

# The Link

Newsletter of the Durham FM Association

January 2021



## President's Corner

Welcome to the first Link of 2021! I'm hopeful that this year, we'll be able to return to some of our in-person HAM activities. However, since I'm not confident in my ability to predict the future (if I were, I'm sure these columns would be much more interesting), I can't say if it will come in time for DurHamFest or other springtime activities. Therefore, the feeling that we need for the start of 2021 is patience. We'll get back together eventually, but in the meantime we'll continue to enjoy our virtual activities including our special club meeting net on Tuesday at 7pm on the 145.45 repeater and WR4AGC-R Echolink/SVXLink node. In the meantime, have you used extra patience in any amateur radio projects? I know our Link editor, Martin, KA5JUU, has in waiting on my tardy columns and in our search for his replacement. Perhaps that patience has allowed you to finally solve a vexing antenna problem or meticulously get all the details perfect in a restored vintage radio. We've love to feature your story of patience in these pages or at a virtual club meeting, so please let us know about it.

73,  
Jack — KM4MBG



## In Memoriam

**Rhett Truesdale George Jr., KE4HIH, SK**

Rhett passed away on December 14, 2020 at Duke University Hospital in Durham. He was 87 years old. He was born in Columbia, South Carolina on May 2, 1933 to the late Rhett Truesdale George, Sr. and Gladys Doughty George. Dr. George earned his undergraduate degree in Electrical Engineering from Duke University in 1955 and his PhD. from the University of Florida in 1965.



Dr. George was a professor emeritus of Electrical Engineering at Duke University. He was a member of McMannen United Methodist Church and was also involved in the Red Cross and the United States Power Squadron. His most passionate hobbies included trains and amateur radio, his radio sign being KE4HIH.

Dr. George is survived by his wife of 58 years, Joanna George; son, Charles R. George (Dawn); sister, Darien Pickens (Robert); grandchildren, Caitlin George Kalen (Alex), Ashlee George; and nieces, Barbara Pickens Foster (Ed) and Linda Pickens Cobb (Ty).

A memorial service will be held at a later date.

In lieu of flowers, the family requests that memorial donations be made to McMannen United Methodist Church: 4102 Neal Rd., Durham, NC 27705.

The family is being assisted by Clements Funeral & Cremation Services, Inc. in Durham. Online condolences may be sent to [www.clementsfuneralservice.com](http://www.clementsfuneralservice.com).

To plant a beautiful memorial tree in memory of Dr. Rhett Truesdale George, Jr., please visit our Tribute Store.  
Events

