



PCARA Update



Volume 21, Issue 2 Peekskill/Cortlandt Amateur Radio Association Inc. February 2020

Bright beginning

A few of us started out the new year with an impromptu **New Year's Day Brunch** at Uncle Giuseppe's in Yorktown Heights, NY. It was a very nice way to start the New Year! Who knows, it might become an annual tradition — it's up to you.

Our January membership meeting on January 5th featured our **Annual PCARA Bring and Buy Auction**. The meeting was held at the Town of Cortlandt Community Room (CUE Room) at the Cortlandt Town

Center. The event was attended by 23 folks and brought in a windfall for the club's treasury due to our very generous members. Lou KD2ITZ supplied bags of Icom Swag (Icom bag, T-shirt, hat, and water bottle) that brought in additional funds. A big **THANK YOU** to Charles N2SO who donated a

Yaesu G-800DXA Rotator to the club for use on the PCARA antenna tower/trailer. Your author came home with a very nice pair of Boston Acoustics bookshelf speakers courtesy of Malcolm, NM9J. I also picked up a Sherwood Receiver and Sony 5-Disc CD Player for work, from Mike N2EAB. We would like to express our appreciation to the Town of Cortlandt Recreation Department for use of the CUE Room.

The January **PCARA Breakfast** was held at 9:00 a.m. on Saturday January 18, 2020 at Uncle Giuseppe's in Yorktown Heights, NY. There were 12 members present despite the ominous weather forecast. A **PCARA VE Test Session** followed at 11:00 a.m. at the John C. Hart Memorial Library in Shrub Oak, NY. One candidate was present and passed his Technician test. Thanks to the John C. Hart Memorial Library for permitting us use of the facilities, to Mike W2IG for coordinating the session, and our Volunteer Examiners for their support!

Keep the evening of Monday January 27, 2020 clear for an **Introduction to the μ BITX Transceiver** presented by Todd N2MUZ and Mike N2HTT at the John C. Hart Memorial Library in Shrub Oak, NY at 6:30 p.m. Come out and join us for a fun evening!

Our next **PCARA Breakfast** is scheduled for Saturday February 15, 2020 at 9:00 a.m. at Uncle Giuseppe's



PCARA's January meeting — with Annual Bring and Buy Auction — took place in the CUE Room. [Pic. by KB2CQE]

in Yorktown Heights, NY. Start working up an appetite now.

Our next regularly scheduled Membership Meeting is on Sunday February 2, 2020 at 3:00 p.m. at New York–Presbyterian / Hudson Valley Hospital in Cortlandt Manor, NY. Bring along your suggestions for ideas on ways to celebrate PCARA's 20th Anniversary — **PCARA 20 in 2020!** I look forward to seeing each of you there.

- 73 de Greg, KB2CQE

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Adventures in DXing

- N2KZ

Nau mai ki Aotearoa!

(Welcome to New Zealand)

Travel about 8800 miles southwest of Peekskill and you will find yourself in an oasis known as New Zealand. Hop onto a choice flight on Air New Zealand and you can be there in 21 hours. Take an economy flight and you may be traveling for up to 50 hours. It is a long way away! There is one remarkable alternative. Take a very short walk into your radio shack, turn on your transceiver and call 'CQ Zed L.' You could be there in seconds!



New Zealand is located in the southwest Pacific Ocean, more than 1000 miles from the coast of Australia.

You have to time your visits carefully. New Zealand is usually heard in the dead of night here back in the States. Prime time for contacts is between 0800 and 1200 UTC — 0300 to 0700 Eastern Standard Time — and the target band is 20 meters. In New Zealand this window is from 2100 to 0100 — 9 p.m. to 1 a.m. local time. Make yourself a filter for ZL callsigns at <https://dxwatch.com/> and be patient. Someone may pop up for you to chase.

This is not an easy pursuit! New Zealand is a double-hop to New York. Your signal needs to bounce back to Earth at least once to get here. I originally grew to understand this propagation path when I first became acquainted with shortwave radio back in 1965. Radio Australia was a highly sought after catch for my QSL

Net night

Peekskill/Cortlandt Amateur Radio Association holds a weekly net on the 146.67 MHz W2NYW repeater on Thursdays at 8:00 p.m.

Join net control Karl, N2KZ for news and neighborly information.

card collection. Just before dawn reception was the only time to listen for RA especially on 9580 kHz from their legendary mammoth broadcast facility in Shepparton. In the evening hours in New York, Radio Australia would strain to be heard on high frequencies in the 19 and 16 meter shortwave bands with endless flutter and fading due to multi-hop skip. Reliable reception happened at dawn!

New Zealand is quite similar. Fifty years ago and more, Radio New Zealand's home was 9450 kHz during the same hours of the dawn except their transmissions were (only) 7.5 kilowatts.

Back in January 24, 1990, RNZ upgraded to 100 kilowatts and a new era began. Now I can hear them in stereo in my car via the Internet!



Times change but propagation does not. Amazing things can be heard in the middle of the night if you give it a try! You can listen to RNZ between 0259 and 0458 Eastern Standard Time on 9765 kHz and from 0459 to 0758 EST on 6115 kHz. Their complete schedule can be found at <https://www.rnz.co.nz/international/listen>. Their interval signal, heard right before their broadcasts, is the song of the native bell bird. You can hear them any time you fancy using the Listen Live tab at <https://www.rnz.co.nz/>. Enjoy their quite professional and clean sound. A first-class station indeed!

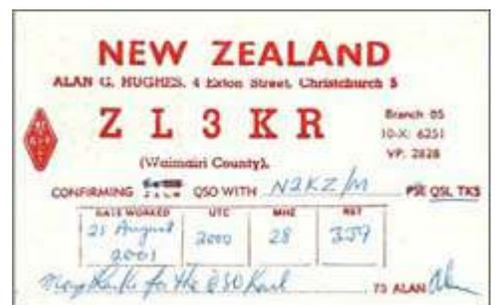
My most memorable QSOs with New Zealand



were long ago at the height of solar cycle 23 back in the year 2001. I worked two stations in New Zealand on ten meter CW mobile

using a straight key on the passenger seat of my car.

