Founded 1919

The Old Professor

The Providence Radio Association, Inc. December 2022 Volume CIII, Issue IV

Affiliated 1921

MESSAGE FROM THE PRESIDENT:

CHANGE IS GOOD

DAVE TESSITORE, K1DT

You've all heard me comment on the recent decline of in-person meeting attendance on Tuesday nights. After careful study, I conclude, for the most part, the folks on ZOOM would otherwise not be able to attend the meetings. Web-meetings are actually a blessing for the PRA.

Since the introduction of Web-Meetings in response to COVID, our membership has almost doubled, and overall meeting attendance has almost tripled. Dissemination of information has increased dramatically, as has on-the-air participation in nets and operating events. All Good!

True, there are fewer folks attending our meetings in-person. But that is offset by a dramatic increase in overall meeting attendance thanks to ZOOM. Times have Changed!

Meanwhile, we continue to improve the clubhouse facilities to improve the safety, comfort, and station functionality for all members to enjoy. The goal is to continue to make the Clubhouse more welcoming, and a resource for members to enjoy Amateur Radio beyond Tuesday nights, whether in-person or remotely.

This year we completed the greatest building maintenance project since the foundation was poured. We preformed much needed maintenance to our Log Periodic, the entire tower and all antenna systems. The building's electrical system and equipment RF grounding and transient protection underwent major improvements. The radio equipment has been upgraded and expanded and all our computers have been replaced with brand new machines.

On tap is a bathroom renovation, additional transceivers (especially VHF and UHF), expanded remote capabilities, an additional tower, emergency AC power, and a modern HVAC system.

I am also proposing a permanent simple non-intimidating GOTA station; an operating position for the newcomer or inexperienced ham to get on the air and gain confidence without fear of causing any disruption to our remote or contest operations and set-ups. A basic HF and VHF no-frills stand-alone station. Even better if it were constructed and maintained by its users with some mentoring. Think how fun and educational that will be!

We've all heard the famous movie line, "Build it and they will come." Well, after 100 years, I'm happy to report the PRA continues to be, "Under Construction".

INSIDE THIS ISSUE

FROM THE EDITOR

38% QUARTERLY GROWTH?

TOM GREENWOOD, W1ER

Welcome to the December edition of The Old Professor. Unlike the stock market which has been tank circuiting for the last several months, we are proud to announce that the newsletter has had another successful quarter and we can report a 38 percent quarterly growth. If you had asked me last quarter if that could be possible, I most likely would have said no, BUT … expect the unexpected. We did it again! So how is that possible? Well, let's quickly go over some of the great reading we have in store for you as we begin to prepare for the new year.

Want to understand how your ears operate? Check out the fine article by our resident otolaryngolist Dr. Jim Meltzer who will explain the workings of hearing and some methods to improve how you hear while working the radio.

The Providence Radio Association, Inc.

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Need a primer on test equipment? Setting up your first electronic work bench? In the first installment of our three part article, Dom Mallozzi, N1DM discusses considerations for that first test equipment for your work bench.

Check out the "CLUB NEWS" column to learn about the many club activities and station upgrades that have taken place over the last three months. Our clubhouse and equipment have undergone some significant upgrade and refurbishment in a short period of time.

Relive the club's journey with Princess Elettra Marconi, daughter of the father of radio, Guglielmo Marconi in the "REFLECTIONS" column. Many thanks to Paul DePetrillo, W1PRA for allowing us to reprint his memoirs of that once in a lifetime opportunity.

Finally, just for fun, see if you can find the hidden message. Only a true Amateur Radio geek can. If you find it, let us know. We'll publish the answer in the March newsletter.

73

Tom, W1ER

Editor, The Old Professor

CLUB NEWS:

STATION IMPROVEMENTS

As many of you are aware W3LPL had brought the availability of the ARDC grant program to our attention as a possible source of funds to update our station. After a lot of work by K1DT and the Board of Directors we received a generous grant from Amateur Radio Digital Corporation (ARDC) this year to make improvements to our stations. Let's discuss those projects and what the results were.

The W1OP Collins 237B-1 Log Periodic Prior to Conducting Maintenance

Log Periodic Antenna and the Tower – We budgeted money to inspect and repair this antenna which is the mainstay of W1OP's HF operations. During inspection the professional antenna company we hired (XX Towers) discovered missing hardware, a damaged insulator and an element with damaged mounting. This is in addition to the damaged rear element we knew about.

The other critical issue is that the four steel truss support cables above the beam were found to be damaged and degrading. They have been replaced with new 3/8-inch stainless steel cable. This is incredibly important from a safety point of view with over a ton of metal turning in the wind 80 feet up.

All these problems discovered were corrected on August 30 and 31, the old LP should now give us years of good service well into the future.

KC1XX's assistant Andrew also installed the selsyn to provide directional indication that K1DT had arranged to have rebuilt. While installing the selsyn he discovered that a sprocket gear for the indicator had moved on the shaft which along with some mechanical toler-

Closeup of Rotator and Selsyn

ancing issues had caused the drive chain to rub on a protruding bolt. This is apparently the reason the original chain broke. Andrew remounted the selsyn box with some spacers and the sprocket gear was moved to avoid the chain rubbing against the bolt again. We now can tell from Studios A & B where the antenna is pointed.

In addition, the old unused feedlines on the tower have been removed. This is important as they can be a source of electrical noise which is a problem we do not need to add to up on the hill.

Thanks to NE1Y's donation we have also installed 3 marine grade blocks (pulleys) and lines on the tower side arms at about 70 feet to pull up the multiple wire antennas we use on 80 and 160 among other bands.

220 FM Repeater Antenna – Many members for the past few years had commented that the 220 repeater did not seem to have its previous coverage. The 220 MHz 4 pole Phelps-Dodge antenna that has been up for 35 years at its perch at the top of the tower. When that antenna was taken down for inspection it was discovered that one of the 4 antenna elements had corrosion at the connection to its coax phasing line and the phasing lines had significant corrosion. From a technical point of view this is incredibly bad, it's likely the antenna pattern was heavily distorted and the bad phasing lines were causing attenuation at some of the other element feed points. Luckily as part of the project we purchased a new Comet CA-SUPER22 220 MHz collinear and that was installed at the top of the tower (at 85 feet) and fed with a new 120-foot length of RFS ½ inch feedline replacing the old RG214 that had been in use all these years. Just replacing this transmission line offers about a 2 dB improvement in repeater performance both transmitting and receiving. It appears that many users are reporting incredibly enhanced performance and that the coverage of the repeater has been restored to what it was in the past.

KC1XX Prepares to Update the W1OP/R VHF and UHF Antennas

440 DMR Repeater Antenna – When we installed the 440 DMR repeater in 2020 we threw up an antenna on the roof tripod with the intention of eventually getting a good antenna on top of the tower. Well as part of the

STATION IMPROVEMENTS CONT'D

Wrapping Up Work at W1OP

ARDC grant we installed a professional L-Com HG439U-NM antenna which is a 9 dBi gain 440 collinear at 85 feet and feed it with 120 feet of ½ inch RFS feedline. The performance of the new antenna shows what can be done from W1OP with a good UHF antenna. The increase in range for portables and mobiles is striking. As the only NEDECN DMR repeater in RI, this has made that all digital voice system more available in a significant part of the state and nearby Massachusetts. This is important especially for the talk groups like SKYWARN that support emergency communications throughout New England. For more information about the enhanced DMR coverage, click on the link.

http://w1op.com/W1OPDMRRepeater.htm

Computers – Part of the total project was to replace the older PC's that NE1Y provided for the remote operation with two newer Dell OPTIPLEX 7090 i7 PC's with 512 GB Solid State Drives and 32 GB of RAM. This should enhance operation of both our remote stations and the N3FJP QSO database.