## Rhett, KE4HIH, SK -- Thank You! -- A personal tribute

Dan, KR4UB talking to Rhett at the Train Layout in 2011

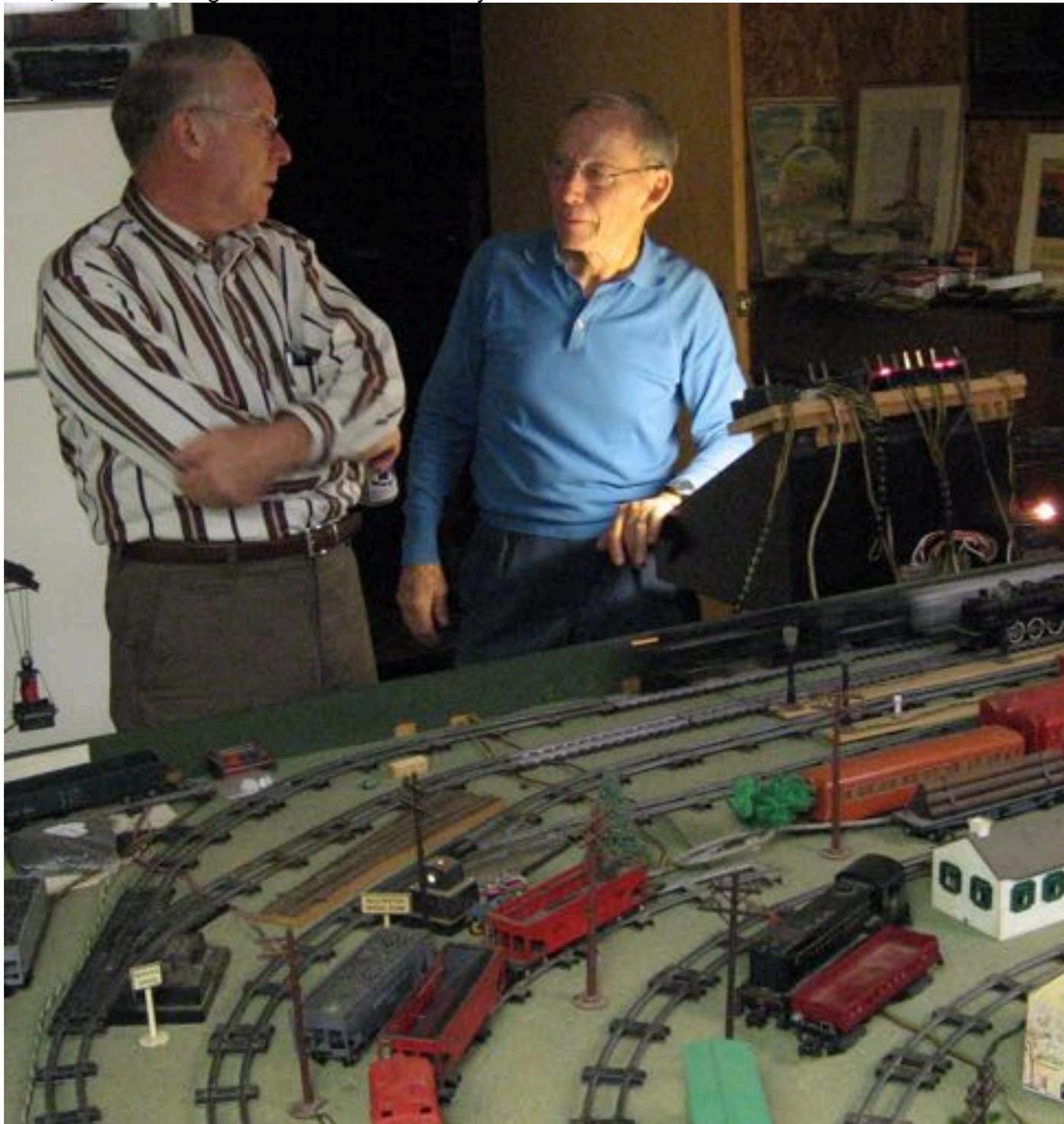


Image courtesy of KU4GC

Rhett George was on the faculty of the Duke Electrical Engineering Department and I was in Computer Science, so I'm sure I met him as early as the 1970s, but had no closer interaction. It was not until my son (Karl, N1XPB) was an undergraduate in Computer Science that I really got to know him. Rhett advised and ran an Electric Car Club in Engineering and my son and his



Joanna, KE4QOZ and Rhett eating with the Lambs  
at the DFMA Christmas Dinner in 2018  
Image courtesy of KU4GC

close friend (Sidik, WH6FUS) became involved in the club. (I also then learned of Rhett's interest in electric tractors.) Rhett was such a nice person, always ready to help and an inspiration to the students. We would always exchange friendly words if our paths crossed on campus after that. About two years later, in 1996, Karl had a job working for MIT and got involved with campus life there. This led to his getting a ham license and subsequently giving me an HT for Christmas and my and my family's life changed. We were all licensed within a few months. We got involved with OCRA and the DFMA and there was Rhett. I had not previously known of his amateur radio activities.

Rhett played many roles in the DFMA and all of us have much to thank him for. Rhett served as the DFMA president from 1998-1999. (He also served a term as vice But it is the less official duties where Rhett really stood out. In 2000, a former DFMA member passed away and his widow contacted the club to donate his radio gear. His collection was vast and it took a party of club members two days with various pickups and vehicles to remove the equipment. So what to do with it? It was decided to auction off the stuff and Rhett volunteered his place for storing all of the stuff and on two successive Saturdays hams from the triangle area came to bid on Lou's treasures.