My very favorite was with Alan, ZL3KR, while driving through Toledo, Ohio on my way to Michigan. Neither of us could believe



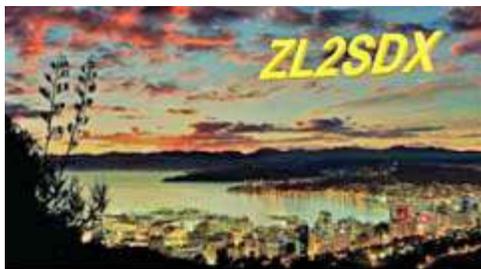
that we were touching base through such extraordinary circumstance! My rig was a second-hand Realistic HTX-100 at 25 watts feeding a mag-mount CB mobile whip. As always, I was operating QRO with a superior high gain antenna (hi! hi!) Ten meters can produce some wonderful magic when it is open! Hint: A great indicator of possible ZL QSOs is the Christchurch VHF DX Group's 50 watt CW beacon on 28.228 MHz signing as ZL3TEN. Listen for it often!

When I think of New Zealand, I immediately think of Darren Hill, ZL2SDX greeting the world from Wellington on the southern tip of North Island on 14.198 MHz USB.

Darren often holds court on or near this frequency greeting the world and has amazed fellow hams far and wide with his Kenwood TS-890 and his massive collection of transceivers, linear amplifiers, phenomenal antennas and accessories. Darren uses a 4 element mono-band 20 meter Yagi on a tall tower. The support beam is 32 feet across! An OM Power linear amplifier (<https://www.om-power.com/products/>) brings his signal to a full legal limit. Listen for him in the middle



Darren, ZL2SDX.



of the night in the U.S.A. Point your beam to the northeast, Darren!

Being an audio aficionado, I appreciate Darren's delight with quality audio and audio processing. Darren

combines a Bock U195 microphone with a Focusrite ISA430 MKII microphone pre-amp channel strip designed by audio legend Rupert Neve. If you love audio... this is a dream and a half. Darren has created a station that truly sounds like a broadcast central. A remarkable voice, indeed!

New Zealand amateur radio clubs are not dissimilar to our ARRL and PCARA. The nationwide organization in New Zealand is called NZART: New Zealand Association of Radio Transmitters. I should explain: 'Radio transmitters' has a different meaning than our usual American interpretation. Getting on the air, you see, makes you a 'radio transmitter' — *not* analogous to a 'radio transceiver' — get it? Those who transmit are

transmitters! NZART is a full-service organization overseeing NZ amateurs and their activities. They publish a bi-monthly magazine 'Break-In' and host affiliate local clubs across the country. Visit their web site at: <http://www.nzart.org.nz> .



Getting on the air in New Zealand can be a rather confusing venture to the uninitiated. It is reminiscent of the days when American hams held separate station and operator's licenses. In New Zealand, you first apply for a GURL (General User Radio License.) The GURL is a registry of all users of electromagnetic spectrum. Think of it like a pre-registration to our FCC's ULS system.

Now that you are 'in the system,' you then sit for an exam to achieve a General Amateur Operator's Certificate (GAOC.) When you have passed, your examiner will arrange your GAOC certificate and ZL call sign. There is only one level of amateur radio license. If you pass the exam, you are ready to go with all operating privileges *provided* that you operate below 5 MHz and above 25 MHz and make 50 contacts in your first three months. Issuance of a call sign is expensive: \$97.00 New Zealand Dollars (about \$67.00 USD.)

One thing you will experience immediately when you visit Zed L: VHF and UHF operations are very, very popular and well developed. Repeaters are installed all over both North and South Islands. Most impressive is the National Repeater System overseen by the Wellington VHF Group. There are about 32 linked repeaters — all on 70 cm — covering nearly all of New Zealand from north to south. There is even an amateur TV repeater in Wellington!



Colonial Knob 2 meter repeater site covers northern Wellington, NZ.

A little geography orientation is in order. New Zealand is sitting well into the far south Pacific Ocean. It sits about 1200 miles from the east coast of Australia — about the same distance as New York City to New Orleans. In between is a lot of deep ocean! In comparison, Honolulu is about twice that far from Los Angeles

— 2,600 miles away. New Zealand is about 1,000 miles from the tip of North Island to the tip of South Island.

From an amateur radio point of view, there seem to be quite a few amateurs on HF and especially on VHF/UHF. Beyond the ZL domain, things can get fairly desolate except for familiar nice long haul skip especially on 20, 15 and 10 meters. A majority of DX QSOs seem to occur on 20 meters into Europe, Russia and the U.K. FT8 is just as popular in ZL as in any other place in the world! America's trusty WWVH Hawaii (with female voice announcements) clearly arrives in New Zealand any time of day on at least one frequency with WWV Colorado (male voice) often heard in the background.

CW in New Zealand is a new experience, as well. You quickly get used to a very different sound at the top of callsigns: 'dah dah dit dit... dit dah dit dit... that's Zed L! You can take a listen for yourself via the remote receivers at <https://www.sdr.hu/>. This site now requires a brief registry to make you accredited for using the over 500 remote receivers you will find there.

[For an introduction to Software Defined Radio and sdr.hu see: 'Adventures in Dxing', *PCARA Update* for June 2018. -Ed.]

My all time favorite New Zealand sdr.hu remote is the ZL1ROT receiver based near Rotorua and Tauranga (in the center of North Island) found at:

<http://zl1mga.zapto.org:8073/> courtesy of the Rotorua

Amateur Radio Club. The medium and short-wave reception here is first rate. To start, try 747 AM NewsTalk ZB, 1107 AM Magic Talk and 1548 AM TAB Trackside Radio, all on medium wave. A nifty guide to all broadcast



stations is on the wonderful Radio Heritage site: <http://www.radioheritage.net/NZRG.asp>. Have fun tuning around! Also worth a visit is the New Zealand Radio DX League with all sorts of useful articles and information: <http://www.radiodx.com>.