Repeater and Duplexer - Part of the proposed project was to replace the repeater and duplexer with newer equipment. We replaced the duplexer, but unfortunately not the repeater, as the additional cost of the unexpected work required on the log periodic used those funds. Unfortunately, the additional cost of the unexpected work required on the log periodic used those funds. The PRA foundation plans on doing some fundraising and also applying for a grant to do that next year.

Other stuff - During the antenna work at the club Dave K1DT discovered a wiring error in the VHF rotator control cable that prevented it from working correctly. After correcting this mis-wire the VHF array now turns nicely.

Thanks to ARDC for their grant to bring our station and especially the digital modes up to the quality that will serve both the PRA and all the hams in the area for years to come.

CLUB NEWS:

AWARDS BANQUET 2022

On Tuesday, October 4, an old tradition of the Providence Radio Association was resurrected, the awards banquet held at our favorite place to dine, The Atwood Grille.

Congratulations to the following members on your awards and for all the fine services that you have provided to the club and earned you such honors.

NE1Y: The "OPerators Award" for championing the PRAs Digital Mode program, for developing our remote station capabilities, for 91,000+ QSO's and multiple operating awards earned for the club, funding of the club broadband fiber service, and let's not forget the Club website and Facebook page.

W1NZR: The "Radio Sacrifice Award" For years of assistance setting up, providing shelter, supplies, hospitality, and graciously opening "the Bunker" to the PRA for over 40 years of Field Day at Beavertail/Fort Burnside.

W1IUP: The "59 Plus 20dB Award" for unparalleled financial support and equipment contributions for so many or our endeavors throughout the years.

Bob VanHerpe: The "Team Player Award" for many years of extraordinary assistance with Field Day including transporting and storing our equipment, running the mess, helping with set-up and break-down, signs, 'favors', and countless other projects around the clubhouse.

N1ET: The "Prime Contributor Award" for assisting with our computer and IT issues, Remote Station and Digital mode improvements, equipment maintenance, developing the W1OP 5-Band Award software and administering that program, operating contests, being the Official Photographer of the PRA, assisting us at just about every function, task, and operating activity. And learning CW!

W3DRE: The "Rising Star Award" for extraordinary performance at his first Field Day, for championing and developing our new POTA program, and encouraging and Elmering others in POTA.

KZ1K: The "Brick and Mortar Award" for spearheading the siding of the building, and for years of service as our Treasurer.

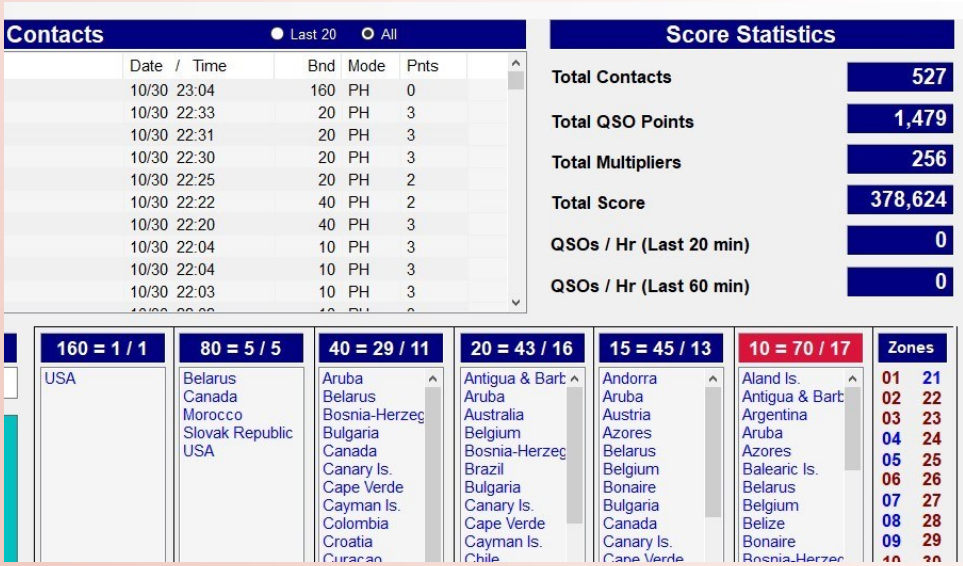
AWARDS BANQUET 2022 CONT'D

N1BBM: The "Chairman of the Board Award" for all the printing, graphic design, house committee, building maintenance, LP rotor control, antenna patch panel to name a few, and never missing a meeting, work party, contest, or Club activity in 50 years.

W1ER: The "Old Professor's Award" for producing the spectacular club newsletter, and operating W1OP in many contests.

CQ WORLDWIDE CONTEST

Congratulations to the participants of team PRA for their efforts in the 2022 CW World Wide contest the weekend of October 30th. Participants included, Vic farmer, NE1Y; Bob Simoneau, N1ET, Dave Steussie, W3DRE, and our good friend, Noah. The team reports that the higher bands were working better than the lower bands. Glad to see that Old Sol has awoken from a very long sleep. Richard San Antonio, K1MD, comments that ***"It's a good time to be a new ham"***.



FIELD DAY 2022 RESULTS

Only hours before sending this out for release, we learned of the results of our Field Day operation.

W1OP placed 4th in New England in 3A, 19th in the Country in 3A. Not our best showing, but still very respectable, and we all had fun.

W1OP (+W1B)

Number of QSOs	2,114
Power multiplier	2
Number of Participants	27
Final Score	7,142
ARRL Section	RI

As for Club Aggregate, we handsomely beat many others with a total score of 15,066 using 5 stations.

Congratulations!

CLUB NEWS:

FLEA MARKET RECAP

Did you attended the New England Hamvention in late August or Near-Fest XXXII in October? These two events were well represented by the PRA. Members of the PRA enjoyed a fine meal at the DX Dinner on Friday evening and listened to famous DXer Joe Reiser, W1JR, recall tales from his seven decades of chasing and being the DX.

At Near-Fest, in true flea market fashion, Friday morning was a soaker. But by mid-afternoon, the clouds had cleared and the sun revealed itself. Saturday was spectacular. Dom, N1DM reports that he barely got 50 yards inside the gate and found a Yaesu Rotator begging for him to take it home. Dom's satellite station will be the beneficiary of this great find.

Attendance is what keeps these events going. Keep your eyes on our calendar and consider joining us for the next big events Spring 2023.

HAMVENTION & NEAR-FEST HONOR ROLL

N1BBM, Gilbert Brown
K1CW, Mike Gibbemeyer
N1DM, Domenic, Mallozzi
K1DS, Rick Rosen
K1DT, Dave Tessitore
W3DRE, Dave Steussie
W1ER, Tom Greenwood
W1EYH, Frank DePetrillo
WA1FOS, Ron Cameron
W1GS, John Good
KZ1K, John Winman
KB1PFD, Orlando Andrade
W1PRA, Paul DePetrillo
AJ1S, Andy Stenberg
NU1X, Kyle Andrade

ON THE AIR:

WHAT DID YOU SAY?