For some years the DFMA had an annual picnic. It was usually held at Rhett's house with Rhett and Joaana (KE4QOZ) hosting. There we also got to visit Rhett's electric train layout. This was a large S gauge layout in the basement and all of us could enjoy it and think back on the trains we might have had in years gone by.

The DFMA Thursday night net on the 147.225 repeater has been going on since before I got my license in 1997. In the early years, Al (KE4IHX) was the most frequent net control and Rhett was an active participant. When Al became less involved (he became an active EMT in Person county), Rhett became the main driving force and the most frequent net control. He kept it going for many years until others stepped in to share the load. He had always been active in the Possum Trot net (for the early risers) and in recent years put most of his energy into keeping that functioning smoothly.

As might be expected from a professor, Rhett was usually involved when the DFMA did anything educational. Over the years license classes were offered from time to time and they often involved Rhett. He also hosted some kit project get-togethers in the Duke engineering labs when Duke was more open to visitors and parking was available at night and on weekends.

Rhett and Joanna were always an expected sight at every DFMA hamfest, as perennial managers of the club table. Joanna had to make sure that Rhett didn't take home more than what was offered on the tables.

Over the years, meeting sites for the DFMA became a problem from time to time. He generously arranged for the DFMA to be able to meet at the McMannen Methodist Church for several years. His only possible ham-related weakness was his problems with Morse code. He remained at the Technician Class level until the code requirement was abolished. Then he quickly got his Extra Class license.

I've only touched on areas where my knowledge of Rhett's service was clear. I'm sure he did much in areas I'm not even aware of or his work with the Power Squadron which I heard about. The bottom line is that the members of the DFMA and the hams in this area owe Rhett a lot. He will be sorely missed.

Dee, KU4GC

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**Happy Holidays**

**from the Land of Magic**

**Wilson and Dee Anne Lamb**

**K4OGP**, later to become **W4BOH**, 1957

WILSON LAMB, a junior at Reynolds High School, tests a home-made radio transmitter which he uses to talk with other radio enthusiasts around the city. Wilson will have a bigger, more powerful set on display at the school Science Fair Friday night.

## The Uncertain Future of Ham Radio

Software-defined radio and cheap hardware are shaking up a hobby long associated with engineering

By Julianne Pepitone



John Anderson (AJ7M), from Marysville, Washington on the air from home for the 2020 ARRL Field Day event, held June 27-28. Field Day is ham radio's largest on-air annual event and demonstration.

Will the amateur airwaves fall silent? Since the dawn of radio, amateur operators—hams—have transmitted on tenaciously guarded slices of spectrum. Electronic engineering has benefited tremendously from their activity, from the level of the individual engineer to the entire field. But the rise of the Internet in the 1990s, with its ability to easily connect billions of people, captured the attention of many potential hams. Now, with time taking its toll on the ranks of operators, new technologies offer opportunities to revitalize amateur radio, even if in a form that previous generations might not recognize.

The number of U.S. amateur licenses has held at an anemic 1 percent annual growth for the past few years, with about 7,000 new licensees added every year for a total of 755,430 in 2018. The U.S. Federal Communications Commission doesn't track demographic data of operators, but

anecdotally, white men in their 60s and 70s make up much of the population. As these baby boomers age out, the fear is that there are too few young people to sustain the hobby.

“It’s the \$60,000 question: How do we get the kids involved?” says Howard Michel, former CEO of the American Radio Relay League (ARRL). (Since speaking with IEEE Spectrum, Michel has left the ARRL. A permanent replacement has not yet been appointed.)

This question of how to attract younger operators also reveals deep divides in the ham community about the future of amateur radio. Like any large population, ham enthusiasts are no monolith; their opinions and outlooks on the decades to come vary widely. And emerging digital technologies are exacerbating these divides: Some hams see them as the future of amateur radio, while others grouse that they are eviscerating some of the best things about it.

No matter where they land on these battle lines, however, everyone understands one fact. The world is changing; the amount of spectrum is not. And it will be hard to argue that spectrum reserved for amateur use and experimentation should not be sold off to commercial users if hardly any amateurs are taking advantage of it.