Australians refer to New Zealanders as 'The Kiwis across the ditch.' The indigenous Maori people of New Zealand call their country 'Aotearoa' translated as 'The Land of the Long White Cloud' that the Pacific trade winds bring. *Nau mai! Haere mai!* — Welcome! Come along! See if you can work New Zealand! Enjoy!

Until next month...73s and dit dit de N2KZ 'The Old Goat.'



TX Factor #25

The latest edition of "The TX Factor" which appeared at the end of 2019 is **Episode 25**. The very first episode of this U.K. video program was streamed in 2014, so a lot of amateur radio technology has been covered in subsequent episodes.

Subjects contained in the 25th edition include RFinder's B1 Dual Band DMR 4G/LTE phone/transceiver. This Android device developed and demonstrated by Bob W2CYK is a combined cell-phone, network radio and DMR radio. The device includes an up-to-date database of worldwide amateur radio repeaters.

Richard G3CWI of SOTABeams demonstrates the Wolfwave advanced audio processor. This is a binaural audio filter with noise reduction, age-related hearing loss correction and a CW decoder which makes use of the built-in display.

Eric WA6HHQ of Elecraft explains capabilities of the company's latest K4 transceiver, built in California. The K4 is a Direct Sampling SDR transceiver covering 160 – 6 meters with touch-screen *and* dedicated physical buttons for the most-used functions, as well as built-in remote control capability.

Finally Tim Pettis 2E0CXQ demonstrates the emergency radio capabilities of Southampton and Portsmouth City Councils — with Yaesu Fusion repeaters for each city, linked together by off-the-shelf Ubiquiti Networks 5 GHz microwave equipment to avoid dependency on the Internet.



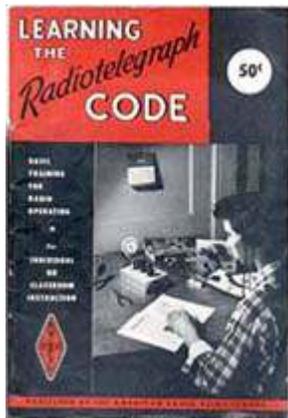
Phil G6DLJ (left) is interviewed by Mike G1IAR on the roof of a 103-storey tower block in Southampton about linking of two Yaesu Fusion repeaters using 5 GHz equipment.

You can find episodes of The TX Factor at the web site: <http://www.txfactor.co.uk/> or search on YouTube for "TX Factor".

Learning the Radiotelegraph Code - N2KZ

Dog-eared manuals

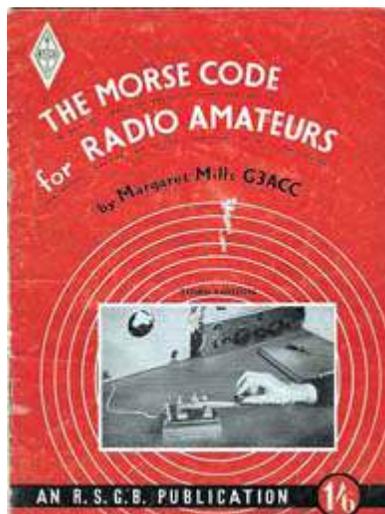
Immediately following the publishing of the January 2020 PCARA Update, Malcolm, NM9J and I started to reminisce about our beloved and dog-eared radio manuals we owned and loved in our youth. We started with the ARRL Handbook, VHF Manual, SSB –and– FM and Repeaters for the Radio Amateur books and finally the ARRL classic *Learning the Radio Telegraph Code*.



Some ARRL publications from 1965-1972.

Malcolm replied that the British RSGB (Radio Society of Great Britain) published a similar primer called *The Morse Code for Radio Amateurs*. Little did we know where that comment would take us.

Malcolm and I were intrigued that the British manual was written by Margaret “Megan” Mills, G3ACC. We knew little or nothing about her! Here was a woman who craftily adapted passages from Shakespeare’s



Third Edition of ‘The Morse Code for Radio Amateurs’ by Margaret Mills, G3ACC.

Macbeth Act 4 to aid in gaining proficiency in Morse. Megan’s clever writing encourages and inspires students to succeed. Her explanatory text and methods are like no other, bringing an otherwise dull task to life. I found myself saying: “Now that is creative!”

Always looking for new material for PCARA Update, I started on a quest to discover what I could about her. One of the first things I found was that someone had already written a beautifully done and comprehensive article all about her! A fellow FISTS, SKCC and NAQCC member and overall CW ambassador, Philip Lazar, K9PL, recently authored a fascinating biography of Margaret Mills. It was the featured front-page article in the September 2019 edition of the *K9YA Telegraph*, an admirable monthly journal devoted to all who love Morse code. With the permission of Philip and *The KY9A Telegraph* we are pleased to re-publish this delight for your reading pleasure:



K9YA Telegraph for Sept 2019.

The Morse Code for Radio Amateurs Margaret Mills, G3ACC

by Philip Cala-Lazar, K9PL

The *K9YA Telegraph* over the past 16 years featured many articles focused on the acquisition and practice of the radiotelegraph code. Every one of those articles was based on the North American model of that art and skill. Margaret Mills, G3ACC, in her *The Morse Code for Radio Amateurs* (written 1947) provides a mid-20th century view of code tuition in the UK. The Radio Society of Great Britain published the 1957 edition, reviewed here. During that era the British Post Office, then the “licence-issuing authority” in the UK, required amateur radio license applicants pass a 12-wpm Morse examination.

Both *The Morse Code for Radio Amateurs* and its counterpart, the ARRL’s *Learning the Radiotelegraph Code*, had their origins in the 1940s, the League’s in the midst of WWII, the RSGB’s in the immediate postwar era.

Margaret Mills, G3ACC

From the introduction to *The Morse Code for Radio Amateurs* we learn Margaret Mills “...was one of the

first women to be commissioned during the 1939-1945 War as a Signals Officer in the Women's Royal Air Force, and the first Englishwoman to be granted an



Margaret Mills, G3ACC

Amateur Radio licence after the war....” Further, “...[she] draws on many years of experience in teaching the Morse Code to produce a series of exercises which are unique in construction.”

