

# The Link

Newsletter of the Durham FM Association

October 2019



Next Meeting is Tuesday, October 1st, 6pm, at Bullock's BBQ.



## President's Corner

Getting Back to our Roots with a New Repeater

We've talked about what activities the DFMA should do this year, and it looks like a perfect new activity has fallen in our lap. Bob Milback, K4WCV, is the organizer and frequent net-control operator for the Wednesday night 6 meter net that you may be familiar with from the reminders on the [ocra-dfma@groups.io](mailto:ocra-dfma@groups.io) email list. He has been working on a 6m repeater, and will be donating it to the club. The repeater is already working with the antenna at a low altitude in another club member's yard. Taking over from the work that Bob started, the club will provide an antenna and permanent home for the repeater.

I think that this is a great project for the because it brings us back to our roots as an organization formed to set up repeaters. This will be a new repeater and band for the club, so a perfect opportunity to get involved from the beginning. At the same time, there is already an active group of 6m enthusiasts in the area as evidenced by our dedicated 6m Field Day team and weekly net. The 6m repeater of our sister club, OCRA, is currently off the air with no plans for a replacement, so this is an opportunity for us to maintain a 6m presence in the area.

Of course, the activities don't have to stop once the repeater is on the air with our WR4AGC call. We need to use the repeater, and for many of us that will mean building 6m home and mobile station. I look forward to these new adventures.

73,  
Jack - KM4MBG

## Program Info

Eric Monson, a Data Visualization Analyst at Duke University Libraries, will be giving a presentation of his choosing. Eric holds a Ph.D. in Applied Physics, but has been working for twelve years with Duke faculty and graduate students from Math to Computational Biology to Art History, helping them transform, visualize and understand their data.

## Message from Your Editor

You will notice that this is a sparse issue. That's because I've not had the usual number of submissions. If you come across some information or an article related to our hobby, that you find interesting and that others might also, please send to me or write something that can be shared with the members through "The Link". Don't worry about formatting, editing, etc., as I can take care of that for you. Here is your editor's contact info:

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## Vaporizing Mercury

**Banks Anderson, W4OFZ**

In 1948, diodes were electron tubes or in the UK, valves. Then, as now, direct current was necessary for transmitters and two diodes were used in full wave rectifier circuits. My first 1948 home brew transmitter used a metal 6L6 output tube requiring just consumer voltages but the urge for more watts meant later circuits using 807s or 811s. My power supply for higher voltages and currents used 866 mercury vapor half-wave diodes. Ionized mercury vapor was the gas in these tubes and when conducting, they glowed with a spectacular iridescent blue.

Their downside was the lethal voltages, weight and heat of these boat anchors. Filament voltage had to be applied first to vaporize the mercury and the filaments remained on continuously until the final 73 before going QRT. The plate voltage was switched on for transmitting and off for receiving. The satisfying glow of those two 866s indicated that plate voltage was present and that current was flowing.

That mercury vapor discharge glow, technically amplified, illuminates city streets all over the world. Although not as efficient as LEDs, these mercury vapor lamps are far superior to incandescents and may last for decades in service applications. There are over a hundred in Durham and our City Council just voted to phase them out in an LED replacement program. Mercury is a trigger word for environmentalists. Fluorescent and metal halide lamps contain mercury but the word is missing from their names. Metal halide lamps are basically mercury vapor with sodium iodide or other metal halides added to expand their longer wavelength emission spectrum. Since few know what metal halide means, the name is not disturbing.

Although in 1948 we knew that Alice's Mad Hatter had been poisoned by the mercury he used in his beaver hat making, elemental mercury was not considered deadly. In chemistry lab we would play with globules of silvery metal rolling around the lab table. Every thermometer in the lab and in mother's home medicine kit contained mercury. The Van Slyke apparatus in Med School biochemistry labs was filled with mercury. Mercurochrome was the topical antiseptic of choice. Cavities in our teeth were filled with mercury amalgams. Tiny globs sealed in glass tubes would roll back and forth in our position sensitive electrical switches. Now one globule in the orbit of Mars is anathema to segments of the population some of whom have amalgam visible in their teeth as they whine.

But do be rational. Dispose of any dead 866s, mercury switches, metal halide lamps or fluorescent tubes with respect for your environment and that of others.