Before we look to the future, let’s examine the current state of play. In the United States, the ARRL, as the national association for hams, is at the forefront, and with more than 160,000 members it is the largest group of radio amateurs in the world. The 106-year-old organization offers educational courses for hams; holds contests where operators compete on the basis of, say, making the most long-distance contacts in 48 hours; trains emergency communicators for disasters; lobbies to protect amateur radio’s spectrum allocation; and more.



Former ARRL CEO Howard Michel (WB2ITX) at headquarters station, W1AW.

Michel led the ARRL between October 2018 and January 2020, and he fits easily the profile of the “average” American ham: The 66-year-old from Dartmouth, Mass., credits his career in electrical and computer engineering to an early interest in amateur radio. He received his call sign, WB2ITX, 50 years ago and has loved the hobby ever since.

“When our president goes around to speak to groups, he’ll ask, ‘How many people here are under 20 [years old]?’ In a group of 100 people, he might get one raising their hand,” Michel says.



Members from the LASA High School Amateur Radio Club, K5LBJ, in Austin, Texas participated in School Club Roundup, a twice-yearly on-air event that encourages participation from ham radio school groups.

ARRL does sponsor some child-centric activities. The group runs twice-annual Kids Day events, fosters contacts with school clubs across the country, and publishes resources for teachers to lead radio-centric classroom activities. But Michel readily admits “we don’t have the resources to go out to middle schools”—which are key for piquing children’s interest.

**We need to “convince them there’s more than getting licensed and putting a radio in your drawer and waiting for the end of the world.”**

Sustained interest is essential because potential hams must clear a particular barrier before they can take to the airwaves: a licensing exam. Licensing requirements vary—in the United States no license is required to listen to ham radio signals—but every country requires operators to demonstrate some technical knowledge and an understanding of the relevant regulations before they can get a registered call sign and begin transmitting.

For those younger people who are drawn to ham radio, up to those in their 30s and 40s, the primary motivating factor is different from that of their predecessors. With the Internet and social media services like WhatsApp and Facebook, they don't need a transceiver to talk with someone halfway around the world (a big attraction in the days before email and cheap long-distance phone calls). Instead, many are interested in the capacity for public service, such as providing communications in the wake of a disaster, or event comms for activities like city marathons.

"There's something about this post-9/11 group, having grown up with technology and having seen the impact of climate change," Michel says. "They see how fragile cellphone infrastructure can be. What we need to do is convince them there's more than getting licensed and putting a radio in your drawer and waiting for the end of the world."

New Frontiers



Dhruv Rebba (KC9ZJX) with his ham radio set up

Dhruv Rebba (KC9ZJX) with memorabilia from his ham radio contact with astronaut Joe Acaba (KE5DAR) onboard the International Space Station.

The future lies in operators like Dhruv Rebba (KC9ZJX), who won Amateur Radio Newsline's 2019 Young Ham of the Year award. He's the 15-year-old son of immigrants from India and a sophomore at Normal Community High School in Illinois, where he also runs varsity cross-country and is active in the Future Business Leaders of America and robotics clubs. And he's most interested in using amateur radio bands to communicate with astronauts in space.

Rebba earned his technician class license when he was 9, after having visited the annual Dayton Hamvention with his father. (In the United States, there are currently three levels of amateur radio license, issued after completing a written exam for each—technician, general, and extra. Higher levels give operators access to more radio spectrum.)

“My dad had kind of just brought me along, but then I saw all the booths and the stalls and the Morse code, and I thought it was really cool,” Rebba says. “It was something my friends weren’t doing.”

He joined the Central Illinois Radio Club of Bloomington, experimented with making radio contacts, participated in ARRL’s annual Field Days, and volunteered at the communications booths at local races.

“We want to be making an impact... The hobby aspect is great, but a lot of my friends would argue it’s quite easy to talk to people overseas with texting and everything, so it’s kind of lost its magic.”

