THE SPLITROCK TIMES

The newsletter of the Splitrock Amateur Radio association.

MAY 2023 edition.

Welcome to the tenth edition of the Splitrock newsletter with its new name.

Editor: Fred Wawra W2ABE. [contact W2ABE@arrl.net]

'The Splitrock Times'.

OFFICERS

President Bruce N2XP

Vice Pres. Bob K2RFH

Treasurer Bruce N2OQX

Secretary Tracey KD2ISX

Trustee Bruce N2XP

Member at Large/'assistant to the President', Fred W2ABE.

Important note: VE testing is on the second Monday of every month. Check with [www.arrl.org/vec] for any possible changes. Testing is at the Mount Arlington Civic Center-Registration is at 7pm. Walk-ins are allowed.

Remember if you are a member of ARRL [and you should be] then subscribe to the weekly email update to keep aware of conditions and activities on the bands and League announcements.

The Club Meets every second Tuesday at 7:30 at the Mount Arlington Civic Center [the log cabin building at the west end of Fern Place]. Come join us for fellowship and learning.

The Club's mailing address is: S.A.R.A. PO Box 528 Lake Hopatcong, NJ 07849 You can also contact us at: www.splitrockara.org OR

membership@splitrockara.org

The repeater is on 146.985, the offset is -600, and the PL is 131.8 Hz.

NOTICE: There will be NO zoom at the meetings for the time being due to WIFI issues

Submissions for the newsletter need to be in word format or an email. Reminder: there is a $35.00 fee paid directly to the FCC for new calls, vanity calls, and renewals. There is no FCC charge for upgrades.

Member profile this month:

Darryl Voigt, KD2MNN

THE PRESIDENT'S MESSAGE

To Splitrock Members,

This month we'll be showing a presentation about a component tester TC-1 and testing Transistors.

A big thanks to all the members that helped with the Hamfest. The Hamfest was great, and everything went as planned. The club will be planning another Hamfest for a September or October time frame.

Field Day is coming up in June so start thinking about what you would like to do and have fun.

If anyone has any ideas for topics, videos and guest speakers, send me an email at President@splitrockara.org.

73,

Bruce N2XP

SARA President

ECLECTIC TECHNOLOGY

By: Fred Wawra, W2ABE.

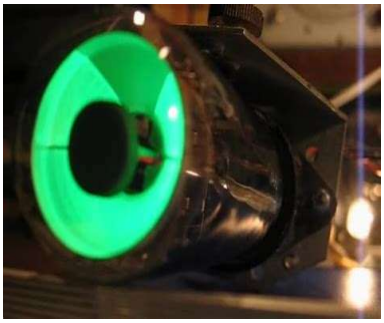
This time Magic Eye Tubes.

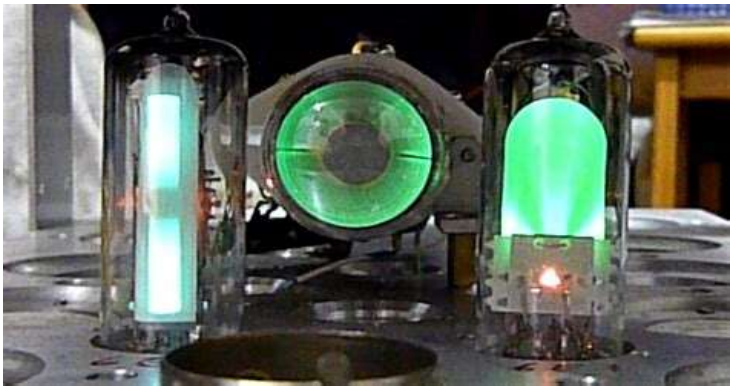
In the early days of electronics 'crystal' radios used a galena crystal with a 'cat's whisker'- (a small wire probing the crystal for a sensitive spot), to rectify the AM signal so it could be heard, what we call demodulated or detected. Early on Edison discovered his 'Edison Effect' where current flow was detected when a voltage was applied between the filament of the bulb and the plate, but flowed only in the direction going toward the small flat piece of metal called the 'plate' which had been added to a light bulb. This pure experimentation led to using tubes as rectifiers to detect a radio signal.

