The ORC Newsletter

Official publication of the Ozaukee Radio Club, Inc. Mail all contributions to the editor, Tom Ruhlmann, W9IPR, 465 Beechwood Dr., Cedarburg WI 53012 (phone 262 377-6945). Permission to reprint articles published in any issue is granted provided the author and the Ozaukee Radio Club Newsletter are credited.

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From the President

De Kevin Steers (K9VIN)

Well, June went out with another successful field day, thanks to so many volunteers. Unfortunately, I had family responsibilities that hindered my ability to be in town that weekend. I look forward to the stories of teambuilding, band conditions, food, and of course the points total.

I am officially mobile HF with my new Wolf River Coil. After a few weeks of poor band conditions, I miraculously broke up a pileup while mobile with a station in northern Bosnia, and another in the Slovak Republic, on 20M. Wow, what a feeling! Clearly the word Mobile peaks operators interests when in a pileup.

On a lark, I bought a mobile HF manual screwdriver antenna at our recent swapfest. I spent only a few dollars for it, and just recently found it in a MFJ catalog, priced at well over $100. Yahoo. I have since mounted it to my pontoon, and need to tweak it to get from 2M on up to 40M. I doubt I will use it much, but it might be fun to give a local repeater more traffic than it currently gets. Plus, if the word Mobile gets attention on the airwaves, I can only imagine what Maritime Mobile would get☺.

My tower rotor is still not pointed in the right direction; apparently I needed to take into account the rotor 'stops' when setting up a rotator. Needless to say, next weekend will be another trip up the tower.

73, Kevin

DX'ing & Contesting

De Gary Sutcliffe (W9XT)

Last month I discussed the 6 Meter sporadic E (Es) season and how the new FT8 mode might be a big factor this season. Typically, the maximum distance you can get with Es on 6 meters is around 1200 miles. During this time of the year patches of ionization are more common, and often it is possible to get multi-hop contacts. It often takes high power and large antennas to make long distance contacts with this propagation mode.

Experience on the HF bands has shown that it is often possible to make solid FT8 contacts when the band would not support CW or SSB contacts. Would this also happen on 6 Meters, and would long DX contacts be possible with moderate stations? The answer is definitely yes!

I was quite active on 6 during the last month and made close to 400 contacts. So far, I have worked 19 countries, and at least six of them are new ones on the band, increasing my DXCC count on the band to 56. I worked stations in Europe, Africa, and South America, plus many in the US and other North American countries. I heard some Japanese stations but so far have not been able to make a QSO.

I have been keeping a list of new countries heard or spotted on the band that I have not been able to work. That list is about 40. So, my theory that it will be possible to work DXCC with a modest station and FT8 seems to be true. I also picked up a couple of new states. I only need three more on the band. I also worked about 180 grids for the VUCC award. This was done with about 150 watts and a small three element beam, hardly a big gun station.

Contesting is inherently an unfair competition. Someone else will always have a better station, a better location, and better propagation. So, it is hard to really say who is the best contest operator. It would be kind of neat if there were a way to have a level playing field and see how the top operators stacked up against each other. It would sort of be like a ham radio Olympics. Well, there is something like that! It happens every four years, and the next one will be this month. It is the World Radiosport Team Competition (WRTC). Top operators will be going to Germany and will operate the IARU contest. They will be competing as two operator teams. There will be about 60 stations set up. They will be using identical antennas, and the locations are selected to be as identical as possible. Each team will be assigned special call signs about 15 minutes prior to the start. No one will know what teams are using what call sign to prevent help from friends. Each team will have a referee present to ensure no rules are violated.

Potential competitors had to compete in many contests over the last three years and earned points based on how high they placed. There are regional team slots, and there will be operators from around 40 countries participating. The winners get to select their teammate. The

other operator does not have to be from the same area, and there are some teams with members from different countries.

There are also some special youth teams. I think they must be under age 30. One of the youth competitors will be CE2LR. Mathias was in Wisconsin at the end of May and I had the pleasure of meeting and having dinner with him.

As I mentioned, this will be happening during the IARU contest. This means you can get in there and make contacts with the competitors and even compete with them in a way. That is not something you can do in the regular Olympics. Your activity will help make it a success.

The IARU contest is a 24-hour event that starts at 1200 UTC (7:00 AM local) Saturday, July 14. There are a lot of entry classes for single operators. You can enter CW only, phone only, and mixed mode with QRP, Low or High Power. Single-Operators can't use spotting assistance. Single-Operators Unlimited can. That gives 18 different operating classes just for single ops.

The exchange is the signal report and ITU zone. Note this is different than the CQWW Zones. We are in ITU zone 8. You can work each station once per band mode. QSO values range from 1, 3, or 5 points. Working your own zone is worth one point, a different zone on the same continent is worth 3 points, and contacts with different continents are 5 points.