But then Rebba found a way to combine ham radio with his passion for space: He learned about the Amateur Radio on the International Space Station (ARISS) program, managed by an international consortium of amateur radio organizations, which allows students to apply to speak directly with crew members onboard the ISS. (There is also an automated digital transponder on the ISS that allows hams to ping the station as it orbits.)

Rebba rallied his principal, science teacher, and classmates at Chiddix Junior High, and on 23 October 2017, they made contact with astronaut Joe Acaba (KE5DAR). For Rebba, who served as lead control operator, it was a crystallizing moment.

“The younger generation would be more interested in emergency communications and the space aspect, I think. We want to be making an impact,” Rebba says. “The hobby aspect is great, but a lot of my friends would argue it’s quite easy to talk to people overseas with texting and everything, so it’s kind of lost its magic.”

That statement might break the hearts of some of the more experienced hams recalling their tinkering time in their childhood basements. But some older operators welcome the change.

Take Bob Heil (K9EID), the famed sound engineer who created touring systems and audio equipment for acts including the Who, the Grateful Dead, and Peter Frampton. His company Heil Sound, in Fairview Heights, Ill., also manufactures amateur radio technology.

“I’d say wake up and smell the roses and see what ham radio is doing for emergencies!” Heil says cheerfully. “Dhruv and all of these kids are doing incredible things. They love that they can plug a kit the size of a cigar box into a computer and the screen becomes a ham radio.... It’s all getting mixed together and it’s wonderful.”

But there are other hams who think that the amateur radio community needs to be much more actively courting change if it is to survive. Sterling Mann (N0SSC), himself a millennial at age 27, wrote on his blog that “Millennials Are Killing Ham Radio.”



Sterling Mann with his ham radio setup

Sterling Mann (N0SSC) is advocating that ham radio shift away from a focus on person-to-person contacts.

It's a clickbait title, Mann admits: His blog post focuses on the challenge of balancing support for the dominant, graying ham population while pulling in younger people too. "The target demographic of every single amateur radio show, podcast, club, media outlet, society, magazine, livestream, or otherwise, is not young people," he wrote. To capture the interest of young people, he urges that ham radio give up its century-long focus on person-to-person contacts in favor of activities where human to machine, or machine to machine, communication is the focus.

These differing interests are manifesting in something of an analog-to-digital technological divide. As Spectrum reported in July 2019, one of the key debates in ham radio is its main function in the future: Is it a social hobby? A utility to deliver data traffic? And who gets to decide?

Those questions have no definitive or immediate answers, but they cut to the core of the future of ham radio. Loring Kutchins, president of the Amateur Radio Safety Foundation, Inc. (ARSF)—which funds and guides the "global radio email" system Winlink—says the divide between hobbyists and utilitarians seems to come down to age.

**“Ham radio is really a social hobby...Here in Mississippi, you get to 5 or 6 o’ clock and you have a big network going on and on—some of them are half-drunk chattin’ with you.”**

“Younger people who have come along tend to see amateur radio as a service, as it’s defined by FCC rules, which outline the purpose of amateur radio—especially as it relates to emergency operations,” Kutchins (W3QA) told Spectrum last year.

Kutchins, 68, expanded on the theme in a recent interview: “The people of my era will be gone—the people who got into it when it was magic to tune into Radio Moscow. But Grandpa’s ham radio set isn’t that big a deal compared to today’s technology. That doesn’t have to be sad. That’s normal.”

Gramps’ radios are certainly still around, however. “Ham radio is really a social hobby, or it has been a very social hobby—the rag-chewing has historically been the big part of it,” says Martin F. Jue (K5FLU), founder of radio accessories maker MFJ Enterprises, in Starkville, Miss. “Here in Mississippi, you get to 5 or 6 o’ clock and you have a big network going on and on—some of them are half-drunk chattin’ with you. It’s a social group, and they won’t even talk to you unless you’re in the group.”



Martin F. Jue (K5FLU)

Martin F. Jue (K5FLU), founder of well-known radio accessories maker MFJ, is developing new products to accommodate the shift towards digital radio communications in the amateur bands. “It’ll all be digital at some point, right at the antenna all the way until it becomes audio.”