After that, a grid was added by De Forest and that led to amplification of signals in radio sets. In that way, tubes were used to receive a radio signal, amplify that signal, or used in test equipment. But there needed to be a cheaper way to indicate tuning or signal strength or to be used as an indicator in the test equipment than the very expensive meter movements available at the time. This led to the invention of the famous 6E5 tube. The tube was invented by Allen DuMont in 1935. DuMont was well known for his many innovations in radio and especially television. The 6E5 is a small version of the larger cathode ray tube with a round anode being the plus or positive terminal at the top which was coated with a phosphor which in most cases glowed green when the electrons from the heater cathode were 'boiled off' and flowed towards the positive anode. It is important to note that electrons in a tube flow from the cathode or heater, which is hot and at a negative potential. The cathode thermionically ('boils off') or gives up electrons which flow toward the positive terminal, which by its positive potential, attracts electrons. Simply put, the electrons flow from negative to positive which is different from conventional current flow that we are used to. Back to the 6E5 indicator 'magic eye' tube. In the 6E5 tube the positive plate is called the TARGET, which glows when the tube is in operation. The electrons from the negative cathode or heater flow to the positive target lighting it. The tube's round target is at the top of the tube and glows green when on. Since the target is round the indication is that there is a large angular shadow when no signal is present but closes fully to make the target all green when there is the proper signal. How it works is that there is a DC amplifier triode under the target section which controls the ray control electrode mounted between the cathode and the target. When the control electrode is less positive, the electrons flowing to the target are repelled by the electrostatic field of the control electrode and therefore do not reach the target thereby causing a shadow (where the electrons do not reach) on the target behind the electrode. The angular shadow ranges from 100 degrees when the control electrode is much more negative than the target, to fully closed—no shadow to when the control electrode is at about the same potential as the target. The potential on the control grid is determined by the voltage on the

control grid of the triode section of the tube. The plate of the triode section is connected directly to the control electrode in the cathode ray section of the tube. The DC supply voltage is connected directly to the target/plate of the cathode ray section and a dropping resistor is used between the target/plate and the triode plate. The flow of the triode plate resistor current and the resulting voltage drop determines the potential of the control electrode in the CRT section of the tube. When the control grid in the triode section of the tube is positive, plate current increases causing an increased voltage drop across the resistor that is between the CRT plate and the triode plate. That causes the potential of the control electrode to go down and the shadow angle widens. Making the control grid less positive, lessens the voltage drop across the plate resistor and increases the potential on the control electrode and the shadow on the target diminishes and even closes depending upon the potential applied to the control grid of the triode.

The 6E5 is one type of tube, another is tha6AF6G which had phosphor targets but no DC amplifier. The two targets can be controlled together or separately. In addition, a separate triode can be used with its output connected to the 6E5 input grid to provide up to a 180-degree shadow opening!





Above are pictured 6E5 tubes along with the bar graph type EM84, the side view European type and a top view mica screen type that was used in some Fm receivers.

As pictured above, there are other 'more modern' electron ray indicator tubes such as the EM84 which has two 'bars' of light that close a shadow between them or fully close. Another was a small miniature tube that had the target facing out the side. These last two tubes were used in more modern equipment such as tube type tape recorders and audio equipment. The electronics were basically the same. Some of the early tube types had the target phosphor on a mica screen and you saw the glow from the other side facing out the top of the tube. As time progressed and meters became cheaper, the 'magic eye' tubes were replaced by meters large and small. A word of caution, if you are going to experiment with vacuum tube technology, keep in mind that you are dealing with high lethal voltages. As of late someone has come up with an LED solid state replacement that looks like a 6E5, but it is at this point they are a poor rendition of the venerable vacuum tube. Speaking of tubes, the are some small and simple tube audio preamplifiers using the new 6J1 and others up to full blown tube audio systems. Tube equipment produces a more pleasing sound due to the resultant harmonics involved with tube equipment versus solid state. I use these small preamps to warm up the sound of various audio systems that I have in use. If you are going to experiment with tubes, no high voltage transformer is needed. What you need to do is to make a voltage multiplier circuit. Some multiplier circuits have a 6VDC input with over 120 volts out for the tubes! Just for fun you can find a tube manual from the 50's to get the information needed for experimentation. Unfortunately, with things becoming so small and specialized we as hams build very little equipment saving small microcomputers. In a past QST there was an article on how to build a tube experimentation breadboard. What it was a breadboard with various tube sockets mounted onto or next to it with an added power supply for the high voltage. Have fun and experiment or at least do some reading on the old stuff.

Fred Wawra, W2ABE, 73.

Do not forget the swap n'shop/tech net on the repeater at 8pm on Sunday nights!

MEMBER PROFILE

Darryl Voight, KD2MNN

I earned my ham radio Technician license in 2016 after a friend and I wondered "How would we communicate if cell service was interrupted?" I was living in Rockaway, NJ at the time and I joined Splitrock Amateur Radio Association (SARA). I bought an HT & then a dual band mobile radio and learned to program them using CHIRP. I spent my time on local repeaters and participated in SARA Winter & Summer Field Days. I also tried out Echolink and made contacts there too. After moving to Pequannock in 2017, I didn't do much ham radio the next few years. My "Friend" above (who retired a few years ago and moved to Pennsylvania) finally got his Tech, General & Extra all in 2020 during the pandemic, which finally motivated me to upgrade to General and Extra in 2021. That really opened my ears to HF! I also find quite a few Hams are/were electrical engineers! So in hindsight, I've come full circle from my active duty Air Force Electrical Engineering days.