The multipliers are the zones worked per band. Working a zone on CW and then again on phone on the same band does not give you a second multiplier. Special IARU headquarters stations are also multipliers. They will send a signal report and an abbreviation of the name of the country's representative organization. For example, the HQ station for the Radio Society of Great Britain would send 59 RSGB. The ARRL is the Secretariat of the IARU, and NU1AW will be the special call sign for this HQ station. I have been invited to operate with the NU1AW team, and if you work them on SSB, it might be me.

Complete rules for the IARU contest are available at http://www.arrl.org/iaru-hf-championship. More information on the WRTC is at http://www.wrtc2018.de/index.php/en/.

The WRTC is a big deal for serious contesters. Four years ago, the WRTC was held in New England. J. K. George, N3BB, wrote a book on it called *Contact Sport*. The amount of work that went into putting it on was covered along with the competitions and the efforts of the judges reviewing the logs to determine the winners. The size of the effort was incredible. I really enjoyed the book because I knew what everyone was going through and know a lot of the people mentioned in the book, both the competitors and volunteers who made it happen. It is highly recommended reading by anyone with an interest in radio contesting. It is available from Amazon in both hardcover and Kindle eBook.

The big DXpedition of July is the KH1/KH7Z to Baker Island. That was covered last month. It is on as I write this but will end on July 6, which is probably before the newsletter comes out. All the other announced operations are single operator, mostly vacation style efforts and nothing stood out.

If you have not been on 6M, be sure to get on in the next few weeks. It has been a lot of fun. Also get on and make some contacts in the IARU contest and keep an eye out for the WRTC stations, probably with special German call signs.

CE2LR Visits Wisconsin

De Gary Sutcliffe (W9XT)

CE2LR, who will be participating in the WRTC, was in Wisconsin in late May. He had dinner with some area contesters and DXers. Left to right:
Gary, W9XT; Rudy, NF9V; Jerry, N9AW; Noll, W9RN; Bill, W9LR; Al, WA9BZW;
Bob, W9XY; Mathias, CE2LR; Gary, K9GS. W9XY photo.

THE COMPUTER CORNER

No. 245: The Best Antivirus Program is …

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…probably the one you already have!

According to Majorgeeks.com, they would not have recommended Windows Defender a couple of years ago, but in 2018, they consider it an excellent choice. If you have Windows 10, you already have it. It is free and comes with the operating system. How about that?

Another thing to consider: You cannot safely run two antivirus programs at the same time. They likely will interfere with one another and cause you all kinds of grief, as well as not working to reveal malware properly. So, don't try running Panda Antivirus until you completely uninstall Windows Defender. On the other hand, you can run an antivirus program and some anti-malware programs at the same time. That is, you install both and both are running in the background simultaneously. For a specific example, Windows Defender and Malwarebytes (the best current anti-malware program) work together quite happily.

Moreover, Malwarebytes really does everything an antivirus program does, and you can certainly substitute it for Windows Defender (or, better, since it runs happily with Windows Defender, run it concurrently). On top of that, you can get a copy of Malwarebytes (at http://www.majorgeeks.com, 15 million downloads there!) that is completely identical to the pay-for version. It will do a nightly (wee hours) scan of your system automatically as well as watching your system the rest of the time, even as you surf the web. After 14 days, it will pop up and ask you if you want to buy it. If not, it will still be there and will still work, but you need to run manual scans by yourself. I really like it and purchased a two-computer copy (Stan's and Nancy's) when they had a sale, about a year ago. And, when that ran out, I popped for another year. But you don't need to pay for it. Between free Windows Defender and the free version of Malwarebytes, you are well protected. On the other hand, I personally really like the sense of security the pay-for version of Malwarebytes gives me, especially for protection from that bad actor, ransomware. (In case you don't already know, ransomware is a viral infection that locks your personal files until you pay their fee – so it holds your files for ransom).

So, there you have it. Nose around the majorgeeks website if you want more information. But you are reasonably safe with Windows 10 as it comes, out of the box. Want to be a little more compulsive? Download Malwarebytes and install and try it for half a month. See what you think.

Happy Computing!

Ham Radio and Electronics Podcasts

De Gary Sutcliffe, W9XT

We can discuss and learn about ham radio on the air, at club meetings, from magazines and newsletters, and various Internet email reflectors. That hardly seems sufficient. There is so much going on in the hobby. Sometimes we just need even more information.

I have been listening to several different podcasts for the last year or so and thought I would share them with you. Usually I download them to my phone and listen while I exercise or take walks. Sometimes I listen to them on a PC when I am working on project on the workbench. I am including ones that are audio only since I listen to them as background while doing other things. Popular video podcasts such as Ham Nation are not included on this list. I also included some non-ham radio ones at the end that I listen to but are electronics oriented.

These are not in any particular order. A link for each of them is included.

Ham Radio Workbench

http://www.hamradioworkbench.com/

A bi-weekly podcast mostly covering ham radio projects. Hosts are George Zafiropoulos, KJ6VU, and Jeremy Kolonay, KF7IJZ. They talk about projects they are working on, new products, radio events, etc., of interest to hams. They usually have a guest who discusses some aspect of ham radio. Sometimes they play a recording of some talk from a ham radio conference. That is great since the hosts are west coast hams and attend events we don't normally get to.