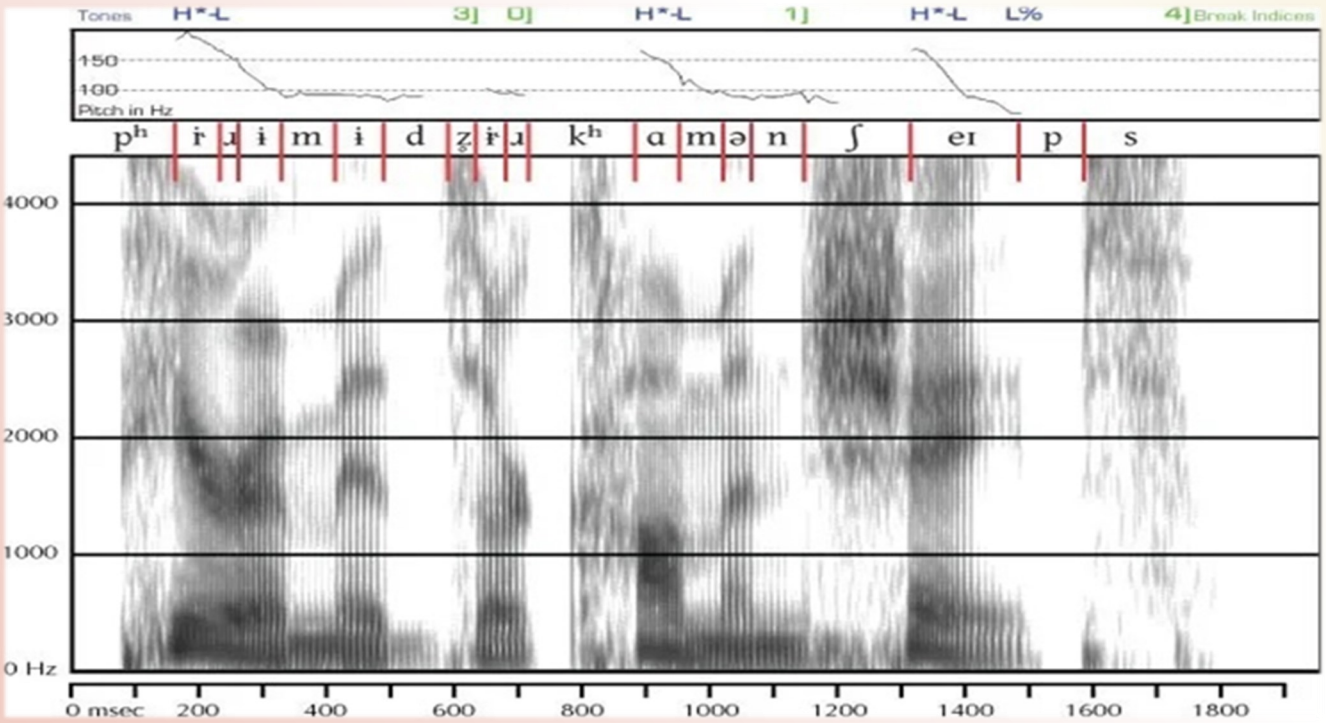
JIM MELTZER, K1TNX

We all know the frustration of trying to pick a single voice out of a background of noise and competing voices. Language production and recognition is a very complicated brain function, utilizing several peripheral mechanisms as well as many areas of the cerebral cortex.

Nature of Speech and Noise—Let us begin by examining the nature of spoken language. The vocal cords, by vibrating in a very complex manner, produce a fundamental frequency along with many harmonics. The average fundamental frequency of a male voice is around 100 Hz and that of a female voice approximately 200 Hz. Audible harmonics of that fundamental frequency are produced up to 3000 or 4000 Hz. The anatomy and configuration of the airway above the vocal cords then causes certain harmonics to be accentuated and others to be repressed. Each vowel sound is made up of three characteristic bands of harmonics which are called formants. These range in frequency from 500 Hz up to around 3000 Hz.

Consonant sounds are used to bracket the vowels and are the most important for understanding words. There are stop consonants which briefly interrupt the flow of air as well as altering the shape of the formants. Other types of consonants are the fricatives, such as the sounds “s”, “f”, and “th”, and these produce a broadband hissing sound of generally high frequency. Finally, there are the nasal consonants, such as “n” and “m”, that bring in the additional resonant cavity of the nose.

A spectrograph, which breaks down the voice into its frequency components versus time, is shown below. In this example a person is saying, *"pyramids have many shapes"*. The pattern of frequencies is not only very complex, but even the same sound, like the letter "i" in the 4th and 6th positions have different spectral



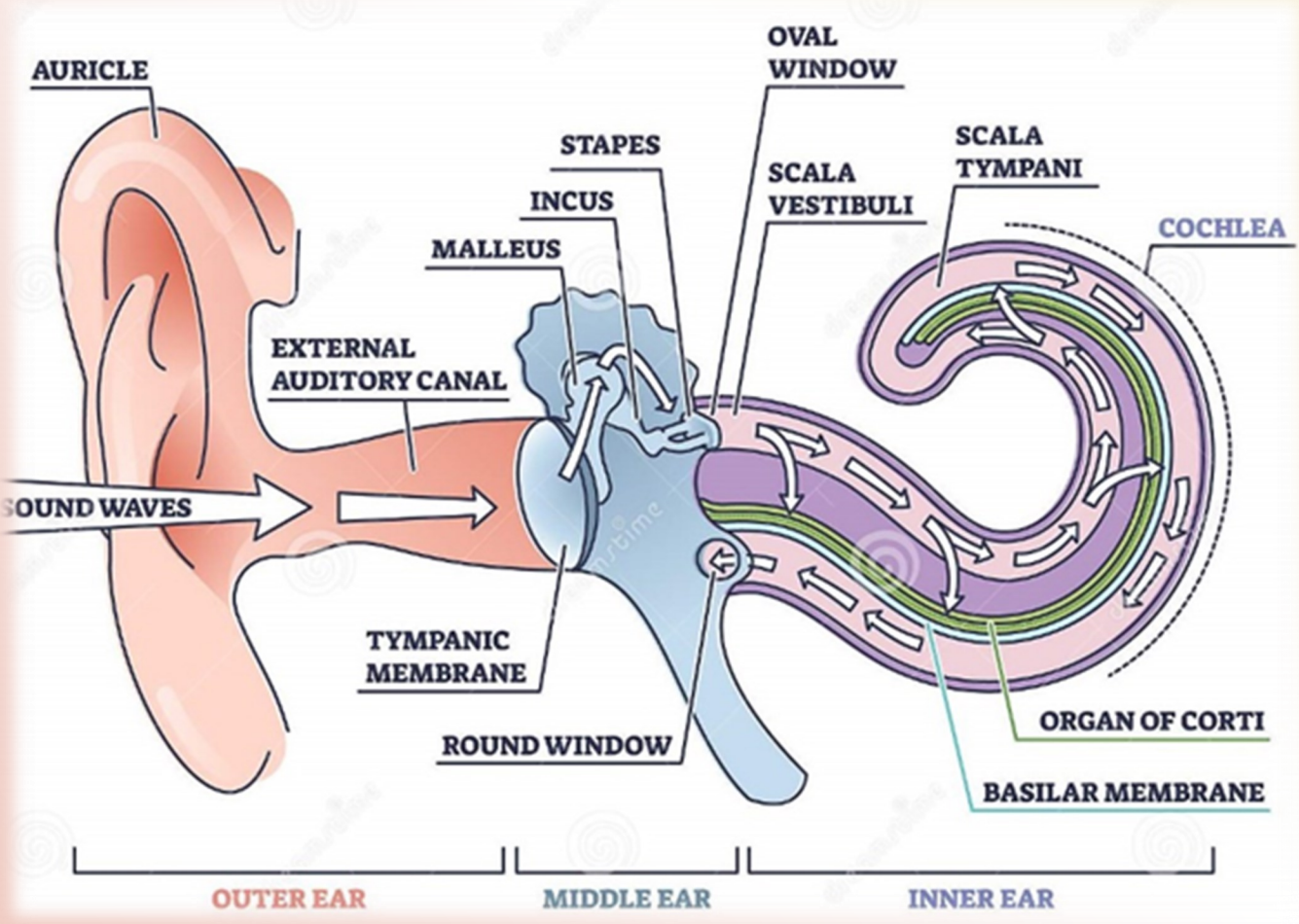
Spectrograph of Human Speech for Certain Letters of the Alphabet

shapes! This fact is due to the shaping effects of the consonants preceding and following the vowel.