The “Around the Shacks” column in the January 1947 issue of *Short Wave News* magazine disclosed that Mar-

garet Mills’, or “Megan—as she is more familiarly called...” journey to licensed amateur radio operator started in 1940 following her enlistment in the Royal Air Force. In 1942 after receiving her officer’s commission and “Whilst on the W.A.A.F. Signal Officer’s Course...” she met some hams who “...encouraged her to take an active interest in Amateur Radio.” Inspired by their enthusiasm she “...was persuaded to sign on the dotted line and become a BRS” (British Receiving Station*) in 1943 as BRS7388. Amateur radio operation in the UK, as in the US, was suspended for the war’s duration.

*Presented here with permission of Bob King, G3ASE, ex BRS4786:

If for some reason (in my case WWII was in progress) you could not apply for a transmitting licence, or for another reason didn’t wish to, but enjoyed listening and reporting on signals heard, you could apply to the RSGB for a BRS number, British Receiving Station. In early 1942 mine was BRS 4786. Transmitting amateurs (and even voice Broadcasting stations) were often pleased to get a BRS QSL card reporting their signals and usually would send a card back giving thanks for the report. Expert BRS listeners became very skilled at reading weak signals and could win awards for various achievements. It was mainly CW in those days for amateurs so BRS were skilled in Morse.

The Booklet

The Morse Code for Radio Amateurs comprises 20 pages—fourteen pages dedicated to Ms. Mills’ text and six pages of advertisements. G3ACC’s one-page, two-column, tutorial is supplemented by one page of Morse basics and operating aids including spacing, alphabet, numerals, procedural signals (punctuation and prosigns) and a table of “Morse Qualifications for Post Office Amateur [Sound] Licence.” (During this period the UK licensing authority offered the Amateur (Sound) Licence, the Amateur [Sound Mobile] Licence

and the Amateur [Television] Licence.)

Though short in length, Ms. Mill’s tutorial is long in wisdom with her emphasis on time honored and proven Morse learning methodologies. Included in her educational canon is the sound over sight method of character recognition, “It is necessary to think of letters as sounds or rhythmic groups of sounds than as printed dots and dashes.”; the efficacy of short, daily practice sessions over infrequent sessions of longer duration; and seeking the support of an Elmer or code practice buddy, “...the assistance of a really skilled operator should be sought.”

The code speed plateau phenomenon is described, “...it is usual for students to remain capable of taking a particular speed for some time without any apparent progress.” Her cure, “...the student should drop all practice for at least three days, preferably a week, after which time usually he will find he can read a higher speed than before.”

Another technique many Morse aspirants, over time, gravitate to is spelled out, “...automatically ‘translate’ into sounds the letters which have been learnt as they are seen on hoardings, in newspapers, etc.”

When copying and an error is made or a letter missed, keep on going, lest you multiply the error.

Copy longhand from the start

don’t print. Speed is essential.

Learn all the characters and numerals and achieve a level of competence before attempting to send.

Correct “keying stance” is important and “a heavy G.P.O. type straight key is recommended.”

Listen to on air code transmissions, “At least a few minutes every day should be spent in listening ‘on the air.’”

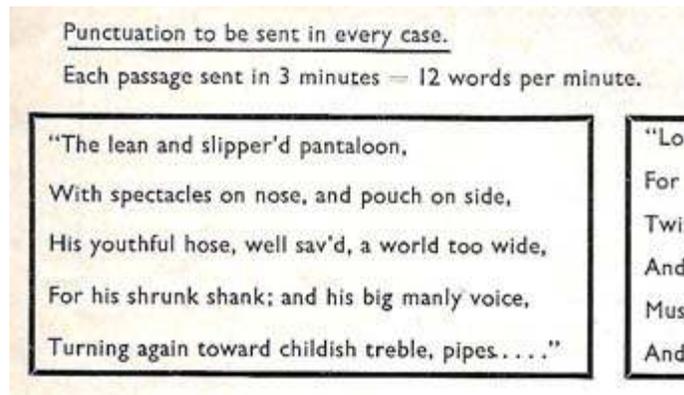
Enlist the assistance of a local radio club.



LESSON SEVEN		
F	X - - - -	Y - - - -
R L Q Z X	A Z Q J I	Q W E R T
Q Z F X Y	G B Y P H	Y U I O P
Y X F Z Q	A F C X O	A S D F G
L R Z Q Y	H B E D W	H J K L Z
R Q Y L R	J I C N E	X C V B N

“The Morse Code for Radio Amateurs” Lesson 7 introduces new letters F, X and Y, with practice based on all the letters learned so far.

The booklet's 12 pages of practice text comprise random letters building on the addition of newly learned letters, single words, short quotations from Shakespeare, numerals and "Abbreviations Commonly Used By Radio Amateurs."



Practice text in "The Morse Code for Radio Amateurs" Lesson 7 is taken from Shakespeare's 'As You Like It'. Don't forget to send those punctuation characters.

The two operators named in four examples of a "Typical QSO" are the author and Louis Varney, G5RV. Q signals are not defined or listed in the text aside from the few included in the sample QSOs. Finally, a simple one-tube code practice oscillator is described and a schematic provided.

The seventh edition (1992) of *The Morse Code for Radio Amateurs* was reviewed in the Autumn 1992 issue of *Morsum Magnificat*. The 1992 edition was revised and content expanded by George Benbow, G6HB. The text grew to 28 pages in "Eight chapters ...and included... a brief review of the advantages of Morse telegraphy; a short history... of Morse; advice on memorising, receiving and sending the code; explanations and descriptions of straight, semi-automatic (bug), and different types of electronic keys; details of both the UK Novices 5 wpm and standard 12 wpm amateur Morse tests."

Endnote

The introduction to the 1957 edition noted, "From time to time the cry is heard that the telegraphic method of communication is nearly 'dead' and that in the near future all communication will be by means of telephony." Since amateur radio's inception to today, prognosticators predicted the end of one operating mode or another with particular emphasis on Morse, *The doomsayers doth protest too much, methinks*.