This is not overly technical. They spend a fair amount of time talking about the projects they are working on, which is interesting. They cover interesting new test equipment and tools that are useful for the home brewing ham. Each episode seems to be getting longer. Recent ones have been over two hours long.

SolderSmoke Podcast

http://soldersmoke.blogspot.com/

A roughly once-a-month podcast by Bill Meara, N2CQR, and Pete Juliano, N6QW. They talk about building their own equipment, ham radio kits, etc. It is entertaining, sort of like meeting for coffee in the morning. The URL above is for the written blog which usually has a few posts each week. At the top is the link to the latest podcast. The actual page with the podcast archive is not kept up well and always seems to be an episode or two behind. Usually I start checking for new episodes around the end of the month.

QSO Today

https://www.qsotoday.com/

A weekly podcast by Eric Guth, 4Z4UG. Each week is an interview with a ham who is an expert at some facet of ham radio or has done something interesting. A wide range of topics are covered. Some of the hams interviewed are well known. Others are new to me, usually because they are into areas of the hobby I don't know a lot about. Very well produced.

The Doctor is In

www.arrl.org/doctor

A bi-weekly podcast by the ARRL with Steve Ford, WB8IMY, and Joel Hallas, W1ZR. Each episode is short, usually about 20 minutes. There is a different technical topic covered each time. Technically they are usually at the basic level.

The Amp Hour Electronics Podcast

https://theamphour.com

A weekly podcast by Chris Gammell, covering mostly electronic hardware. About every other week it is co-hosted with Dave Jones from the EEVblog. They discuss things they are working on, new technologies, interesting happenings in the industry, etc. It is not overly technical.

Dave Jone's EEVblog is a popular site for electronics enthusiasts. He covers all sorts of electronic topics in video formats. His occasional rants with his Aussie accent are entertaining. He has some excellent tutorials if you dig for them. www.eevblog.com

When Dave is not on the podcast, Chris interviews a guest who is doing something interesting in the world of electronics.

Embedded.fm Podcast

www.embedded.fm

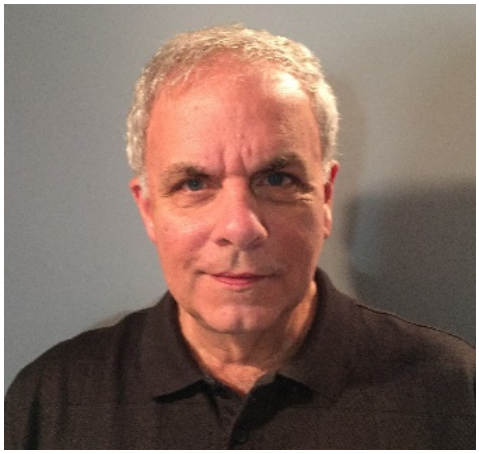
A weekly podcast hosted by Elicia White and her husband Christopher. The hosts are engineers who work on embedded systems. Embedded systems are systems using microcontrollers to perform a specific task. Projects using Arduinos and Raspberry Pi's are embedded systems. Christopher has a ham ticket and occasionally they mention ham radio, but I don't recall him ever saying his call sign. Sometimes they talk about stuff of more interest to practicing engineers. Other times they interview people who are doing interesting, and sometimes wacky things.

Most weeks they have a guest who is involved in embedded systems as a maker, engineer, entrepreneur, etc. It is usually not overly technical.

Try listening to some of these if they sound interesting. Are there podcasts you listen to that I missed? If so, let me know!

Vintage Amateur Radio

De Bill Shadid, W9MXQ



After releasing the successful TR-3 Transceiver in 1963, Drake Radio Company came out with an updated version, the TR-4, in 1967. The TR-4 upgraded the filter system to make the filters more competitive and in the process solved some dependability problems with the filters as originally designed for the TR-3. Also, the vacuum tube PTO in the TR-3 gave way to a solid-state PTO in the TR-4. Recall that Drake used variable inductor tuning in their PTO. Most competitors used a variable capacitor for tuning, usually referred to with the term “VFO.”

The TR-4 design kicked off a model that went well into the 1970’s and competed successfully against the hybrid transceivers coming from Kenwood, Yaesu, and Sideband Engineers. As mentioned in the article on the TR-3, for a while this design was made in parallel with the much-touted Drake TR7 all solid-state transceiver. The TR-3/TR-4 basic design was very successful and said a lot for the engineering and design talent coming from R. L. Drake Company in Miamisburg, Ohio

This Drake TR-4 article is the second of a two-part series about Drake Vacuum Tube Transceivers. It will also include the specialized six-meter version, the TR-6 Transceiver. I urge you to also read the previous article on the TR-3 for additional information that applies to both radio series.