It is notable that many of the consonants, which are so important for speech discrimination, tend to be higher frequency and softer sounds. Compounding this fact, hearing loss due to aging (presbycusis) and noise exposure affect the ability to perceive these higher frequency sounds. Noise induced hearing loss characteristically begins with a diminution at 4000 Hz, and with continued exposure, this notch deepens and spreads to affect the perception of high frequencies on either side.

Background noise, which affects the intelligibility of speech, has a very broad spectrum of frequencies. While the frequencies vary with the source, noise is often in the low to mid speech range. One problem I shall discuss a little later is that low frequency sounds can mask higher pitch sounds, further compounding the problem.

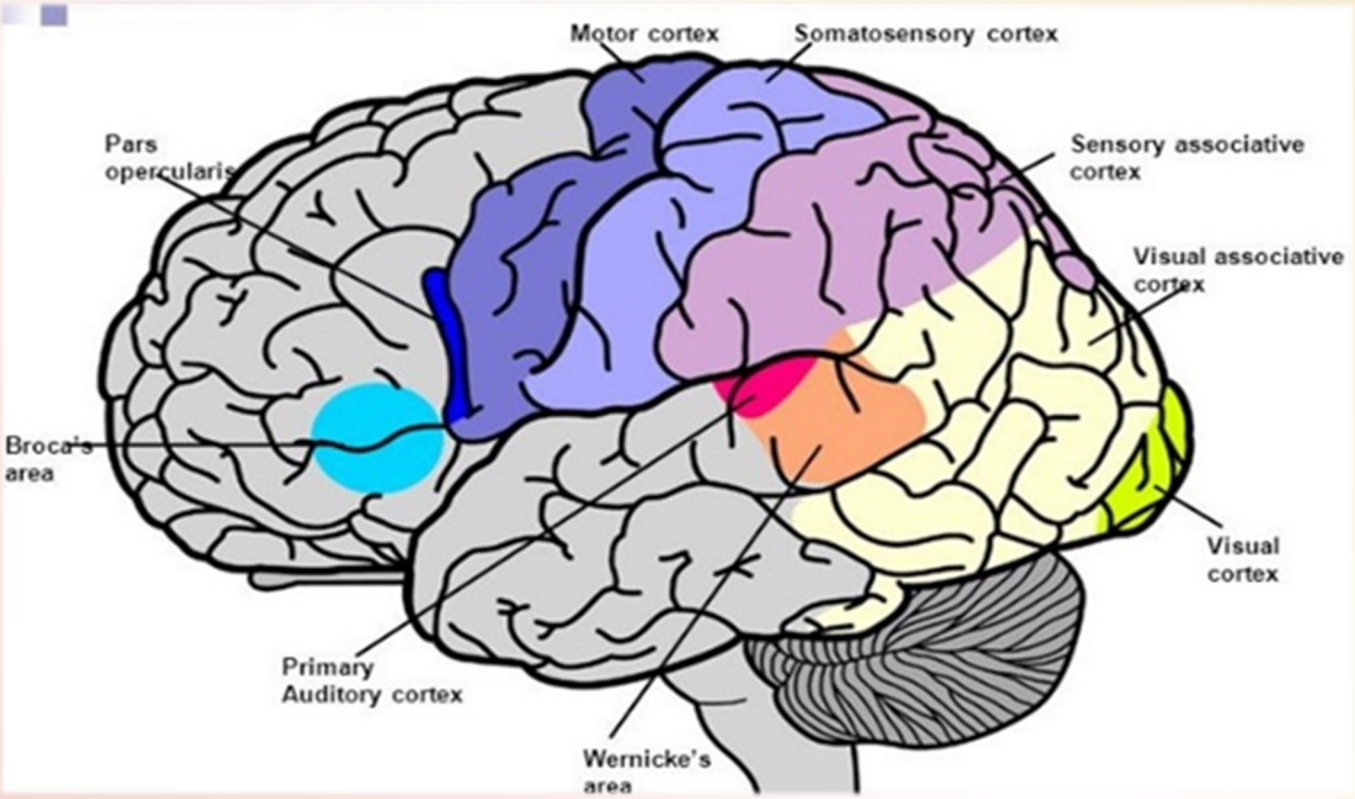
On to the Auditory System—As we learn in grade school, sound and enters the ear canal, strikes the tympanic membrane, and is conveyed to the inner ear by three small bones (malleus, incus and stapes– shown in figure below). Interestingly, these small bones of the



Anatomy of the Human Ear

middle ear are the only bones in the body that are the same size at birth as they are at death.

The actual organ of hearing, located in the inner ear, is known as the cochlea. As seen in the figure, this organ is snail shaped and divided into three fluid-filled compartments. Two of these compartments are divided by a structure known as the basilar membrane. Upon this structure are mounted the sensory cells, known as hair cells, which initiate nerve impulses when distorted by vibration of the basilar membrane. Due to the shape and elasticity of the basilar membrane, sounds of different frequency cause it to vibrate maximally at certain points along its length. The near end responds maximally to the highest pitch sounds while the far end responds to low frequency sounds. The hair cells in these areas of maximum vibration then initiate the nerve impulses which travel up the brain stem to the auditory cortex. Due to the biomechanical properties of the basilar membrane, high intensity lower frequency sounds, which travel its entire length, can prevent the high frequency receptors, at the near end, from responding properly. This phenomenon is one of the prime reasons that makes noise so disruptive to speech understanding.



Parts of the Brain Responsible or Hearing Function

The spatial arrangement of frequencies on the basilar membrane is maintained along the auditory pathway up to the primary auditory cortex (red), which is located in the temporal lobe. Just posterior to it is the secondary auditory cortex which contains Wernicke's area (orange). Early on, it was found that people with lesions in Wernicke's area, though able to hear

sounds, were unable to understand speech. As with most secondary sensory cortexes, it contains memory of previous stimuli (e.g.words) and therefore crucial to understanding language. This information is then passed posteriorly to the parietal lobe (yellow) This lobe functions as an associative area, receiving and sending impulses to many areas, including the other sensory areas and most importantly to the frontal lobe (far left), wherein lie the functions of cognition and recognition. Needless to say, this whole process is extraordinarily complex and poorly understood at present.

A Bit About Hearing Loss—Hearing loss comes in three basic forms. Conductive hearing loss (CHL) is due to some impediment in the transfer of sound from the tympanic membrane to the inner ear. The three main causes of CHL are congenital malformations of the middle ear, infections, and trauma. Some of these can be surgically repaired. Next is sensorineural hearing loss (SNHL), which is the most common. It is caused by damage and deterioration of the sensory hair cells or disruption in the connection of hair cells to the main auditory nerve. As mentioned earlier, the most common causes of SNHL are aging and noise exposure as well as certain ototoxic drugs. This form of hearing loss creates several problems. Since it mainly affects higher pitches, the ability to identify many consonants is impaired. SNHL also causes distortion of sounds and therefore the ability to understand language. Also, there is a phenomenon known as recruitment, wherein as the intensity of sounds passes the person's threshold for hearing, they become uncomfortably loud with little further increase in the sound intensity. Benign tumors on the auditory nerve are uncommon, but they distort sound and speech perception. The final and least common cause of hearing loss and understanding is disruption in the central processing of language.

Hearing Evaluation—The common audiogram measures a person's threshold of hearing at individual frequencies from 250 to 8000Hz. In addition, speech discrimination at suprathreshold levels is measured. One drawback of this traditional testing is that it is performed in a quiet environment. Some patients with ostensibly normal thresholds and apparently good speech discrimination still report difficulties with understanding speech in the presence of noise. Therefore, more sophisticated tests have been developed to test an individual's ability to understand language with background noise. These signal in noise (SIN) tests vary the signal to noise ratio from 30dB down to 0dB. Requiring more sophisticated equipment, many audiologists do not provide this testing.