But Jue, 76, notes the ham radio space has fragmented significantly beyond rag-chewing and DXing (making very long-distance contacts), and he credits the shift to digital. That's where MFJ has moved with its antenna-heavy catalog of products.

"Ham radio is connected to the Internet now, where with a simple inexpensive handheld walkie-talkie and through the repeater systems connected to the Internet, you're set to go," he says. "You don't need a HF [high-frequency] radio with a huge antenna to talk to people anywhere in the world."

To that end, last year MFJ unveiled the RigPi Station Server: a control system made up of a Raspberry Pi paired with open-source software that allows operators to control radios remotely from their iPhones or Web browser.

"Some folks can't put up an antenna, but that doesn't matter anymore because they can use somebody else's radio through these RigPis," Jue says.

He's careful to note the RigPi concept isn't plug and play—"you still need to know something about networking, how to open up a port"—but he sees the space evolving along similar lines.

"It's all going more and more toward digital modes," Jue says. "In terms of equipment I think it'll all be digital at some point, right at the antenna all the way until it becomes audio."

#### The Signal From Overseas

China's advancing technology and growing middle class, with disposable income, has led to a "dramatic" increase in operators.

Outside the United States, there are some notable bright spots, according to Dave Sumner (K1ZZ), secretary of the International Amateur Radio Union (IARU). This collective of national amateur radio associations around the globe represents hams' interests to the International Telecommunication Union (ITU), a specialized United Nations agency that allocates and manages spectrum. In fact, in China, Indonesia, and Thailand, amateur radio is positively booming, Sumner says.

China's advancing technology and growing middle class, with disposable income, has led to a "dramatic" increase in operators, Sumner says. Indonesia is subject to natural disasters as an island nation, spurring interest in emergency communication, and its president is a licensed operator. Trends in Thailand are less clear, Sumner says, but he believes here, too, that a desire to build community response teams is driving curiosity about ham radio.

"So," Sumner says, "you have to be careful not to subscribe to the notion that it's all collapsing everywhere."

China is also changing the game in other ways, putting cheap radios on the market. A few years ago, an entry-level handheld UHF/VHF radio cost around US \$100. Now, thanks to Chinese manufacturers like Baofeng, you can get one for under \$25. HF radios are changing, too, with the rise of software-defined radio.

"It's the low-cost radios that have changed ham radio and the future thereof, and will continue to do so," says Jeff Crispino, CEO of Nooelec, a company in Wheatfield, N.Y., that makes test equipment and software-defined radios, where demodulating a signal is done in code, not hardwired electronics. "SDR was originally primarily for military operations because they were the

only ones who could afford it, but over the past 10 years, this stuff has trickled down to become \$20 if you want.” Activities like plane and boat tracking, and weather satellite communication, were “unheard of with analog” but are made much easier with SDR equipment, Crispino says.

Nooelec often hears from customers about how they’re leveraging the company’s products. For example, about 120 members from the group Space Australia to collect data from the Milky Way as a community project. They are using an SDR and a low-noise amplifier from Nooelec with a homemade horn antenna to detect the radio signal from interstellar clouds of hydrogen gas.

“We will develop products from that feedback loop—like for hydrogen line detection, we’ve developed accessories for that so you can tap into astronomical events with a \$20 device and a \$30 accessory,” Crispino says.

Looking ahead, the Nooelec team has been talking about how to “flatten the learning curve” and lower the bar to entry, so that the average user—not only the technically adept—can explore and develop their own novel projects within the world of ham radio.

“It is an increasingly fragmented space,” Crispino says. “But I don’t think that has negative connotations. When you can pull in totally unique perspectives, you get unique applications. We certainly haven’t thought of it all yet.”

The ham universe is affected by the world around it—by culture, by technology, by climate change, by the emergence of a new generation. And amateur radio enthusiasts are a varied and vibrant community of millions of operators, new and experienced and old and young, into robotics or chatting or contesting or emergency communications, excited or nervous or pessimistic or upbeat about what ham radio will look like decades from now.

As Michel, the former ARRL CEO, puts it: “Every ham has [their] own perspective. What we’ve learned over the hundred-plus years is that there will always be these battles—AM modulation versus single-sideband modulation, whatever it may be. The technology evolves. And the marketplace will follow where the interests lie.”