Drake TR-4C 80-10 Meter SSB/AM/CW Transceiver and RV-4C External VFO

(Part of the Drake Collection at W9MXQ)

The TR-4C was the last major chassis version of the TR-4 series of radios. The TR-4C (pictured above) changed the dial readout design in keeping with the “C” series of Receivers and Transmitters from Drake (the R-4C and T-4XC) in addition to many other improvements. Some of those improvements were also on late versions of the original TR-4. There were two other sub-versions of the TR-4C . . .

- The TR-4CW – included provisions for adding a 500 Hz CW Filter for receive use.

- The TR-4CW/RIT – which include TR-4CW features plus Receiver Incremental Tuning to further enhance the radio's capability on CW.

The RV-4C you see above is virtually identical to the earlier RV-4 except for the different dial mechanism – in keeping with its dual disk epicyclical display which is like the drive and display on the Collins S-Line dial except the dial escutcheon area design. All the TR-3 accessories worked with the TR-4 series as well. That includes the RV-3, RV-4, and RV-4C External VFO Consoles.

Something unique about Drake – and in the industry, to my knowledge – was that the transceiver's power supply could be mounted inside the Remote VFO cabinet. Also unique was the speaker in the Remote VFO Console. Other manufacturers that offered a separate Transceiver, Speaker, and External VFO required the placement of three cabinets on the operating desk. Drake made this possible with only two cabinets.

Here are pictures of the three interchangeable External VFO Consoles offered by Drake, for your comparison . . .

RV-3 External VFO

RV-4 External VFO

RV-4C External VFO

(From the W9MXQ Drake Collection – Past and Present)

Remember that all three of the above units would work equally well with any TR-3, TR-4, TR-4C, TR-4CW, or TR-4CW/RIT Transceiver. The RV-3 and RV-4 are nearly identical. The RV-3 and RV-4 have markings every 25 kHz with 1 kHz (25 total) markings on the dual skirt – like the TR-3 and TR-4 Transceivers. The RV-4C has 1 kHz markings on the dual disk epicyclical display, like the TR-4C series of radios. As with the TR-3 Transceiver, the RV-3 used a vacuum tube oscillator. The RV-4 and RV-4C are solid-state.

There were other differences to be noted – particularly in early and late versions of the TR-4 Transceivers (pre-TR-4C). See below pictures of an early and late TR-4 . . .

Early TR-4 Transceiver:
See the area in the lower right-hand corner. It is empty except for a small aluminum color dot (it is a tiny circle). This is where the Noise Blanker switch is placed in the later TR-4. No plug-in provision is made for a Noise Blanker in the early TR-4 Transceiver. But one was available – see later in this article.

Late TR-4 Transceiver:
You can see the placement of the Noise Blanker Switch in the lower right-hand corner. That indicates internal wiring and a chassis connector for the available 34-PNB Noise Blanker. This is the only outward difference in the early and late TR-4. Internally, however, some very early TR-4's had the same 4-Pole Crystal Filter used in the TR-3. Later TR-4 Transceivers used an eight-pole filter.

The TR-4 Transceivers – all models – used three 6JB6 Television Sweep Tubes in the final amplifier section. The three tubes provided an input power of 300 watts PEP on SSB and a bit less, 260 watts, on CW. The radio would provide 260 watts PEP input power on AM with controlled carrier AM modulation providing approximately 75 watts carrier output with no modulation. Output power would be about 150 watts PEP SSB output and about 130 watts CW, key down output. 10 and 15 meters would produce somewhat less. On AM mode, there is a separate detector for clear and pleasant AM audio. Friends on AM, however could spot you as using an SSB radio as they could tune and discover that you had only one sideband. In the end, this is a SINGLE sideband transceiver!

The TR-3 used three 12JB6 tubes in the final amplifier – a major difference with the TR-4 series radios and their 6JB6 finals. These tubes are identical in performance. The 12.6-volt 12JB6 seemed appropriate given that these radios were also designed to run in 12-volt system automobiles. When the final amplifier tubes are a 6.3-volt and there are three of them, there is a bit of filament voltage and current balancing to use a 12.6-volt supply source. It is interesting to study the schematic to see how Drake ran the three 6.3-volt power amplifier tubes in the 12.6-volt power system.

Drake did offer the high performance 34-PNB Noise Blanker for late TR-4 and all TR-4C series transceivers. For TR-3 and early TR-4 radios, Drake had offered a model 34-NB Noise Blanker. Note the absence of a "P" in that model number – meaning that this was not a plug-in device. Drake provided an extensive set of instructions for a complicated installation process. One of these 34-NB Noise Blanker units is installed in a TR-4 owned by my friend, Pat, W9JI. Pat's TR-4 has an added switch in the position shown on "Late TR-4" picture. Many owners installed a switch in that location with a matching Drake knob to make their radio look like a later TR-4. However, Drake's installation manual for the 34-NB Noise Blanker had a different idea. See the picture below taken from the instruction manual front cover for the Drake Model 34-NB Noise Blanker Kit . . .