Hearing Aids—Although hearing aids are often helpful, such devices take time to get used to. The person is suddenly bombarded with sounds that were not previously heard or at much lower levels. This problem is especially true of "low-tech" aids which tend to amplify sounds at all pitches equally, thereby boosting the level of low frequency noise as much as high frequency speech sounds. The newer digital hearing aids, however, can be adjusted to an individual's degree of loss at different narrow bands of frequencies. They also use compression to avoid the abnormal increase in perceived loudness above the person's threshold (recruitment).

Practice, Practice Practice—And so, not surprisingly, one of the bottom lines is that practice and experience play a most significant

role in a person's ability to understand speech in the presence of noise and competing signals. Of considerable usefulness is our ability to recognize one person's voice, which has its own fundamental frequency, harmonic structure, and shape of the upper airway.

LESSON

In recent years, several training programs have been developed, which I have begun to investigate, so that people can practice listening to speech in the presence of noise. The level of background noise can be progressively increased, and the nature of the noise can be changed. The latter may be "babble" of multiple voices or broad-spectrum random noise of different frequencies.

It might also make sense to utilize an audio equalizer to allow a person to boost higher frequencies where they might have a loss in acuity and where many consonants have more of their energy. Of course, a number of companies have developed such devices for amateur radio. Something I will also be looking into further (more will be revealed!)

On the transmit side, increasing the treble and lowering the bass of one's voice might help "punch" through those pile-ups. I'm sure many of you already know that, but it came as a new idea to me!

Anyway, for those who have gotten this far, I thank you!

AN INTRODUCTION TO TEST EQUIPMENT

DOM MALLOZZI, N1DM

It is inevitable at some point you need to fix something or at least make sure everything is working correctly. As all electronics stuff cost money picking what you need for test equipment without breaking the bank is important.

Let's start by talking about the different types of test equipment you may be exposed to in ham radio. What you do in ham radio determines what test equipment you need so we will go from dirt cheap and common to expensive and specialized. What do I mean by this, well if you are just operating HF a DMM, SWR meter and an antenna bridge should be more than enough. Those working on boat anchor (tube) radios will find a frequency counter and VTVM are a worthwhile investment. For those experimenting with frequencies above 148 MHz a Bird watt meter and a nice signal generator are real helpful.

In my opinion the two pieces of test equipment ever ham should own are a good digital multimeter (under $100) and a good SWR/Power meter for the bands they operate (under $250). Noticed I said good and not great. While great is nice, the expensive professional instruments really do not offer much to the ham that they really need. While a $12,000.00 DMM with 8.5 digits of resolution and incredible accuracy is a great instrument it really has little application to ham radio. A $100 three and a half digit handheld DMM is more than adequate for most ham radio applications.

There is an incredible array of test equipment produced to do everything from simple to incredibly complex measurements. At one time Keysight (formerly HP and Agilent) who are one of the largest manufacturers of test equipment for the professional electronics industry had a

300 page catalog the issued annually (now it's all on their internet site). They made an incredibly variety of stuff from a $100.00 handheld DMM to a microwave network analyzers that when loaded with options cost over $250,000.00 each. In my 40 + year professional life in the electronics industry I always seemed to have at least one Keysight piece of test equipment on my work bench.

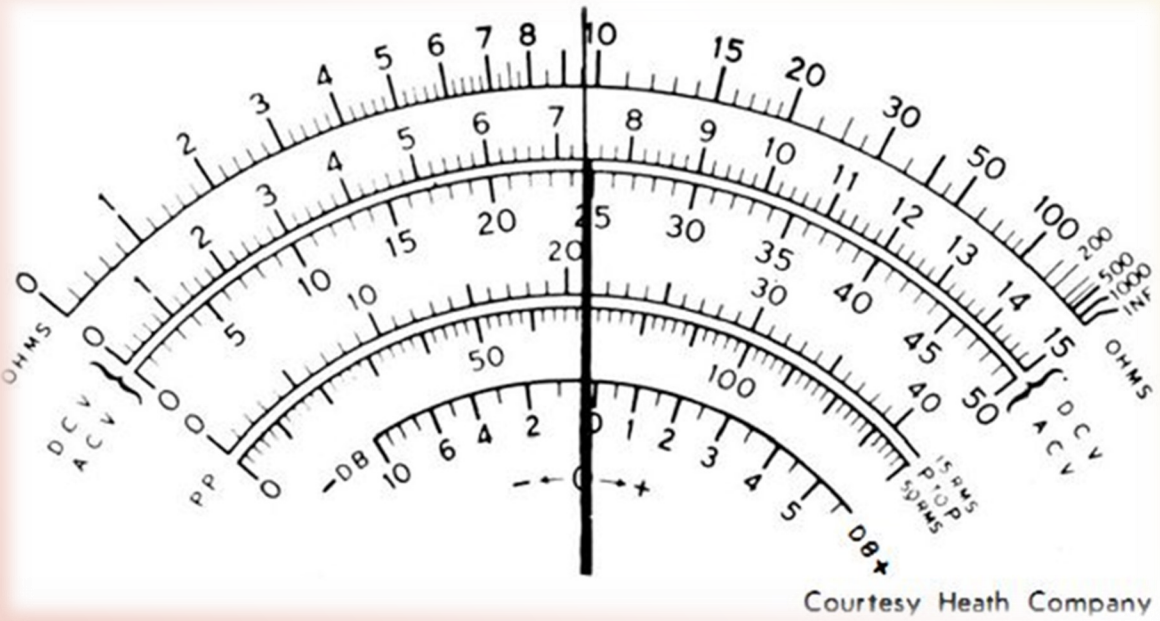
There are some basic things that are common issues with all test equipment.

Accuracy—This is a pretty simple concept to understand, what the meter reads should be as close as possible to the real value. What good is a voltmeter that when you connect it to a car battery reads 36 volts not the 13.8 or so you would expect. This is a major issue when troubleshooting equipment where you are trying determine if the item you are measuring is correct. In most ham applications an accuracy of 5% is what you need. The only exception is frequency counters where you really want the counter to be accurate to at least 10 parts per million (in other words they read within +/- 10 Hz at 1 MHz). That 10 parts per million comes out to 0.001%. A small note for the newcomer when you get a schematic and service manual for a piece of radio equipment it will give nominal values for various points in the circuit. Typically, they can vary +/- 5 % from those shown and not be a - Refers to how close can I read a value. This is a bigger issue with VOM's and VTVM's whose scale is non-linear. Also, analog Bird watt meters use a nonlinear scale.

Look at this picture on the top scale, which is resistance, it is pretty compressed to the right of the arc. This is what we mean by non-linear and therefore the resolution is limited by the compression at the right side of the scale.

With digital instruments it is pretty straight forward. If the meter reads from 0 – 19.99 volts this means it has a 0.01 volt resolution.

Repeatability and Stability—A meter that will not read the same thing twice with the same result is useless. Especially, if you are using it to determine if something has changed. Think about your antenna if it had a SWR of 1.2:1 six months ago and you check it today and it is 2.8:1 than you need to find out what is changing. If your SWR meter is not repeatable the antenna may be just fine. Now a days most SWR



Typical Analog Multimeter Display

meters have more than adequate repeatability.

Range—Obviously, you want to have the instrument you select work over the range of measurements you will use it for. If you buy an antenna bridge, make sure it covers all the bands you want to use.

The electronics business like every other business has its own lexicon and abbreviations so get ready for a flood of disassociated letters.

DMM—The first thing we will discuss and the most useful is a 'DMM' which stands for digital multi meter. DMM's have ranges that typically measure DC volts, AC volts, DC Current and DC resistance. Some have additional functions like AC current and capacitance measurement. Want to know if you correctly installed connectors on your coax cable without a brake or a short, the DMM is the first tool you can grab and get an idea where you stand. Similarly, if your HT is not recharging you can take the DMM and find out if the wall wart charger for the radio is putting out the voltage it should be by its nameplate to charge the HT batteries.

