematic and all construction details. He finished by noting "If you build one and lend it to a friend, plan to build another one. He probably won't want to return it!" (*Great testimonial. Walt, are you reading this? 50 years later*). (Also— *This technique was used by HP at the time to produce accurate attenuation values in their signal generators — W2BVH).*

**From the Book Rack**. Paul, **K3WEU**'s monthly column discussed the book "Solid State Circuit Design and Operation," by Stanton Prentiss. 288 pages with over 140 illustrations. He gave it an "excellent" report, based on the breadth and depth of material covered. Another TAB book, the hardback edition cost $9.95.

**New Products of Interest to Hams**. This aperiodic column, written by Lynn, **W3NSI.** He described the new Clegg 2-meter FM transmitter / receiver. Crystal controlled transmitter, tunable receiver, 60 watts output. Price $369.95 (*Ouch*). Also, Free Standing Aluminum Towers, from the Universal Manufacturing Company. Attractive pricing with a 30' tower weighing just 38 pounds) for less than $70. (*Try to match that today*!) Lastly, a pocket size VOM from Triplett, for $74. (*Compare that price with the one you can get today from Harbor Freight, for $1*.)

**Calendar**. Next meeting, December 9. The topic will be "Contest Round Up." As usual in December, this will be a Closed Meeting (*members only*), as contest "strategy" will be discussed.

**Membership.** Visitors to the October and November meetings included: **WA3DNL**, Joe; **K2KVT**, Frank; **WA3AQA**, Walt; Mike Sonstein; Steve Schechner; D Schechner; Jeff Berg; Morgan Jones; **WA3AXH**; and **WA2UUV**. (*Several subsequently became members*.)

**2 Meter Activity Report. W2EIF,** Joe, reported a decline in good propagation this month, with very little activity south and west. Conditions on SSB to the northeast remained good. He has had regular contacts with **W1YTW** (Maine), **W1YK** (Massachusetts), and **WA1JTK** (New Hampshire). The Packrat net activity has picked up, with better than 20 check-ins each night.

**January Contest**. The co-chairman, K3BPP and W3CJU, provided a lengthy list of "things to do to get ready." This served as a reminder of all the things you should have done, but didn't. "Get ready for Jan 9-10." (*The same holds true today*.)

**Holiday Greetings**. As usual in December, a page was included expressing holiday greetings from individual members. (*As I recall, these had a nominal cost which went to the club treasury*.)

**Swap Shoppe.** By **W3ZRR**. *(Always nostalgia. Now we use the club reflector.*) Only listing was a "wanted to buy," a 2-meter VFO, by George, **K3GFF**.

**Miscellany.** *Postage for this copy was still a single 6-cent Roosevelt stamp. 7 double sided, 8-½ x 11" sheets). As usual, many "folksy" comments about members, their families, and activities were included in this edition of Cheese Bits. If interested, or for more detail on any of the above items, visit our website (**www.W3CCX.COM**) and read the full issue scanned by **K3IUV** (me), and posted on the website by **W3SO**, our webmaster. Remember, I have also posted the club Officers history, club Membership history, and Packrat Inventory (updated frequently) on the **W3CCX** website. These files are password protected, and only accessible to registered members. Have you registered? I hope you enjoyed reading these bits of nostalgia as much as I did in writing the article. If yes, you might let me know. Thanks to those that did.*

*Thirty,* de **K3IUV** (**K3IUV@ARRL.net**)

# Events

**For inclusion, please direct event notices to the editor.**

**Winterfest - Hamfest -** January 9, 2021. Harrisburg, PA. For details see http://www.w3uu.org. Use good judgment when deciding whether or not to attend in this era of COVID

**January VHF Contest - Contest -** January 16-18, 2021. See http://www.arrl.org/january-vhf for rules and details. Also see the Packrat web page for club specific info. (Info will be posted shortly).

**2M Spring Sprint -Contest–** Monday April 5, 2021, See https://sites.google.com/site/springvhfupsprints/home/2021-information for details.

**222 MHz Spring Sprint -Contest–** Tuesday April 13, 2021, See https://sites.google.com/site/springvhfupsprints/home/2021-information for details.

**432 MHz Spring Sprint -Contest–** Wednesday April 21, 2021, See https://sites.google.com/site/springvhfupsprints/home/2021-information for details.

**Microwave Spring Sprint -Contest–** Saturday May 1, 2021, See https://sites.google.com/site/springvhfupsprints/home/2021-information for details.

**6M Spring Sprint -Contest–** Saturday May 8, 2021, See https://sites.google.com/site/springvhfupsprints/home/2021-information for details.