(W9MXQ Radio Manual Library)

Picture of the Instruction Manual Front Cover for the Drake 34-NB Noise Blanker Kit

This book is a rare find. It completely covers the many areas of wiring modifications to tap the i-f of the TR-3 or TR-4. One assumes the "34" means TR-3 and TR-4 but that is hard to tell some 55 years after the fact.

Look at the PLATE control just to the right of the meter assembly and you can see a small (hard to see in this picture) stick-on label that says "ON" on top and "OFF" on the bottom. Also see the lever switch that is added concentric with the PLATE tuning shaft. The 34-NB Kit supplied parts for this location of the Noise Blanker switch. May hams, as discussed, added a switch in the same location as on the later TR-4 and all TR-4C series Transceivers.

Drake had a complete line of accessories for the TR-4 series transceivers that all worked equally well with the earlier TR-3 radio. Unlike other Drake models that had little inter-series compatibility, the TR-3 and TR-4 lines were 100% compatible in all ways for interconnection.

There was a rather interesting change at the time the Drake TR-4C replaced the TR-4 and at the same time the Drake R-4C Receiver and T-4XC Transmitter replaced the R-4B and T-4XC, respectively. Drake made a subtle change in the front panel in addition to moving to an epoxy ink silk screen over the brushed, anodized front panels. Here is an example for you while looking at a late TR-4 and an even later TR-4C Transceiver . . .

Late Drake TR-4 Transceiver

Drake TR-4C Transceiver

(Pictures from W9MXQ Drake Collection - Past and Present.)

See the aluminum trim around the outer edge of the TR-4 Front Panel and the absence of that feature on the TR-4C Front Panel. Accessories that transcended this change had running changes – for instance the popular Drake MN-2000 Antenna Matching Network and the

L-4B Linear Amplifier were changed – so you can find them with both front panel versions, depending on when they were manufactured. As a collector, I like for all my units to match. Functionally, that is a ridiculous requirement – but that is what I like in any case!

Here is a rather complete setup of major accessories for the TR-3/TR-4 line of equipment. This is as it exists at W9MXQ . . .

Drake TR-4C Station at W9MXQ
Running in the 2017 Wisconsin QSO Party – (Amplifier was not used)
Left to Right – Drake Radios
MN-2000 Antenna Matching Network, TR-4C Transceiver, RV-4C External VFO, L-4B Linear Amplifier
Left to Right – Accessories
Shure 444 Desk Microphone, MFJ-422A Electronic Keyer (With Bencher KY-1 Key)
(You will note that my MN-2000 at the time had the earlier front panel design!!)

Like the TR-3, Drake offered power, speaker, and accessory options for the TR-4 series of radios. These accessories stayed the same through the entire production cycle of the TR-4 line. Drake even offered a specialized console to use when the TR-4 was mounted in an automobile. For these accessories, please review the pictures, below. Many of these items were updates from similar items offered for the TR-3 Transceiver. Some, however, were later designs and were unique to the TR-4 line.

Drake “4-Line” Accessories that were used with the TR-4 Transceivers . . .

MC-4 Mobile Console – Installed and Alone

MS-4 Speaker Console

AC-4 AC Power Supply (Mounted in MS-4 or RV-4)

DC-4 DC Power Supply (For 12 VDC Operation)

FF-1 Fixed Frequency Adapter

(Pictures above are from W9MXQ collection items – past and present – except for the MC-4 Mobile Console. MC-4 pictures are from Universal Radio, in Columbus, Ohio.)

Other accessories were also used with the very popular Drake "4-Line" Receivers and Transmitters. These are the subject of an upcoming article. Check these items that, except for the W-4 Wattmeter, are shown in the complete station setup, previously pictured . . .

L-4B Linear Amplifier

MN-2000 Antenna Matching Network

W-4 Wattmeter

(From the W9MXQ Drake Collection.)

The Drake L-4B Linear Amplifier was preceded by the similar appearance L-4 Linear Amplifier. Drake Amplifiers will be the subject of a future article. The MN-2000 shown here – a recent acquisition – is a later design without the border on the front panel. The MN-2000 is capable of full power at the time of its manufacture – that is, 2,000 watts PEP input. It is not up to the power capability of today's 1,500-watt output amplifiers in key down modes, such as RTTY. Drake made a lower power version Antenna Matching Network that was called the MN-4. The MN-4 was designed around the power level of the TR-4 with its capability to handle 200 watts PEP output on SSB. The MN-4 had a similar appearance and front panel size to the MN-2000. But the MN-4 lighter in weight and was several inches less in depth.

As mentioned in the TR-3 article, one negative in the Drake designs in early years was their copper plated chassis. A high percentage of these chassis, even with reasonable care, seem to corrode in an odd array of unsightly black and blue-green colors. Some do not do that, however, and it is hard to tell why. I had a Drake R-4B and T-4XB Receiver and Transmitter that I bought new in the late 1960's that stayed for years nearly pristine. I sold the set to a ham in Chicago who still has it. When I saw it again a few months ago it was still clean and near perfect. But that is not the norm for Drake or other brand radios with copper plated steel chassis

and other hardware. With the introduction of the “C” series radios, Drake moved to a cadmium plated, clear chromate dip steel chassis and other parts. Here are some pictures to show you the difference in the two TR-4 series radios at W9MXQ right now . . .