A couple of things that really confuse people is that while the DMM will measure DC resistance it does not measure AC impedance. So, things that have a characteristic RF impedance like 50 ohm coax will not read 50 ohms on a DMM but rather the DC resistive components of the center conductor and shield are what the DMM reads. But to start troubleshooting and work on circuits DMM's are both versatile and cheap. Every ham should own a DMM as it is the most basic yet most useful tool in our arsenal of stuff. The very popular Fluke 77-IV shown below is an example of a more expensive ($350) professional DMM. While a Triplett BBT858L shown below and sold at Home Depot for $27 is more than adequate as a first choice.

VOM—A VOM or volt-ohm meter is an older analog version of the DMM. It uses an old analog style meter with a moving needle with a non-linear scale to provide the readings. They are nice but lack the accuracy of a DMM and usually have less available measurement functions and ranges then a modern DMM. They shine in applications like tuning circuits for a null or a peak. A Simpson 260 is shown below, they are the gold standard of VOM's and many of us still use them. FYI: they have a battery or two in them for the resistance function.

VTVM—One of the issues when working on old radios is you will see reference to VTVM's (which are vacuum tube voltmeters). They are VOM's with a vacuum tube amplifier which enhances their application in some circuits with high impedance. Now a days a good DMM is a better solution (if it has the voltage ranges you need). Now a days there are no manufacturers still making VTVM's but there are zillions of Heathkit VTVM's on sale at flea markets for very

AN INTRODUCTION TO TEST EQUIPMENT
CONT'D

reasonable prices if you want one. A hint once you get it home like VOM's most VTVM's used a battery for the resistance function. Change the battery in the meter or the resistance function will often not work correctly. Also, the VTVM requires a special probe, make sure if you buy one at a flea market you get the probe. Shown below is a Heath IM-28 which is the type I have on my workbench.

SWR/Power Meter—Most modern SWR meters include a calibrated power meter function. These are defined by frequency and power range. So, you can have two identical appearing meters that are quite different. For example, a 1 to 30 MHz power meter may have ranges of 20, 200 and 2000 watts while a VHF/UHF meter may work accurately over a range of 140 to 520 MHz and have 50 and 500 watt power ranges.

Within their specified ranges most of these are relatively accurate (within 10%). Now a days they are also relatively inexpensive. MFJ, Palstar and Daiwa, among others, make fine SWR/power meters at prices that will not attack your budget. The Daiwa CN901HP shown below is available at HRO for about $230.

Look for the March 2023 newsletter where we will discuss some more esoteric instruments.

WC1MA 6M REPEATER QRV

Bruce Fant KA1TZY reports that the WC1MA 6 meter repeater atop Mt Wachusetts in central Massachusetts is back on the air. Output is 53.31 with a PL of 71.9 . The old PL 162.2 will not work take note and change your PL if needed.

The new repeater was donated in memory of Dale Thomas WA1RJC by John W1GPO. The Custom built antenna and tower work was donated by Clark N1PAH. After years of operation, the repeater suffered a lightning strike over a year ago. With Alex AB1FC they started looking at ways to bring it back. On install day, help from some volunteers Mike Girard from MEMA and Joe KC1EGK helped in bringing it back on the air.

Give it a try and Bruce requests reports.

A DAY FOR MARCONI

PAUL DEPETRILLO, W1PRA

[Editor] It is with great honor and pleasure that we bring to you the memoirs of our former President and current Sergeant of Arms, Paul DePetrillo, W1PRA as he tells the story of maybe one of the greatest friends and visitors to the Providence Radio Association, Princess Elettra Marconi, daughter of the father of radio, Guglielmo Marconi.

This book is dedicated to my son Nicholas, my daughters Allyson and Caroline, and my wife LuAnne.

And of course, my beautiful mother Fatima and my father Frank DePetrillo. I will sorely miss them for all my days.

Our journey began at noon on the 18th of January 2003, my brother Frank DePetrillo, W1EYH, and myself, headed for Cape Cod for what turned out to the experience of a lifetime.

An hour and a half into our trip, we arrived at the site of the original Marconi Station where Marconi broadcast his first trans-Atlantic message between the United States and Europe exactly 100 years ago. We were excited as Theodore Roosevelt when in his first wireless message , told His Majesty King Edward VII that Marconi's invention was a "wonderful triumph of scientific research and ingenuity". Although the sea reclaimed the original site years long ago, one could almost smell the ozone and sense of crackle of static that filled the air many years before.

Continuing on our way while experiencing some of the most beautiful Cape Cod winter scenery one can imagine, we visited station WCC, one of the early Marconi sites in Chatham where we enjoyed a video on Marconi's early days as an inventor. We also had the pleasure to see some historic relics, which at one time adorned Marconi's original station.

While driving north, I couldn't help but think about the personal invitations we had received to the big reception that evening, and that we would soon be seeing the honored guest, Princess Elettra Marconi, the youngest daughter of the father of radio, Guglielmo Marconi.

Along the way, we were to meet The Hon. Michele Frattellone and Vincenzo Frattellone, two brothers from Italy with whom I have the pleasure of serving with on the Marconi Committee. The Honorable Michele Frattelone is the President of the New England delegation, Comitato Tricolore of Boston.

The story began in the year 2000 when as the President of the Providence Radio Association, I was asked by Mayor William R. Macera of Johnston, Rhode Island, also a friend of the Princess, if I would like to be a member of the Marconi Committee. He went on to explain that we would erect a monument in Marconi's honor at Rt. 5 Atwood Avenue and Rt. 14 Plainfield Pike in the Thornton section of Johnston, and rename the square to, "Piazza Guglielmo Marconi".

A DAY FOR MARCONI CONT'D

PAUL DEPETRILLO, W1PRA

When I inquired as to who else would be on this committee he replied "well, myself and of course Princess Elettra Marconi". Well, I certainly could not pass this up. I immediately agreed to serve. Shortly thereafter the entire committee was formed to include Princess Elettra Marconi, Mayor William R. Macera, Frank DePetrillo, W1EYH, Hon. Michele Frattellone, Vincenzo Frattellone, Mr. Joseph Muratore, Dr. Vincent Delasandro, and myself.

I finally had the pleasure to actually meet Princess Marconi when she came to America in December of 2001 to dedicate a beautiful brass plaque in honor of her father which now hangs in the Alitalia Terminal at Logan Airport in Boston. The large brass plaque of Marconi was sculpted by our dear friend, artist Henry Zunino.

The Marconi Committee, from left, Arnaldo Abatacola, Paul DePetrillo, The Honorable William Macera, Princess Elettra Marconi, Joseph R. Muratore, and Vincenzo, Frattallone

At the time, my brother Frank and I had our copies of her book "Marconi My Beloved" signed by the author Princess. She wrote a beautiful message for each of us inside the front cover of our books and in her classic regal style as the daughter of the "father of radio", followed our names with our callsigns. Within the first few minutes in her presence, one could clearly sense that she was a warm, wonderful, and very gracious person well deserving of the title "Princess".

Continuing our road trip north, we arrived at the Eastham Coast Guard Station where special event station KM1CC (Kilo-Marconi one-Cape-Cod) was bubbling with activity. Members there marked the centennial with a weeklong special event communicating with enthusiasts the world over, and in space. Providence Radio Association club member Mark W. "Brown" Beezer was one of the visiting operators as KM1CC made over thirteen thousand radio contacts during the special event week. An interesting fact is that a periodical appeared on Block Island (our favorite playground) in 1902 called the Marconi Wireless, and was quite possibly the first newspaper in the world to receive its news by wireless telegraph.