1957 edition:

<https://archive.org/details/TheMorseCodeForRadioAmateurs/page/n3>

10th Edition:

<https://rsgb.org/main/blog/publications/books-extra/2006/10/18/morse-code-for-radio-amateurs/>

12th Edition:

https://www.rsgbshop.org/acatalog/Online_Catalogue_Morse_Code_12.html

Special thanks to Bob King, G3ASE, ex BRS4786

G3ACC QSL card courtesy K8CX:

<http://hamgallery.com/qsl/>

References

Radio magazines: <https://www.americanradiohistory.com/>

RSGB licensing history:

<https://rsgb.org/main/operating/licensing-novs-visitors/uk-licensing/licensing-history/>

The Belfast Gazette, May 9, 1958

Amateur Radio, Goodhead Publications, Bicester, Oxon, England, 1982

Listening on the Short Waves: 1945 to Today, Jerome S. Berg, McFarland & Company, Inc., 2008, ISBN 978-0-786-3996-6

The Morse Code for Radio Amateurs, Margaret Mills, G3ACC, Radio Society of Great Britain, 1957

Morsum Magnificat, Autumn 1992

Short Wave News (UK), January 1947.

Reprinted with permission of the *K9YA Telegraph*

(<http://www.k9ya.org>).

Interview with Megan

The only interview we could find with Megan was published back in January 1947 by the British publication *Shortwave News* as an installment of a regular column called "Around the Shacks." You will see how Megan's experiences launching into the world of amateur radio are not at all unlike your own!

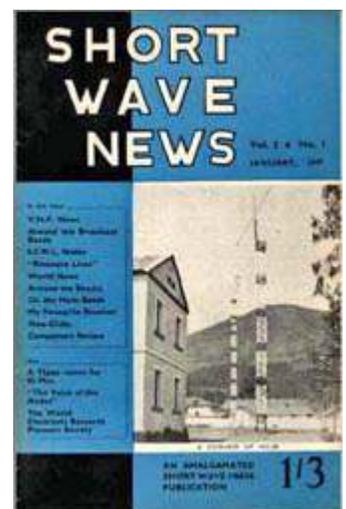
Around the Shacks

No. 7

G3ACC

The female voice is heard frequently enough on the amateur bands these days, but a genuine YL operator is still a rare bird! It is with great pleasure therefore, that we introduce Margaret Mills, G3ACC, who must surely be the first YL to be licenced since the war.

Megan — as she is more familiarly called — first became interested in radio when she joined the



R.A.F. in 1940. After the usual square bashing, she became a Teleprinter Operator. After several months operational duty at Northolt, she was seconded to F.O. until 1942 when she was commissioned. Whilst on the W.A.A.F. Signals Officer's Course, she met a number of



The original 'Around the Shacks' article from Short Wave News, January 1947.

radio enthusiasts who encouraged her to take an active interest in Amateur Radio. In her own words:—
 “At the end of the Course, when finals were over and I was in a weak condition through over-work, I was persuaded to sign on the dotted line and become a BRS. To everyone’s

delight, I was the proud possessor of the number 7388!! This caused quite an amount of amusement. So at the end of 1943, I was a Signals Officer and BRS7388”.

On demobilisation, Megan was appointed Display Supervisor for Express Dairies, which was as she remarked “quite a change”. She missed her radio so much that something had to be done about it. So she borrowed a Hallicrafters SX-16 and with the aid of “a dear little transmitter — just the usual CO-PA,” she got on the air — after the usual formalities of course! Describing her first experiences of being on the air, Megan continues:— “The first time someone came back to my CQ, I could hardly hold the key for excitement; my hands were hot; my feet got cold, and my mind went a complete blank! It was equally exciting when I answered my first CQ call. I’m not sure whether I hoped someone else would get him first or not and when I found I had got him, I was completely at a loss for something to say”!

We think Megan’s description recalls vividly the thrills which so many of us have forgotten once came our way.

Megan is quite an old hand now. The “little CO-PA” has undergone many modifications and she is now active on 3.5, 7, 14 and 28 Mcs. Most of her time is spent on 14 Mcs. She has got well and truly bitten by the “DX bug” and her best so far is PY and LU.

Incidentally, those fortunate to receive Megan’s QSL card will be left in no doubt of her artistic ability,

and if you do QSO, you’ll probably be quite surprised at her “pretty fist,” for all her QSO’s are of necessity on CW at present.



— From Short Wave News – January 1947.

So let us raise our glasses high and toast an inspirational operator for all time: Margaret ‘Megan’ Mills - G3ACC. Her Morse handbook served many generations of beginning hams. I am sure her legacy will live on for many decades to come. I wonder how many countries she eventually worked with her “little CO-PA” from her flat in East Dulwich, London!



Margaret Mills’ former residence today. Her house is the one with the blue door, 59 Upland Road, East Dulwich, London SE22.

Thank you for authoring a gem that has helped many an operator onto the air and adventure!

- Karl, N2KZ

Recycling by request

As we start the New Year, revised Sanitation & Recycling Guides appear from the various towns of Northern Westchester. One of our columnists asked for an explanation of plastic recycling codes — so let's take a look at how they play a role in our local area, along with the arrangements for electronic waste.

Towns that are part of Westchester's Refuse Disposal District (RDD) maintain separate curbside pickup streams for paper/cardboard recycling and for commingled recycling. Both streams are routed to the county's **Material Recovery Facility** (or "Murf") in Yonkers.

Mixed up materials

Commingled recycling may include metal, plastic and glass items. Metal items could be aluminum or 'tin' cans for food and beverages plus aerosol cans. Glass containers might be jars or bottles. Plastic items could include containers marked on the base with one of seven resin identification codes (RICs). The meaning of these codes is as follows:

 PET	Poly(ethylene terephthalate) 'PET' or 'PETE'. Used in soft drink, water and salad dressing bottles.
 HDPE	High-density polyethylene 'HDPE'. Used in milk, juice and water bottles.
 PVC	Poly(vinyl chloride). 'PVC' Used in 'blister' packaging for non-food items.
 LDPE	Low-density polyethylene 'LDPE'. Used in squeeze-bottles for ketchup and plastic bags.
 PP	Polypropylene 'PP'. Used in kitchenware, yogurt containers; margarine tubs.
 PS	Polystyrene 'PS'. Used in yogurt containers, disposable cutlery and plates.
 O	Other 'O'. Often polycarbonate or ABS. Used in beverage bottles.