TR-4 – Copper Plated Chassis
(On loan from W9JI)

TR-4C – Cadmium Plated Chassis
(In W9MXQ Drake Collection)

Relatively speaking, the copper plating is in “good” condition on the TR-4, above left, compared to what one can find on the market. This radio is in good operational condition and is one I hope to add to my collection. This issue faded into history with the later cadmium plating. While good chassis Drake radios can be found in this vintage, it must also be known that this does not impact good operation from the radio. The above left TR-4 works every bit as well as the rather perfect looking TR-4C on the right.

The world seemed to love Drake radios and design. This is proven in an offering from the Brazilian amateur radio equipment manufacturer, Eudgert.

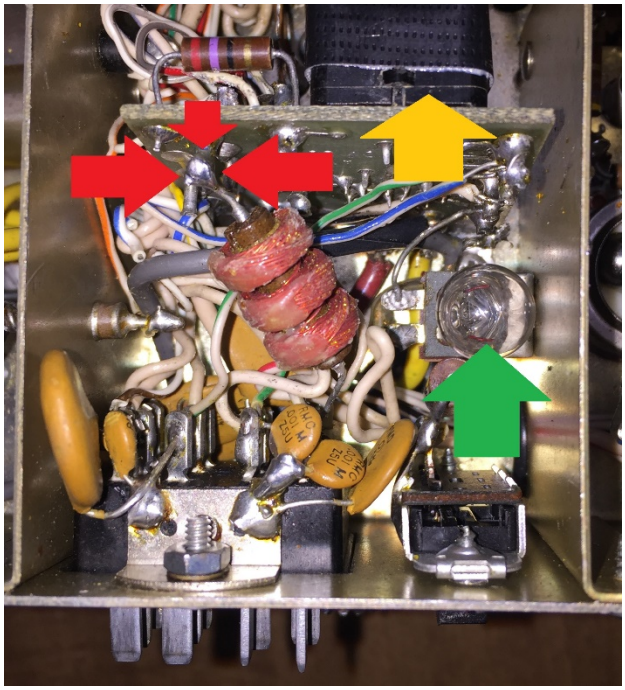
Eudgert Linha Ouro B Transceptor

Eudgert Speaker/Power Supply

As they say, “Imitation is the sincerest form of flattery.”

In a little personal note, my TR-4C Transceiver, MS-4 Speaker, and AC-4 Power Supply came from a ham in British Columbia. The RV-4C came from a friend of his in Ontario. The TR-4C worked intermittently when initially tried (after I upgraded the AC-4 Power Supply with new capacitors and diodes). I wanted to get the cabinets refinished so I sent the radio to a well-known Drake repair person. Upon return the cabinets were as perfect as new, the radio was as clean and nice as the day it left Drake. But, the transceiver only worked for the first day back. The intermittent operation had returned just as when I sent it. After a few days I decided to make my own repairs and made some interesting discoveries . . .

TR-4C Repairs . . . After returning to W9MXQ from a repair technician, the radio still became intermittent and then became intermittent more frequently. The issue was found after a study of the schematic and the known symptoms. I felt it was related to the Low High Voltage (about 250 volts which is high voltage for lower level stages). After this analysis and the resulting determination of where to look I measured voltage in active circuits in the radio and found that intermittent operation was tied to low or erratic 250-volt supply. Going from the 250-volt pin on the power supply connector – lower left in this picture I almost immediately found an intermittent, cold, solder joint at the radio side of the 250-volt input choke – in the center of the picture. The cold solder joint was at the point indicated by the three red arrows. For reference you can see the T/R relay (yellow arrow) and the series fuse lamp (receiver input line) (green arrow). Analysis with symptoms while looking at the schematic is a classic form of troubleshooting that reduces the time necessary inside the radio. For me it determines the path to the solution before opening the radio cabinet.



Subsequent issues – after the radio was returned from the technician and after replacing the final amplifier tubes – came to light with the radio when it started making "hissing noises." That indicated arcing taking place somewhere. A bit of observation with the room lights switched off caused an interesting discovery – a grid to plate intermittent short in one of the final amplifier tubes. I replaced the defective 6JB6 tube and all is now functioning very well.
Moral of this story is . . . ***"Repair your own radios."***

Drake, in about 1968, introduced a variant of the TR-4 for six-meters – the single band TR-6. The unit appears to have used much TR-4 hardware – even down to the final amplifier with its 6JB6 Sweep Tubes. The power capability of the TR-6 with those same tubes in the 50-54 MHz band was the same as on HF with the TR-4. Here are some pictures of the offering . . .