**June VHF Contest - Contest -** June 12-14, 2021. . See http://www.arrl.org/june-vhf for rules and details.

**Murgas ARC Hamfest & Computerfest - Hamfest - July 4, 2021. Plains PA. http://hamfest.murgasarc.org**

**CQ WW VHF Contest - Contest -** July 17- 18, 2021. Details to follow.

**222 and Up Contest - Contest -** August 7– 8, 2021. Details to follow.

**222 and Up Contest - Contest -** August 7– 8, 2021. Details to follow.

**10 GHz and Up Contest (Round 1) - Contest -** August 14– 15, 2021. Details to follow.

**September VHF Contest - Contest -** September 11-13, 2021. Details to follow.

**10 GHz and Up Contest (Round 2) - Contest -** September 18-19, 2021. Details to follow.

**EME - 2.3 GHz & Up – Wknd 1 - Contest -** September Date TBD

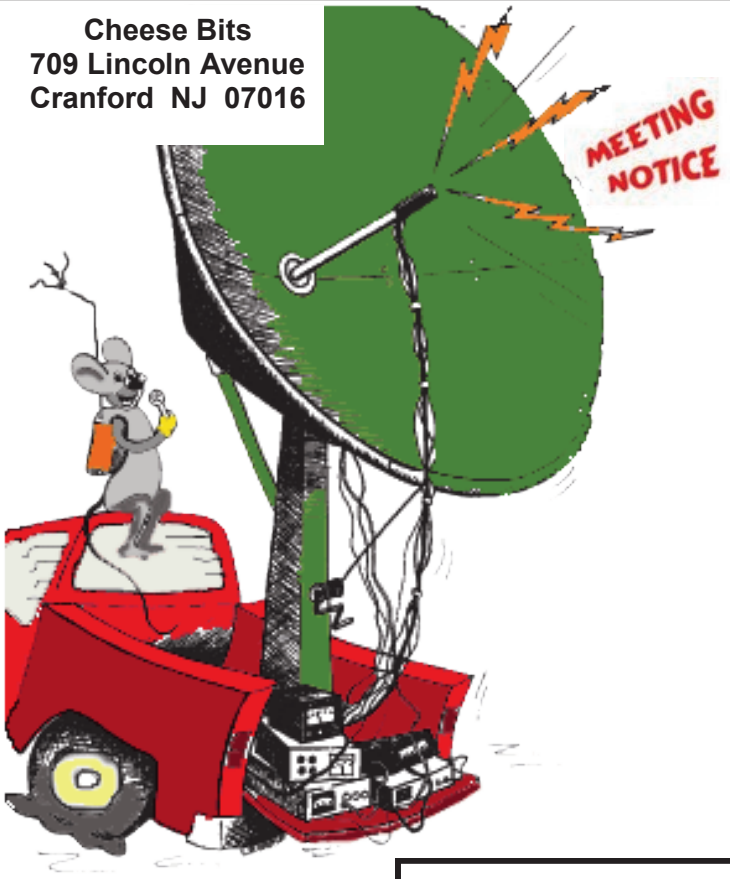
**EME - 50—1296 MHz – Wknd 2 - Contest -** October Date TBD

**EME - 50—1296 MHz – Wknd 3 - Contest -** November Date TBD

This is the coolest collection of stamps I have ever received on a QSL Envelope. This was for a satellite QSO, so the Apollo-Soyuz, Viking, Mariner, Skylab and Pioneer stamps are very appropriate. I have never seen those before.

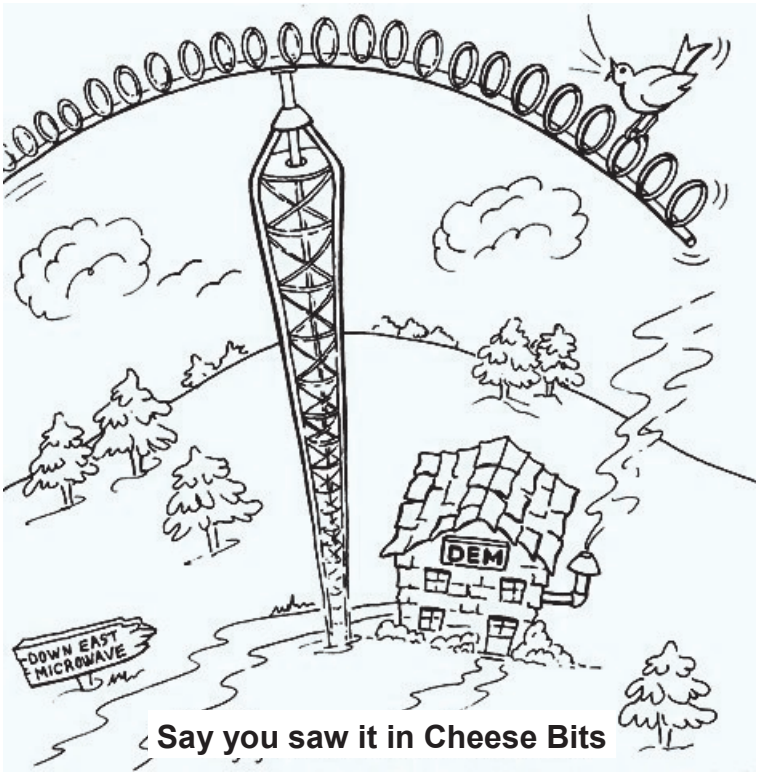
73, Alex KR1ST

Cheese Bits
709 Lincoln Avenue
Cranford NJ 07016




TO:

## MT. AIRY VHF RADIO CLUB, INC.

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