About the Author

Julianne Pepitone is a freelance technology, science, and business journalist and a frequent contributor to IEEE Spectrum. Her work has appeared in print, online, and on television outlets such as Popular Mechanics, CNN, and NBC News.

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## **How About A Little Ham Humor?**

Two elderly hams had been friends for many decades. Over the years they had shared all kinds of activities and adventures on the ham bands. Lately, their activities have been limited to meeting a few times a week to play cards. One day they were playing cards when one looked at the other and said, “Now don’t get mad at me .... I know we’ve been friends for a long time ... but I just can’t think of your name

and your call! I've thought and thought, but I can't remember them. Please tell me what they are." His friend glared at him. For at least three minutes, he just stared and glared at the gray haired old man. Finally, he said "How soon do you need to know?"

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**Minutes of Last Club Meeting**

Durham FM Association (DFMA)

DFMA Club Meeting 12/01/20 – Dan, KR4UB, Secretary

Location: 147.225 & 145.450MHz PL 82.15 DFMA Repeater

Attending: KM4MBG, Jack; KR3AM, Mark; KU4GC, Dee; NC4CD, Charlie; N4DSF, Dave; KO4JAR, Allen; K0OUX, Vic; KM4JZA, Mike; N4JQR, J.R.; KW4KZ, Chuck & Mary; KK4PH, Lowell; KW4XL, Dave; KN4FKH, Felicia; W4OFZ, Banks; KF4PAB, Lenore; AJ2X, Mark; KR4UB, Dan; WA4UJM, Wally; KO4DHJ, Ken; WD4CEE, Terry; KN4EEO, Rick; K4BFR, Michael; KI4RAN, Bill

A total of 24 attended, 23 of them hams.

President: Jack, KM4MBG opened the over the air Monday Christmas club meeting net at 7 pm with a call for brief officer reports, followed by check-ins and assignment of numbers for the door prize drawing, followed by a round table topic of ham New Year's resolutions.

**REPORTS**

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

Secretary – Dan, KR4UB called for member feedback on the 11/3/20 Over the Air Club and 11/17/20 Board meeting minutes included in the most recent DFMA Newsletter. Nothing heard.

Repeater Manager – Charlie, NC4CD reported work has been done on adjusting audio levels on various repeaters, including the Red Mountain connection to the Hillsborough 225 repeater and the linking from the 225 to 450 repeater IRLP link. He further reported that former DFMA member KB4WGA, John now located in Florida is working on setting up Echolink on his Dade City, Florida repeater for use during the morning DFMA Possum Trot Net.

Program Presentation

The program was a round table discussion with Jack reading member resolutions from last year and calling for each attendee to report on their accomplishments, followed by soliciting New Year's resolutions for the next year. A fun time was had by all hearing progress and not so much progress reports.

Mark, KR3AM - Not at last year's Christmas Party, Most of his ham radio activity is now taking place on Zoom. Next Year: Strong effort to learn CW.

Charlie, NC4CD - Get station on the air. Progress is very slow; the coax and grounding are in place but no station yet. Next Year: Get HF station on the air. Perhaps some members interested in remote stations will want to get involved.

Dave, N4DSF - New member of the club and area. Most ham activity has been with club members at his former Virginia location. Next Year: More active locally.

Taking a break from the resolutions, Jack held the drawing for the first door prize. In keeping with the (HAM) Have Another Meal tradition, meal seven gift certificates were procured from three different restaurants. Using the random number cell phone application, Lowell, KK4PH won the first prize and selected a \$50 meal gift certificate from Kitchen Restaurant in Chapel Hill.

Dee, KU4GC - Continue the WAS & DXCC Chase. Still not quite there. Next Year: Improve VHF/UHF set up at home..

KO4JAR, Allen - New to the hobby and area. Next Year: Learn more about antennas, get a general class license, a few more radios, and establish relationships with hams in the area.

K0OUX, Vic - Not at last year's Christmas Party. Next Year: Get 80 and 40M antennas back on the air and run more power.