I think my personal interest in learning about Ham Radio goes further back, because I originally earned my BS degree in Electrical Engineering from Bucknell University in 1985. During college I joined the US Air Force to help pay for college. After graduation, my first assignment was to Hanscom Air Force Base (AFB), MA in Sept 1985. My first job was software development manager for the Ground Wave Emergency Network (GWEN), which was a LF command & control system for US strategic nuclear assets before, during and after a nuclear war. I separated from active duty in 1991, and switched careers and went on to earn my Doctorate degree in Optometry in 1995. I continued my military service in the US Air Force Reserves including 17 years as Chief Optometrist at McGuire AFB, NJ until I retired in 2013 after 29 years of service at the Rank of Lt Col. Since 1997 I've owned my own private Optometric practice in Wayne, NJ.

In hindsight, back in 2017 I wish I'd continued to improve my Tech privileges more to try operating on 6M & 10M. There was certainly an opportunity for me to advance my skills in HF SSB/Phone communication as well as digital

communication even with just a Tech license. But it wasn't until after I earned my General & Extra that I started looking for an HF radio. In May 2022 I bought my first complete used HF setup (from a SARA member – Pete Demas W2PJ) consisting of a Kenwood TS-50S, MFJ 949E Tuner, and an Outbacker Perth Vertical antenna, which I've setup portable in my physical QTH and made contacts, as well as during Field Day June 2022 with SARA. Then as my interest and excitement grew, in Aug 2022 I bought a used ICOM IC-718 along with a SignaLink box, and added a new Wolf River Coil (WRC) Antenna. In addition, I now have a Hustler Mag Mount along with an RM-40 and RM-20 resonator antennas for my car.

Starting in the Fall of 2021, I was doing most of my HF operating via RemoteHams.com on my laptop using a station very close to me (15 miles away) in Northern NJ. So while technically I was operating "remote" it felt like my QTH, because I only used this station (even same Grid Square FN20). Since the Fall of 2022, I've been using my own ICOM radio much more at home using a Bioenno battery.

Back in 2022 I had also discovered Parks On the Air (POTA), which is a lot of fun. POTA has a FB page and I see postings all the time from Hams who've been licensed for 30-40-50 years saying how much fun they're having with ham radio again thanks to POTA. I hope to activate my first park at some point in 2023. Along with POTA I'm enjoying trying to achieve the Worked All States (WAS) Award on QRZ (42 of 50). Most recently, I figured out how to run FT8 on my IC-718 using the SignaLink box and my laptop and made my first FT8 contacts in Jan 2023. I'm also interested in learning other modes (eg RTTY, PSK31, FT4, JT65) and logging more DX contacts. Someday (maybe after I retire) I do hope to learn morse code and make CW contacts.

Overall, I give a lot of credit to and have a lot of appreciation for the many members of SARA who have helped me over the years. I've learned so much and had lots of fun during my Field Day experiences and hope all members will try to come out and participate when they can. I would also really enjoy having at least one member volunteer to give a very brief update at each monthly meeting about what they've been doing with ham radio so we can all get more ideas about how to enjoy the hobby.

Incidentally, my "Friend" has gone in a completely different direction from me the past couple years. He joined his local club and got his VE certification and administers VE testing. In addition, he joined ARES and is now the ARES coordinator for

his county. He runs the NETs for ARES and his local club and does most contacts via FT8 and rarely uses SSB for contacts. He uses an ICOM IC-7300 and installed a permanent dipole in his backyard that runs into his house, along with a fixed VHF/UHF vertical on his roof for NETs.

Darryl Voight, KD2MNN

IF you are up early in the morning and want to get on the air there is the 'friendly net' on 7.235 from 7am to 8am 365 days a year. It is a non-political "G' rated net open to all.

There is also the 'Awful Awful Ugly net on 3855, with check ins and rag chewing at 8pm and net starting at 9pm.

VE sessions 2nd Monday each month. Pre-registering required.

SEE YOU AT THE MEETING

Honor Roll of Club Meeting Attendees:

K2GG- SID, N2XP- BRUCE

KD2DWT- DENNIS,

W3CJD - CHRIS DIX

KB2UNZ - ED DONNELLY and RYAN DONNELLY

KD2ZSW - MICHEAL SMITH

N2ELC - GEORGE

N2GPH - JACK KNOTT

KB2AMH - KURT FLEISCHER

KD2MNN - DARRYL VOIGHT

K2RFH - BOB HACKETT

KC2 LTM - JUDITH SHAW

W2ABE - FRED WAWRA

KB2UFF - TOM

KC2CSV - MIKE

KD2ISX - TRACEY

W2MAK - MIKE