Paul Robertson, N2XZF has been forwarding his old club's newsletter to me each month. Since the club is embarking on a major 6 meter project, I thought the following article from their newsletter quite appropriate. It's slightly "fuzzy", but readable. (technical problem)

## 6 METER LOOP ANTENNA

TIM BROWN, WB2PAY

With all my Ham Radio experience, I never had a dedicated horizontally polarized antenna for 6 meters. I had always used one of my multi-band HF antennas to get on 6 meters. The RXCW group has been holding Morse code CW practice Tuesday evenings at 9pm on 50.250mhz. I managed to check in a couple of times using my 80m ladder line fed Delta Loop. Performance was marginal. The antenna would load up but how well it was radiating was questionable. I could barely copy hams from the east side of the county 18-20 miles away.

Having plenty of antenna materials I decided to construct a 6m loop antenna. I like loops because they are low noise and can be easily erected.

I started by calculating the overall loop length. ( $1005 / 50.250 = 20$  feet). Each side of the Delta loop would be 6ft 8in.

I cut the wire needed, adding about 6 extra inches in case I had to trim the antenna. (Better to be too long than too short)

3 Dogbone insulators are added to the wire. The center insulator is used to hoist the antenna into the tree. The other two serve to pull the base of the Delta horizontal. The side insulators are held in place 3 feet from each end of the wire using tie wraps. The center insulator is allowed to "float".



The next step is the center feed point assembly. I used a T coax adapter with two PL-259 connectors.



One end of the Delta loop is soldered to the center pin of one PL-259 and the other end of the loop is soldered to the outer case of the second PL-259. The two connectors are screwed into the T adapter. A Female to Female SO-239 connector is used to connect the T to the matching Stub coax.



A 1/4 wave matching stub was made from RG59, 75 ohm coax. I did not have a 4:1 balun readily available.



The length was calculated as  $(234/50.250) \times 0.66$  velocity factor = 3.07 feet. PL-259s were placed at each end of the Stub. Another F/F adapter connects the Stub to the RG-213 coax which goes to the shack.

The completed antenna is ready for hoisting.

See next page

Delta loops can be mounted horizontally using 3 masts or they may be mounted vertically with one support point. I chose to mount the antenna vertically by hoisting it up with an antenna cord tossed over the limb of a tree. As many of you know, I am an advocate for the use of D style Carabineers to attach my antenna cords. The side insulators are pulled horizontal to another tree and to a trellis on my back porch.



Antenna is up and ready for testing. Total assembly time was about 1.5hrs. Assembly could go faster with two people.

On air tests with Forest Shick, WA2MZG and Harry Williams, KF2TV showed a dramatic improvement over my previous antenna. Signals were up 2 S units and background noise was reduced.

An easy to build antenna that does not require a lot of area should be attractive to hams wishing to get on 6 meters.

## Minutes of Last Club Meeting

### Durham FM Association (DFMA)

**DFMA Meeting – 09/03/2019** – Dan, KR4UB, Secretary

**Location:** Bullock's Bar-B-Cue, Durham

**Attending:** KR4UB, Dan; NA4VY, Dave; W4BOH, Wilson; N2XZF, Paul; KA5JUU, Martin; W4OFZ, Banks; KN4SVO, John; formerly WB4HIH, Steve; N8BR, Bill; KE4QOZ, Joanna; KE4HIH, Rhett; KW4XL, David; WA4UJM, Wally; KK4BPH, Mike; WB4ROI, Henry; KM4MBG, Jack; KF4PAB, Lenore; KB7ZGU, Thaddeus; KU4GC, Dee; KF4NTC, Bob & Renu; KW4KZ, Chuck & Mary; KM4LKN, Detlev; KJ4VWG, Sam; KE4UVJ, Don

A total of 26 attending, with 23 of them currently licensed hams.

**President:** Jack opened the membership meeting at 7 pm first recognizing new attendees, followed by announcements.

### Announcements:

Jack announced that Jimmy, KF4KHU who planned to make a presentation on the new DFMA web site had to cancel due to illness. The time portion allotted for the presentation will be used for an extended introduction period with each attendee requested to go into more detail about their interests, needs, topics and activities they would like to see the club to focus on.

Martin, KA5JUU, noting the rather short September DFMA newsletter pleaded for members to please write some articles for the DFMA Link. Members can submit articles in any form and Martin will take care of the formatting. He also requested a return of the W4BOH "Land of Magic" articles.

Jack, reiterated that with his taking on the club president role he is no longer the DurHamFest chairman. He called for a volunteer to take on that role, noting that it is now time to submit the DPS site application for 2020. He even brought the near completed application form needing only a coordinator name & signature and mailing it to DPS. DFMA will even prepare the check to go with it. There were no takers.