The next door prize drawing was held with J.R. N4JQR winning and selecting a Bullocks meal gift certificate.

KM4JZA, Mike - Just retired this year and now has more time for ham radio. Next Year: Upgrade his tech license to general class.

N4JQR, J.R. - Get an amplifier for HF work; done! Next Year: Upgrade his HF, 2M and 440cm antennas.

KW4KZ, Chuck - Got an outside wire antenna up and used it! Had much more DMR activity. Next Year: Rework coax feed line, put up even more antennas. Expand his TARP node. Mary's resolution is to be Chuck's QSL manager and more (signal too noisy to copy).

The next door prize drawing was held with Allen, KO4JAR winning. No response, Jack will contact Allen later.

Lowell, KK4PH - Finish his 5 ½ yards concrete project for his tower. Done! Tower has been pulled into place, and still needs a little additional work. Next Year: Has some fences that are lacking Beverage antennas and plans to get two beverage antennas installed.

Dave, KW4XL - Put his antenna on the ground! The antenna is on the ground (in a good way). It was designed to be a 4 legged roof mount antenna and has now taken up residence on a backyard swing set. Next Year: Moving and looking for a new house near Troy, NC due to Felicia's job location. Planning to build but location (of course) must be able to accommodate the outdoor antennas.

Banks, W4OFZ - Not at last year's Christmas Party. Next Year: Reconstitute his ham radio shack after a residence move takes place in 2021.

The next door prize drawing was held with Ken, KO4DHJ winning and selecting a Bullocks meal gift certificate.

Lenore, KF4PAB - Get back on HF. Got on HF checking into the 10M net several times and kept the DFMA bills paid. Next Year: Continue to enjoy the new HF radio and don't lose any checks. Keep the bills paid!

Mark, AJ2X - Get on FT-8; Done! Next Year: Improve his antenna situation using nearby trees to get some height.

Dan, KR4UB - More HF activity and hopefully less demands for repeater building. Worked a lot of HF FT-8 in the early part of the year and then for the at home Field Day FT-8 operation making more digital points than all digital points at last year's Field Day. Watching Bruce N1LN and Laurie N1YXU on Zoom continuing to operate well into the wee hours of the morning was great motivation! Did more repeater building with great participation from Nick KA1HPM, Jim W4CFO and Paul N2XZF to return the OCRA 443.475 repeater on the air, deployed to just East of Siler City and the 145.230 repeater rebuild is near complete. Next Year: Less repeater activity involvement by successfully handing over responsibility to younger, dedicated club members.

The next door prize drawing was held with Dave, KW4XL winning. No response, Jack will contact Dave later.

KO4DHJ, Ken - Not at last year's Christmas Party. Next Year: Finish his licensing through General Class and participate in 2021 Field Day.

WD4CEE, Terry - Not at last year's Christmas Party. Got his Extra class (promise from several years back). Next Year: Automatic antenna that he can put up and night and lower in daytime to keep neighbors happy. Talk Dewey, WA4AHR into doing most of the work!!

KN4EOO, Rick - Not at last year's Christmas Party. Next Year: More AuxComm & CERT classes, more power on DMR and getting his CW speed back up to what he used to be able to do.

The next door prize drawing was held with Dee, KU4GC winning but declined to avoid any conflict of interest. Next number drawn was Mark, KR4AM . No response, Jack will contact Mark later.

K4BFR, Michael - New to Christmas meeting. Next Year: Build his antenna tower and build his base station.

KI4RAN, Bill - Not at last year's Christmas Party. Next Year: Get his radios programmed, undecided on other projects.

WA4AHR, Dewey - Next Year: Learn how to program his radios. Make it through COVID-19, spend more time on HF and talking Terry, WD4CEE into buying that HF radio.

The next door prize drawing was held with Dewey, WA4AHR winning and choosing a Bullocks gift certificate.

WA4UJM, Wally - For Susan to get her license. Very busy year, got license manual but did not get license. Next Year: Get license!

Meeting adjourned at 8:30 pm.

## **Minutes of Last Board Meeting**

There was no board meeting in December