Drake TR-6 Transceiver

Drake TR-6 with the RV-6 External VFO

Note identical panel designs – missing only the LSB/USB Indicator Lamps. As you can also see, the silk screen was also unique to the TR-6 and RV-6.

Most accessories for the "4-Line" worked with the TR-6. But, the TR-6 had two of its own in the 9-NB Noise Blanker and the RV-6 External VFO, pictured above. I have had two TR-6 Transceivers over the years. These are a nicely built, work very well, and hold their own even on today's bands. One omission in the line was a linear amplifier. But back in those days, a group of former Drake employees started Raytrack Company, in Columbus, Ohio, to make their own version of the Drake L-4B Linear Amplifier. They also had a six-meter version of that amplifier that was reasonably popular. The fact that it connected easily to the TR-6 was almost a given. Raytrack used two Eimac 3-500z triode amplifier tubes in both. I have wondered if Drake ever contemplated a six-meter version of the L-4B. But, it was a limited market.

The TR-6 was expensive. Better prices (but not better performance) came from Swan with the 250c Six-Meter Transceiver and the Heathkit SB-110A. (Not to be confused with the not so good, earlier versions from both companies – the Swan 250 and the Heathkit SB-110.)

I appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, W9MXQ@TWC.com.

Thanks to W9JI for loan of his TR-4 (that I hope to obtain) and to W9DYQ, K9DJT, and KC9PIF for keeping me honest by proofing my articles.

My CW Academy Experience & My CW Operations

De Jeff Whisler WV9X

Before I retired late last fall, I set a goal for myself to be active with the club on Field Day as a CW op. However, my CW skills were very seriously rusty. My last CW contact was in 1993 with OD5/SP7LSE. Over the last few years, I tried various programs and apps. While I re-learned the alphabet, they didn't prepare me for on air activity.

In January, I stumbled on a pair of YouTube videos about CW academy. CW Academy is run by a non-profit group called CW Ops. These wonderful people have the mission of sharing their enjoyment and training in CW with others. They have three levels of training depending on your current state of skill. After some back and forth with the program administrator, I signed up for a Level 1 class.

The classes are held over Skype, a video conference application, and on the air. There is a dedicated volunteer instructor/mentor for each class. Classes meet twice a week for ten weeks. The Level 1 class is in high demand and there is normally a several months wait to get accepted. In my case we met Monday and Thursday evenings at 8 PM for one hour. There is homework in between each class session. For me this was just the structure I needed to get my skills back.

We had five students at the beginning of class. All students were in the same time zone which makes scheduling easier. Our Instructor mentor was Andy WB7DKZ. He led a specific program of instruction and lessons, all carefully designed to get you on the air quickly. For new students they learn code characters sent at 23 WPM with 10 WPM spacing between characters. This makes speeding up easier. I found this approach very helpful to me. Andy was a skillful and very patient coach.

In between classes we had numerous resources available to us, including many code practice audio files, and several documents on how to study and practice the code. We also shared several computer applications to aid us. On my iPhone I loaded an app called Ham Morse. This allowed me to practice head copying during my morning drive time. Ham Morse will send simulated QSO's or callsigns or random characters all in the same format recommended by CW Ops.

Later in the program I used a Windows-based program called RufzXP. This devilish piece of code sends a series of fifty callsigns and you type what you hear. This was good for me because my typing skills were also lacking. If you get the call sign correct, it sends the next one faster. If not, it sends slightly slower. It is constantly pushing you and keeps track of your performance. I also used an online application called Morse Trainer by SC Phillips. It follows the CW Academy lesson plan exactly. I found the "shuffle mode" of reviewing the lessons a lot of fun. Gary, W9XT, recommended Morse Runner. Now I wish I had spent more time with Morse Runner prior to Field Day.

While my performance at Field Day was nothing special, it was a great milestone for me. I am grateful to the club and Gary for allowing me the opportunity to participate even if I did slow down the QSO rate on 40 meters.

I do plan on taking the Level 2 class as soon as my schedule allows. Two big thumbs up for CW Academy. Link to CW Ops: www.cwops.org/index.html
Link to Morse Code Application: https://morsecode.scphillips.com/trainer.html

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UPCOMING EVENTS

July 11th meeting program – Chuck Curran (W9KR)
Restoring the Classic Collins KWM-2

ORC Membership Meeting Minutes of June 13, 2018

De Ben Evans (K9UZ)

President Kevin Steers (K9VIN) called the meeting to order at 7:30 PM. All the attendees introduced themselves.

Announcements, Show-and-Tell, Bragging Rights:
Bill KD9DRQ: Finally got his tower and antennas up.

Gary W9XT: Brought the transmitter he built for the new 630M band for show and tell.

Dave KC9REP: Still has Android VOIP radios available for sale as he mentioned in the April meeting announcements.

Loren N9ENR: Brought flyers for swapfests all over to the meeting.

Program #1:
After being introduced by Stan WB9RQR, meeting guest Bob Schmid WA9FBO from Colorado gave an interesting presentation on solar cells and their applications.