Dan, KR4UB announced that John, KX4P has volunteered to give a presentation at the next DFMA meeting on the restoration of his Collins KWM-380 Pro-Mark transceiver. John further suggested that members read the recent August QST review of this classic radio. The radio is very easy to work on and repair.

Dan further announced that Steve, KZ1X plans to lead a construction project of the K1EL Morse Tutor Keyer Kit at the October 14th, 2019 OCRA meeting. This is a very simple but great quality low cost Morse tutor set and will facilitate over-the-air Morse lessons at some later date. A flyer on the kit was passed around. Further information on the club construction project is available at the [ncocra.org](http://ncocra.org) website.

1st time attendees were Steve, formerly WB4HIH and Thaddeus, KB7ZGU who have been inactive for some period of time. Steve was licensed in the late '60s and plans to take the exam in the next month. Thaddeus plans to return to active ham participation in VHF and UHF.

## REPORTS

**Vice President** – Jimmy, KF4KHU absent due to illness.

**Treasurer** – Lenore, KF4PAB provided the treasurer's report. There are 114 members with dues current.

**Secretary** – Dan, KR4UB, announcements listed above.

**Repeater Manager** – Charlie, NC4CD absent.

**AuxComm EC** – Shawn, K4CTD absent.

**Field Day & VE Coordinator** - Dave, W4SAR absent.

**Presentation of the DMFA "Lid" Award** - The DFMA LID was last presented by Jack, KM4MBG to Jimmy, KF4KHU for his generous gift to the club of the new Optoma projector and for his IT work to upgrade and maintain the DFMA website.

**Door Prizes** - Door prize winners were selected from the 26 attendees on the sign in sheet by a cell phone random number program as follows: Flashlight - Steve, 1st time attendee and formerly WB4HIH; Screwdrivers - Martin, KA5JUU; Magnetic Lamp - Dave; NA4VY; and VOM donated by Dave, NA4VY - Mike, KK4BPH.

**Program:** In lieu of a program, Jack returned the meeting to an extended introduction period inviting each attendee spend some time going into more detail about their interests, needs, topics and activities they would like to see the club to focus on. Highlights of the discussion were as follows:

Lenore, KF4PAB would like to see more time devoted to member interaction at the meetings. Others concurred that this should be done on some ongoing basis such as show & tell sessions are currently done. Wilson, W4BOH added that while commonly referred to as "bull sessions", impromptu open discussion sessions where members suggest a topic and then letting the discussion go to the extent members desire can be very productive. Topics could be on radio basics, activities and projects of interests. Bill, N8BR would like to learn more, or better yet, find someone experienced in re-cabling a telescoping tower. Don, KE4UVJ commented there must be members who enjoy vintage cars; their skills are dearly needed for another vintage vehicle, the DFMA MCU. Dave, NA4VY citing his URC-32 long term interest from his Navy era and longer term project trying to keep it operational, wants to learn more about modern technology including SDRs, new technology batteries, 5G, antennas and other's hobbies. Jack, KM4MBG also expressed an interest in learning more about SDRs and enjoys working on things. Wally, WA4UJM wants more tech talks. Thaddeus, KB7ZGU a returnee to ham radio wants to get back into VHF/UHF operations. Martin, KA5JUU recounted obtaining his Novice license in 1951 with help from information in a Boy's Life magazine. He went on to describe how he used CW to play chess over the air with a Mississippi tugboat captain. Bob, KF4NTC commented that there were very few attendees at the last Auxcomm planning session and would like to see more involvement. Dee reiterated the need for more involvement for Auxcomm, reminding all that the meetings occur on the 4th Tuesday of the month at the Durham EOC. He further reminded all that the DFMA Thursday night 8pm net on the 147.225 and 147.450 linked repeaters follows Auxcomm net procedures, then announcements and a club rag chew session at the end. The net could become an extension of the above type discussions. Dan, KR4UB a long time repeater builder for OCRA and soon to start rebuilding and re-coordinating two repeaters to be deployed for Chatham CERT support has learned over time it can be difficult to find some high reliability parts, and is always interested in hearing when others have found a particularly

good source. Chuck KW4KZ enjoys building things and is always looking for interesting kits of parts and of course enjoys HAM (Have Another Meal) gatherings.

**Meeting adjourned at 8:00 pm.**