In the early days of plastics recycling, only codes  PET and  HDPE were acceptable as they could be easily shredded, cleaned and remanufactured into new bottles — or processed into lower-quality materials such as carpet fiber.  PVC and  polystyrene are especially difficult to recycle. PVC can taint other plastic streams — its high content of chlorine can form toxic organochlorine compounds when heated. Polystyrene containers are often contaminated with oil and grease from food. Improved techniques of sorting and processing now allow types 3 – 7 to be separated.

Moving mountains at the 'Murf'

Processing of commingled recycling items at the Daniel P. Thomas **Material Recovery Facility** began in 1992. The building is located across I-87 from Yonkers Home Depot and Stew Leonard's.



Westchester County's Daniel P. Thomas Material Recovery Facility is located alongside I-87 in Yonkers.

Plastic, metal and glass waste is delivered by truck to the "commingled" side of the ground-level tipping floor. The separate "pulp" side of the floor is for paper and cardboard. Front-end loaders pick up the mixed plastic waste and transfer it to a conveyor belt that raises it to a higher level.



Conveyor belt carries commingled waste to an upper floor of the MRF to begin the separation process.

Non-recyclable garbage is pulled out of the stream by hand, ready for transport to the county's waste-to-energy facility in Peekskill. The remainder passes through a **glass breaker** where containers are crushed. The glass shatters into small pieces which fall through a screen ready for re-use. Metal objects are removed next — ferrous metals such as steel or tin-coated cans are lifted off the belt by **magnetic** attraction. Non-ferrous metals such as aluminum are detected by an **eddy current separator** which has a rapidly revolving magnetic rotor. The magnetic field induces circulating electric currents in metal objects. This creates a secondary magnetic field around the item which is repelled by the magnetic field of the rotor, ejecting aluminum cans and

other objects from the stream.

The next stage of the process separates plastic items using **optical sorting** machines. According to Westchester County, following a five month refit in 2011: “high tech optical sorting equipment shoots thousands of laser beams per second through each plastic container to identify the resin type. This allows the county to continue recycling plastic containers



Yogurt container marked with resin code 5, polypropylene.

coded 1 and 2 and also collect and recycle containers coded 3 through 7, including yoghurt containers, plastic cups and take-out food boxes.”

The separation technology probably depends on the reflection spectra for the different plastic types in the near-infrared region — wavelengths of 780 to 2500 nm. Using lasers with different wavelengths as the radiation source and photodiode detectors coupled to a computer-based controller, these systems are able to scan and determine the color, type, shape and position of each item as it passes by. Air jets then eject desired items from the material stream into the correct bin — for example one bin for PET, another for colored-HDPE, another for natural-HDPE. The separated plastics are compacted into bales then sold off to the recyclable market.

A recent modification in 2015 added screening equipment to enhance paper and cardboard recycling.



Wax-paper beverage containers can now be included in commingled recycling.

The new equipment requires less hand-sorting of paper recyclables, allowing MRF personnel to be redeployed to sort beverage containers. Recyclable cartons consist predominantly

of wax-covered cardboard for juice, milk, soup and broth. Refuse Disposal District residents should now include these cartons with their commingled recyclables — not mixed in with their paper and cardboard.

Westchester MRF accepts **plastic boat wrap**, used to protect boats during winter. The material consists of low-density polyethylene and was previously discarded when boats were unwrapped in the spring. Marinas can

now bring used wrap to collection points for processing at the MRF. Recycled LDPE can be employed to manufacture guard rails, park benches, garbage cans etc.

There are a couple of items which must *never* be included in commingled recycling because of problems they cause with the MRF’s equipment. Metal wire clothes hangers must be kept out of the stream as they will be caught in the sorting mechanism, where they can jam the flow and damage equipment. Plastic shopping bags should also be kept out of the commingled stream as they can clog the machinery. Instead they should be returned to stores that provided them. Single-use plastic bags will be banned in New York State from March 2020 — with counties and cities able to place a 5-cent fee on paper bags.

The Daniel P. Thomas Material Recovery Facility in Yonkers processes around **90 percent** of the county’s collected recyclable material. On average, the facility receives 350 tons of recyclable material per day from the 36 Westchester municipalities that use it. Sales of the recycled material can generate as much as \$5.5 million per year. You can take a video tour here: <https://youtu.be/nLLACg9NOAE> .

Wheeling around

Income from the sale of recyclable products is not the only benefit of Westchester’s MRF in Yonkers. A further saving arises by *diverting* material away from the **Charles Point Resource Recovery Facility**, which imposes a tipping fee. The county’s closed waste-to-energy facility is located at the end of Louisa Street in Peekskill and is operated by Wheelabrator Technologies Inc.



Westchester County’s waste-to-energy facility in Peekskill. (Picture taken from Fleischmann Pier, Charles Point.)

The plant began operation on the east bank of the River Hudson in 1984 and is more than a simple incinerator. On weekdays non-recyclable waste from all over the county arrives in a near-continuous stream of trucks which are weighed before they transport their loads to the tipping floor.

Material is visually inspected before being pushed into the fuel bunker. An overhead crane then transfers the waste to a feed hopper where a hydraulic ram pushes the waste fuel into an integrated boiler/furnace. Over a period of about one hour fuel moves through the boiler's inclined reciprocating metal grate where temperatures reach 1350°C.

Air for the boiler is drawn from the waste storage area by large fans in order to avoid dust and odors reaching outdoors. A non-catalytic reduction system injects urea into the furnace to prevent nitrogen oxide emissions. Hot combustion gases pass over the boiler tubes to create high pressure steam which drives a turbine generator, producing electricity for sale to Con Edison. Steam is also piped to the White Plains Linen laundry across the street. Residual steam is condensed into purified water and returned to the boiler system.