Program #2:
Ken W9GA gave his presentation about the club's activities for the upcoming Field Day week-end. He explained the dual purpose of Field Day which is to demonstrate the readiness of the amateur radio community to provide communications in case of a disaster, and to compete with other groups for the most contacts and have fun doing it. Ken then talked about the ORC's plans for Field Day 2018 and highlighted the club's past Field Day activities with contact statistics and photographs. Ken said that unless we get a band captain and more operators on

20M sideband, we will not have a 20M phone station and the designation this year will be 4A rather than 5A.

Auction:
There was no auction due to the additional program.

50/50 Drawing:
There was no 50/50 drawing.

Officer Reports:
Kevin S. (K9VIN) President – After serving as treasurer for years and doing a fine job, Dave Barrow N9UNR's plate is full, so the board last month voted in favor of transitioning the role of treasurer to Robert Eskola K4WTH who has been assisting Dave in the treasurer duties for the last several months. Kevin thanked Dave for his service to the ORC, and the membership gave Dave a round of applause. The audit recently conducted for the 2017 books came out clean, and Kevin thanked Dave for that. Kevin then asked Dave to say a few words.

Dave told the group that due to various reasons, he would prefer someone else take on the role as treasurer instead of Robert. In response, Kevin said that Robert had performed admirably as assistant to the treasurer and has the full backing of the board. Robert works for a bank and, while not a CPA, has certain certifications that have to be kept up.

Kevin requested a motion to transition the responsibilities of treasurer from Dave Barrow to Robert Eskola. The motion was made by Chuck W9KR and seconded by Nancy KC9FZK. The motion carried by voice vote. Nels WA9JOB requested a hand vote, which was then taken. The hand vote was four nays, and the ayes were more than three-quarters of the members present.

Pat V. (W9JI), 1st VP – No report.

2nd VP – No report.

Tom T. (KC9ONY), Repeater VP – An agreement has been worked out with the Cedarburg Fire Department to exercise their bucket truck as training for them and to help the club with the repeater antenna replacement. Still trying to figure out the date, hoping that it will be by the end of this month. For safety reasons, Tom asks that people don't come out to the site during the installation. The 220 and the 10-meter repeaters will also be turned off for safety. Naomi KC9YES asked that OZARES be notified when the repeater will be turned off because they use that repeater as a backup.

Ben E. (K9UZ), Secretary – A box full of copies of the 2018 ORC directory was brought in for members to take up to three copies for themselves. This month's newsletter was published on Monday which includes the minutes from the May meeting. There were no questions or comments about the minutes. Motion to accept the minutes was made by Stan WB9RQR, seconded by Bill W9MXQ and approved by the members.

Treasurer – No report.

Committee Reports:
Jim A. (K9QLP), Audit Committee – Chuck W9KR, Sandy W9BTN and Jim conducted the audit at Dave Barrow's residence. The only focus was the 2017 books, and everything was in good

order for that year, and all questions asked of Dave were answered reasonably. Sandy should be writing a report on the results of the 2017 audit. Regarding 2018, the audit committee felt that the board should take up the accounting issues that were raised and "the claims made by two different people" and possibly get the club trustee, who is a CPA, involved to help resolve those issues. Kevin pointed out that Robert K4WTH was also present at the audit and knows what to expect.

Old Business:
There was no old business.

New Business:
There was no new business.

Adjournment:
Stan WB9RQR made the motion to adjourn the meeting, which was seconded and was passed by the members. The meeting was adjourned at 9:14 PM.

Attendance:
There were 41 members and two guests present at the meeting.

A copy of the attendance sheet is available upon request in PDF format. Please contact Ben Evans via email at ben@evansengsolutions.com for a copy.

Respectfully submitted,

B. Benjamin Evans, K9UZ
Secretary

ORC Meeting Agenda

July 11, 2018

1. 7:00 – 7:30 PM – Network & Rag Chew
2. Call to Order & Introductions
3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.
4. Program: Chuck W9KR, "Refurb of the Classic 1967 Collins KWM-2"
5. 50/50 Drawing
6. Fellowship Break
7. Auction – Stan Kaplan (WB9RQR)
8. President's Update – Kevin Steers (K9VIN)
9. 1st VP Report – Pat Volkmann (W9JR)
10. Repeater VP Report – Tom Trethewey, (KC9ONY)
11. Secretary's Report – Ben Evans (K9UZ)
12. Treasurer's Report – Robert Eskola (K4WTH)
13. Committee Reports:
    A. Fall Swapfest
    B. Field Day
    C. Other
14. OLD BUSINESS
15. NEW BUSINESS
16. Adjournment to ??

Return undeliverable copies to:

The ORC Newsletter
465 Beechwood Drive
Cedarburg WI* 53012

First Class

Next ORC Meeting

Grafton Senior Citizens Center

1665 7th Avenue, Grafton
Wednesday, July 11th 2018

7:00 PM – Doors Open

7:30 PM – Meeting Begins