After spending some quality time at the KM1CC station, Frank, W1EYH identified a num-

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PAUL DEPETRILLO, W1PRA

ber of great old rigs (amateur band radios) presently in use at the station. Most of which he recognized and knew all about, and some of which he presently has in his own collection. After meeting some wonderful people and exchanging some great stories, we continued on our way to the Sheraton Four Points Hotel in Eastham where we were to meet up with Dave Tessitore, K1DT, a long time member of the Providence Radio Associatioon, and Paul Stockman, Commodore of the Connimicut Point Yacht Club. Among the notables present were ARISS International Chairman Frank Bauer who works for NASA at the Goddard Space Flight Center in Maryland. At the reception, Mr. Bauer presented Princess Marconi with a QSL card confirming her radio contact earlier that day when she sent "cordial greetings, and good wishes" to ISS Commander Ken Bowersox, KD5JPB, while he was operating NA1SS from the International Space Station.

Receiving the QSL Card from her radio contact with the International Space Station

During the reception, at exactly 1900 hours, a message was broadcast worldwide by President George W. Bush marking the 100th anniversary of Marconi's first transmission. As we sat with Princess Marconi, we could clearly see that she was moved by the President's words honoring her father. At the same time, her son, also name Guglielmo Marconi, was at the family's ancestral home in Bologna, Italy waiting to receive the President's message.

At the reception, I showed the Princess my cellular phone to which I had an internet connection set up with a web cam running in my living room back in Cranston, RI. As the Princess looked into the display of the phone, she saw my daughter Caroline waving to us live, and in living color. I told the Princess that this is just a small example of how her father's dreams of wireless communications had evolved. She responded in amazement, she had not seen this before, it was a proud moment for her.

We then had a wonderful conversation about the monument to her father, which we had erected for him back in Johnston, RI and how our radio club, The Providence Radio Association W1OP, was a trustee of this monu-

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PAUL DEPETRILLO, W1PRA

ment. I promised her that as long as were here on this Earth that her father's monument would be properly maintained. She must have thought this was a sight that she must see before returning to Italy.

The next day I received a call from Mayor William R. Macera confirming that the Princess would be arriving around noon to see the Marconi monument. In the excitement of the moment I knew that I had to convince The Princess to also visit the Providence Radio Association clubhouse.

When the Princess arrived at the site of the monument, we greeted her in true royal fashion. She appeared quite elegant , as she stood with us in the damp January cold. She appeared quite moved by the site of the monument with its pyramid base of blue pearl marble, with a tower antenna mounted on top with a blinking red beacon.

I explained to her how the voice of her father is constantly broadcast to automobile radios tuned to an FM station as they passed by. She stood there is absolute astonishment saying that she had never seen anything so wonderful. We stood there for a moment , arm in arm in twenty-degree weather as I pointed out both of our names on the side of the monument, which lists the Marconi Committee members. She responded by saying how beautiful our names looked carved into the blue marble of this wonderful tribute to her father and that she would never forget this moment. Nor will I.

I was aware that the Princess has to be back in Boston by 2:30 PM. I thought that if a trip to the PRA clubhouse were going to happen, it would have to be very soon. I took that opportunity to ask her if she could make the trip to the clubhouse which was only two miles away. As the people in her group were pointing to their watches, she turned to me and said, "Paul, I am with you. Where you go, I go.". She definitely has that giving quality that make sone feel very special.

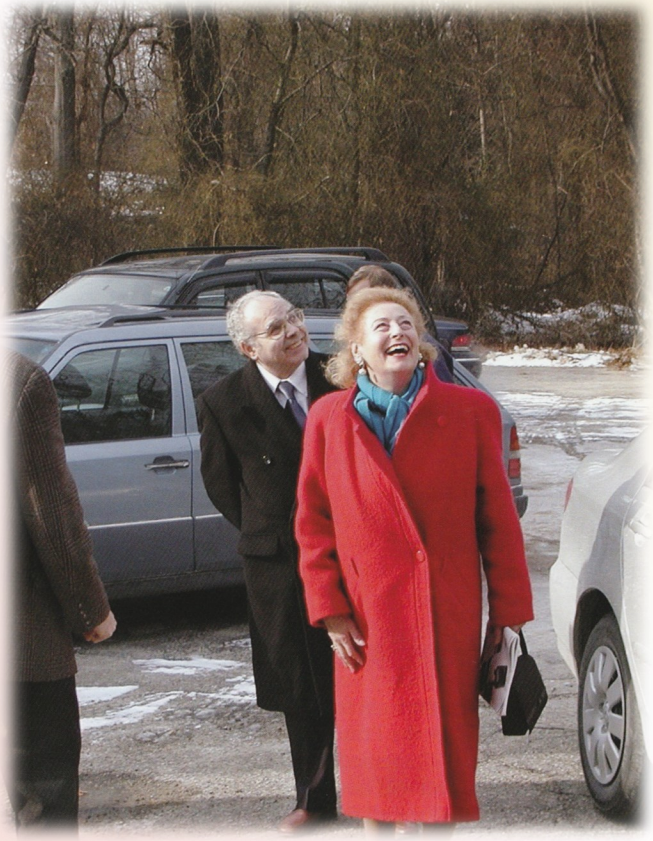
The caravan had the look and feel of a royal procession as we made our way to the Providence Radio Association (PRA) clubhouse. Members including Dave Tessitore K1DT, Dave Smith WA1UWU, John Winman KZ1K, and Bob Mancini K1HGC were on hand to crank up the heat and turn on the station FT-1000MKV and amplifier in anticipation of the arrival of our royal guest. They also alerted the Marconi Station KM1CC on Cape Cod to remain on standby on 7.250 MHz at 1800 hours GMT.

I kept the club informed as to our route position via the club 223.980 MHz repeater frequency. As the procession headed toward the clubhouse, I called out the name of each street on the route so they would be aware of our arrival. As we turned down the driveway to the clubhouse, the members were already outside awaiting the Princess' arrival.

As I opened the car door for her, she stepped out into the freezing cold and gazed up in amazement at our very impressive Collins 237B-1 log periodic antenna looming huge eighty feet over the clubhouse, which was at the time pointing east towards Italy. In her soft, high-pitched voice she said "My Father Lives here". We were all captured by the moment.

A DAY FOR MARCONI CONT'D

PAUL DEPETRILLO, W1PRA



Gazing at the huge Log Periodic Antenna above the PRA, The Princess whispers "My Father Lives Here"

Inside the PRA clubhouse, Tess, K1DT made contact with KM1CC Station on Cape Cod, who was standing by for an important message. We can only imagine their surprise when the message they received was from Princess Elettra Marconi making contact from the Providence Radio Association W1OP. Lots of pictures were taken as the Princess skillfully handled our HF rig like a pro and completed the historic contact with the KM1CC station and proceeded to log the call sign into the club's log book. This was a historic entry in the club's log book to say the least.

While this noteworthy radio contact was in progress, PRA club member Roland Daignault, N1JOY was at his home station in Westport, Mass. Hosting the VHF contest with Dave Neal, W2DAN. They dropped everything to digitally record the entire conversation between princess Marconi at W1OP in Johnston, RI and KM1CC on Cape Cod, MA. This recording will be a great addition to the digital slide show, which is being assembled at this writing.

PRA club member Paul Gosselin, N1RHS was somewhere over the Atlantic on his way back from France when the events were taking place at the club. We were sorry he had to miss the Princess' visit.

By now the day was passing, though we

The Princess transmitting her message to the Marconi Station in Wellfleet, MA from the Providence Radio Assn.