Activated carbon powder is injected into the flue gas that exits the boiler to remove mercury vapor and trace organic compounds. The flue gas then enters a scrubber where lime neutralizes acid gases such as sulfur dioxide and hydrogen chloride. Flue gas is passed through a filter to remove particulates and other pollutants. After additional monitoring, the cleaned flue gas is cooled with water from the Hudson River then released through the smokestack; the white plume that is often visible consists mostly of water vapor.



Another view of the Wheelabrator Resource Recovery Facility. (Pictured here from Lents Cove, Buchanan.)

The ash that results from the combustion process is rich in metals such as iron, steel, copper, and aluminum, which are extracted and sold for recycling. An average of 6,000 tons is recovered each year. The remaining ash, which amounts to 5% of the volume of original waste arriving at the plant, goes into landfills.

Wheelabrator's Peekskill facility can process up to 2,250 tons per day of waste material, generating 60 MW of clean electricity from 700,000 tons of waste per year. You can take an animated video tour of a typical Wheelabrator recovery installation at: <https://youtu.be/QbC6ed3RAAU> .

Electronic waste

Electronic-waste or E-waste has to be recycled separately as it contains materials that can be toxic when incinerated — for example tin/lead solder, cable insulated with PVC, back-lights containing mercury and plastics containing brominated flame retardants.

E-waste can also yield valuable materials such as gold, silver and cobalt. As an example, in Austin, TX Apple has a 33 foot long robot called 'Daisy' that can disassemble 200 old iPhones per hour. Daisy allows 14 minerals to be recovered, including cobalt and lithium.



Daisy devours an iPhone.

New York State law prevents consumers from disposing of specific electronic equipment in landfills, waste-to-energy facilities, or in curbside trash. Instead, this material should be taken to an electronic waste collection site, returned to the manufacturer or returned to the retailer. Examples of equipment that is subject to the law include computers, computer peripherals, televisions and small items such as DVD players.

Individual towns in Northern Westchester have their own drop-off facilities which accept a wide range of electronic waste. This usually includes computers, chargers, printers, phones, answering machines, TVs, video games, cell phones, microwave ovens, radios, speakers, cameras and GPS units. Be sure to clear all **personal data** from digital devices before disposal — especially from computers, tablets, phones, GPS units, streaming video players and cameras.

The **Town of Cortlandt** recently changed its E-waste drop-off location from Roa Hook Road to **Buchanan**. Waste should now be taken to the Department of Public Works at 218 Westchester Avenue, Buchanan. The drop-off point is a shipping container located at the far end of First Street, alongside the baseball field. Drop-off is allowed 7:00 a.m. – 3:30 p.m., Monday to Friday.



Drop off point for Town of Cortlandt residents' electronic waste is this shipping container, behind Buchanan DPW.

The **City of Peekskill** has a similar drop-off point at the Department of City Services' garage, located at the intersection of Louisa Street and South Street. Drop-offs are allowed at Louisa Street on Saturday mornings between 9:00 a.m. and 12 noon.



Peekskill City Services' garage on Louisa Street is the drop-off point for Peekskill residents' E-waste.

The **Town of Yorktown** has its drop-off site at the Refuse and Recycling Department, located at 2279 Crompond Road, behind the Police and Court buildings — which recently lost their steel monopole. During the year 2020, drop-off is allowed from 7:30 a.m. to 2:30 p.m. on Fri Feb 28, Sat Apr 18, Wed Jul 1, Fri Sept 11, Wed Oct 14 and Wed Dec 16. Yorktown also accepts bagged textiles and car tires on these dates.

For other locations, consult your individual town's web site to find drop-off locations and acceptable items. Another possibility is to drop off E-waste at retailers such as Best Buy. Home Depot and Lowe's will accept rechargeable batteries and CFL bulbs.

Westchester County allows drop-off of E-waste year-round at its Household Material Recovery Facility (H-MRF) located at 15 Woods Road, Valhalla, NY. Your visit has to be pre-arranged by phone or on-line, see: <http://environment.westchestergov.com/facilities/h-mrf>.



Westchester Household Material Recovery Facility (H-MRF).

The county also schedules occasional **Household Material Recovery Days** at FDR State Park in Yorktown (usually in September) and at Rye Playland. Keep an eye on the County's web site for the year's schedule.

The three Rs

In 2018, China stopped taking imports of plastic waste, roiling recycling markets around the world. A growing number of countries across South East Asia, including Indonesia and the Philippines, have returned unwanted waste over the past year. Most recently, Malaysia has been returning hundreds of shipping containers of illegally-imported plastic waste to the originating countries.

International concern about discarded plastic polluting the oceans has led to a call for single-use plastic items to be banned and for manufacturers to greatly increase the proportion of recycled material in their packaging.

We should all support and contribute to these worthwhile initiatives. While continuing to classify waste into separate streams, we must also remember the essential motto:

Reduce, Reuse and Recycle.



Reduce waste by only purchasing enough of what you need — whether that be food, clothing, cleaning products or electronic goods.

Reuse unwanted items by taking clothes to Goodwill or the Salvation Army. Bring electronics to a Hamfest table or to the Bring & Buy Auction. Repair faulty items — or take them to the next Repair Café. Refill spring-water bottles from the tap for Field Day. Take your own fabric shopping bags to the store rather

than accepting the store's own single-use bags.

You can also re-purpose everyday items for specialized use — for example fill a large detergent container with water and make it into an antenna counterweight. Use sliced deli-meat containers with snap-on lids for storing small electrical components. Cut the top off a plastic bottle to make a bath for etching



Inexpensive counterweight.

circuit boards. Convert old coaxial cable into braided ground straps by removing the inner insulator and conductor. Use plastic pipe off-cuts as antenna spacers and for open-wire feeder.

Recycle everything else — provided it is accepted by your town or county.

- NM9J

V.E. Test Session – Jan 18

PCARA's first test session of the New Year took place on Saturday January 18, 2020, shortly after the well-attended breakfast at Uncle Giuseppe's Marketplace. Saturday's weather forecast was continuing cold, with snow for the afternoon — so eyes were on the sky as the session began at John C. Hart Memorial Library in Shrub Oak.