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PAUL DEPETRILLO, W1PRA

The Princess, upon becoming the Honorary President For Life of the Providence Radio Association

did not want it to end. We thanked the Princess for gracing our clubhouse with her presence and presented her with some small gifts such as our classic PRA pin (she is an avid pin collector) and other mementos from the PRA. In return, she signed some of our Marconi memorabilia and tirelessly posed for more pictures with all of our club members. From what I have seen her accomplish in just the last two days, she has shown herself to be a woman of great strength and nobility, and The Providence Radio Association is proud to have hosted her even for a short time.

At this time I kindly asked the Princess to sit down at the head table in the Presidents chair, and with one bang of the gavel, I bestowed upon her the title of "Honorary President for Life of the Providence Radio Association". In return she bestowed upon us the title of "Marconista" a term reserved for the elite in Italian Amateur radio. She reminds us that she comes to America every year and that she will not forget the Providence Radio Association or its members. As you can imagine this was quite a moment for all of us at the PRA, and speaking for the membership at large, we couldn't have been more appreciative.

When we consider the future historic value of this material, our greatest hope is that it will encourage young people to become

LuAnne, Allyson, and Myself with Princess Elettra Marconi at Piazza Marconi, Johnston, RI

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PAUL DEPETRILLO, W1PRA

more involved in the hobby and to see the immense value in Amateur Radio. It certainly offers the opportunity of connecting with people and making friends around the world. My own son Nicholas DePetrillo, N1CKD, a computer science major at the University of Rhode Island and Amateur Radio operator, agrees that the Amateur Radio community needs to grow and become stronger. He feels that young people today are "more into computers". This may be true but I thnk they are starting to see the wave of activity in Amateur Radio that includes the use of computers in fact adds a greater visual effect that makes the hobby more interesting than ever. Participation in the art of Amateur Radio certainly builds character and says something about young people on the right track.

As it came time for the Princess to leave, I wondered when we would see her again. It all seemed surreal, as if a portal from a time long past had opened and was now about to close. She continued to wave to us and throw kisses all the way down the driveway until she was out of sight.

Princess Elettra Marconi left us all with the feeling that we were certainly in the presence of someone very special, someone who would not forget who we are or what we stand for. I told her that we could stay in touch, and I will try to maintain contact with her at least a couple times a year.

I must say, having Princess Elettra Marconi present at the PRA clubhouse, was like seeing Guglielmo Marconi himself working "the old dog X-ray" (DX) in Studio A.

Paul R. DePetrillo, W1PRA, President

Providence Radio Association, W1OP

HAPPENINGS:

Congratulations to new PRA members Bill Bliss, W1WBB, Kyle Andrade, NU1X and Orlando Andrade, KB1PFD . Bill took his oath on August 24, 2021 and Kyle and Orlando took their oaths on October 11, 2022. Welcome to the club and remember "once a member, always a member".

Congratulations to PRA member Rick Rosen, K1DS on winning the door prize at the New England Ham Exposition in August.

It is with deep regret that we pass along the news of the passing of PRA member Joseph M. Sarandrea, Jr. on October 12, 2022 at his home in Johnston.

It is also with deep regret that we pass along the news of the passing of Mary Mallozzi, mother of our club secretary Domenic Mallozzi, N1DM on November 3, 2022.

Want to help the club? Consider renewing your ARRL Membership through the PRA. For each renewal, the club get $5. For each new ARRL membership processed by the club, the club get $15. Not a member of the ARRL? Why not? The ARRL is your representative in all matters pertaining to amateur radio. In addition, each month you get the great QST magazine, the league's premier source of technical articles and information. Need to know more why you should be a member of the league, check out the ARRL website at the link below.

https://www.arrl.org/about-arrl?gclid=EAIaIQobChMIybDsoqqg-wIVlozICh3WcwaxEAAYASAAEgLhEfD_BwE

Contact our club treasurer , John Winamn, KZ1K for more information on how to process your league membership through the PRA.

Dues for 2023 will be due soon. Keep your eyes open on email with an announcement from our club secretary, Domenic Mallozzi, N1DM, with next year's dues rates and instructions on how to renew.

Annual elections for club officers will be held on January 10, 2023. Remember, in order to vote you must be an active member with your 2023 dues fully paid.

Our **Happenings** section is the place to list member accomplishments and other short notices pertaining to club members and other items of member interest.

If you think there is an item of interest or event that should be listed in our **Happenings**, please let our Club President know and we will do our best to get it included.

CALENDAR: WINTER 2023

CQ World-Wide, CW 1 Ludlow St	***Nov 26-27***	Multi-Op Entry *http://www.cqww.com/rules.htm*
ARRL 160M Test 1 Ludlow St	***Dec 2-4***	Friday and Saturday Nights *http://www.arrl.org/160-meter*
FT RoundUp 2022 Remote from FL	***Dec 3-4***	Depending on Vic's Schedule *http://www.rttycontesting.com/ft8-roundup/rules/*
ARRL 10 Meter Contest 1 Ludlow St	***Dec 10-11***	W1OP and a few other members from their respective home stations *http://www.arrl.org/10-meter*
Stew Perry Top band Challenge	***Dec 17-18***	Experience the challenge of working top band and score points based upon distance *http://www.kkn.net/stew/*
Christmas Party 1 Ludlow St	***Dec 20***	Traditional Pot Luck
Algonquin Amateur Radio Club Flea Market 25 Union Street, Marlboro, MA	***Feb 18***	Join us for the first official flea market of 2023 followed by lunch *https://www.qsl.net/n1em/*

PRA NET ON DMR

Don't forget that the PRA conducts a weekly net on DMR every Sunday night at 2000 EST/EDT, hosted by the New England Digital Emergency Communications Network (NEDECN) on talk group NETAC1.
All are welcomed to attend.

Our **Calendar** section is the place to list events either sponsored by the PRA or of general interest to the PRA membership and including its participation.

Events take place year round, be it contests, conventions, flea markets, or just casual get togethers.

If you think there is an event that should be listed in our **Calendar**, please let our Club President know as soon as possible and we will do our best to get it included.

Also, don't forget we meet weekly every Tuesday evening on the web. Members should watch your email for meeting announcements.

IN CLOSING:

PLANNED GIVING

DAVE TESSITORE, K1DT

The Required Minimum Distribution, RMD, is an IRS rule which many retirees struggle with. RMD rules apply to all employer sponsored retirement plans, including profit-sharing plans, 401(k) plans, 403(b) plans, 457(b) plans, traditional IRAs, IRA-based plans such as SEPs, SARSEPs, and SIMPLE IRAs, and to Roth 401(k) accounts.

Explained briefly, after a certain age, retirement plan participants must withdraw a required minimum amount annually from their qualified accounts (check with your accountant and tax adviser.) Many run into an issue when forced to withdraw money which they don't need nor have plans for spending, and then adding insult to injury, must pay taxes on these withdrawals.

Gifts to grandchildren, travel, new car, and home remodels are common uses of RMDs. However, Tax-deductible gifts to qualified non-profit organizations and foundations are a key component to reducing one's tax liability (again, consult your accountant and tax advisor.) This is why we receive so many solicitations from non-profits at this time of year.

While I encourage supporting your local food bank, library, and favorite charity, I ask you to also consider a donation to our very own PRA Foundation. As a bona fide IRS 501(c)(3), the PRA Foundation, EIN 88-2092962, will provide you with an official receipt of your contribution to file with your taxes, while using your generous contributions to further our cause.

I hope you will consider including the PRA Foundation as part of your planned giving. It's as simple as writing a check. Feel free to contact me in confidence for further information or with any questions.

Thank you for supporting Amateur Radio.

Dave Tessitore, President

We wish you all a safe and Happy Thanksgiving, a very Merry Christmas, and a Happy Hannukah!

Many thanks to all who contributed for this issue.
It could not be done without you.

This is Your Newsletter !!
Forward your items of interest, short articles, and photos to *W1ER@ARRL.NET*
We will make every effort to include your submission.

73 AND SEE YOU IN MARCH