Despite the forecast, a good number of Volunteer Examiners joined PCARA's testing team in the Children's Reading Room. There was one candidate — Edward of Mahopac — who was successful in passing the Technician examination. Well done! His new call was granted by the FCC on January 24, 2020 — KD2TIR — Total Internal Reflection?



Amateur Radio tests were supervised by five members of PCARA's Volunteer Examiner team during the January 18 test session at John C. Hart Library.

Thanks to Volunteer Examiners Mike W2IG (Team Liaison), Stan WA2NRV, Larry AC2QH, Lou KD2ITZ and NM9J. Fortunately, the snow held off long enough for everyone to leave the Library before flakes began to fall from the sky.

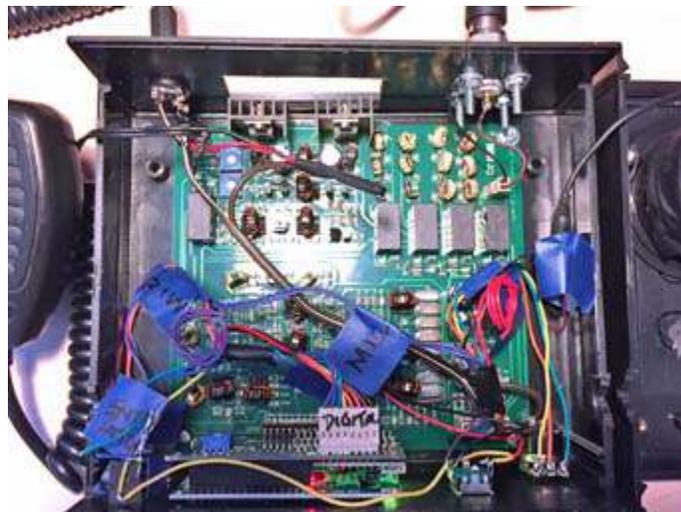
More μ BITX

In the January 2020 issue of *PCARA Update* we reported how Charles N2SO had recommended the μ BITX v6 transceiver kit to Nick KD2SKY. In subsequent e-mail correspondence, Todd N2MUZ



The Arduino-controlled μ BITX v6 is shown installed in HF Signals' laser-cut, powder coated aluminum case.

described his experiences with an earlier version of the μ BITX, as reported in *PCARA Update* for April 2018.



Interior of the μ BITX v3 transceiver as constructed by Todd N2MUZ. [N2MUZ pic.]

Karl N2KZ posted an item about the μ BITX v6 kit on the PCARA Facebook page, resulting in a record number of hits.

Following a suggestion from Lou KD2ITZ, Todd has now prepared a presentation on his experiences, constructing and operating the μ Bitx. Mike N2HTT has built the same kit and made some improvements which will be included in the discussion.

Their combined presentation "Introduction to the BITX Transceiver" takes place on Monday January 27, 2020 starting at 6:30 p.m. Venue is the John C. Hart Memorial Library at 1130 East Main Street in Shrub Oak.

For more information on the μ BITX v6 transceiver, see the HF Signals site: <https://www.hfsignals.com> .



Peekskill / Cortlandt
Amateur Radio Association
<http://www.pcara.org>



Introduction to the BITX Transceiver

The elegant design of this Arduino-controlled transmitter/receiver has attracted the attention of the maker movement. Fully-assembled versions are available at an affordable price, opening the world of amateur radio to a new generation.

Monday 1/27/20 at 6:30 pm

John C. Hart Memorial Library
1130 East Main Street
Shrub Oak, NY 10588

Free Admission
All Are Welcome
For more info: mail@pcara.org



Peekskill / Cortlandt Amateur Radio Association

Mail: PCARA, PO Box 146, Crompond, NY 10517

E-Mail: mail 'at' pcara.org

Web site: <http://www.pcara.org>

PCARA Update Editor: Malcolm Pritchard, NM9J

E-mail: NM9J 'at' arrl.net

Newsletter contributions are always very welcome!

Archive: <http://nm9j.com/pcara/newslett.htm>

PCARA Information

PCARA is a **Non-Profit Community Service**

Organization. PCARA meetings take place the first Sunday of each month* at 3:00 p.m. in Dining Room B of NewYork-Presbyterian/Hudson Valley Hospital, Rt. 202, Cortlandt Manor, NY 10567. Drive round behind the main hospital building and enter from the rear (look for the oxygen tanks). Talk-in is available on the 146.67 repeater. *Apart from holidays and July/August break.

PCARA Repeaters

W2NYW: 146.67 MHz -0.6, PL 156.7Hz

KB2CQE: 449.925MHz -5.0, PL 179.9Hz

N2CBH: 448.725MHz -5.0, PL 107.2Hz

PCARA Calendar

Mon Jan 27: "Introduction to the μ BitX Transceiver", by N2MUZ and N2HTT, John C. Hart Library, Shrub Oak. 6:30 p.m.

Sun Feb 2: PCARA meeting, NewYork-Presbyterian /Hudson Valley Hospital, 3:00 p.m.

Sat Feb 15: PCARA Breakfast, Uncle Giuseppe's, Yorktown Hts. 9:00 a.m.

Hamfests

Sun Feb 23: LIMARC Long Island Hamfest & Electronics Fair, Levittown Hall, 201 Levittown Parkway, Hicksville, NY. 9:00 a.m.

VE Test Sessions

Feb 9: Yonkers ARC, Yonkers OEM, 789 Saw Mill River Rd, Yonkers NY. 11:30 a.m. Pre-reg. Walt, KD2D, kd2d@arrl.net

Feb 17: Columbia Univ ARC, 531 Studebaker Bldg, 622 W 132nd St, New York. 6:30 pm, Alan Crosswell (212) 854-3754.

Feb 20: WECA, Westchester Co Fire Trg Center, 4 Dana Rd., Valhalla, NY. 7:00 p.m. S. Rothman, (914) 949-1463.

Feb 21: Orange County ARC, Munger Cottage, 183 Main Street, Cornwall NY. 6:00 p.m. Contact Joseph J. DeLorenzo (845) 534-3146.



Peekskill / Cortlandt Amateur Radio Association Inc.
PO Box 146
Crompond, NY 10517