K9YA Telegraph

Robert F. Heytow Memorial Radio Club

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The Way We Were

Science News Letter

Philip Cala-Lazar, K9PL

In 1941 there were about 60,000 hams in the United States. This according to then ARRL President George Bailey, W1KH, in the article, "Radio Hams Are Back," *Science News Letter*, March 9, 1946. President Bailey optimistically forecast that number to increase to 100,000 by year's end 1946 and 250,000 in five years.

The 1946 article, to acquaint readers with the reemergent radio service and provide a ham radio primer, outlined the basics: Two licenses required, station and operator; must be able to send and receive International Morse code at 13 wpm; and "demonstrate a thorough knowledge of radio." A reassuring tidbit tossed to would-be hams, "More than half the applicants fail to get a license the first time they apply," but most return and pass the examination "later."

"DX Hound"

Some radio activities were briefly described: "Ragchewer," "DX Hound" and the ARRL's Emergency Corps. Discussions via radio were mainly of the technical variety, but "ham talk was not limited to science." DX Hounds conducted "a continual search for new and faraway stations." Experimentation in the new and exciting world of VHF/UHF radio, boosted by wartime advances, was growing ever more popular.

Chicago Daily Tribune
February 13, 1946
FCC Reopening Radio Lanes to Ham Operators

For the first time since the beginning of the war the FCC was issuing amateur radio licenses. ARRL Secretary Kenneth B. Warner, W1EH, issued a ham population prognostication identical to Mr. Bailey's. Mr. Warner "…expects the number of 'hams' to reach a new high of 250,000 within five years as compared with the peak of 60,000 prior to the start of the war." Some of those quarter million hams would include the approximately 8,000 individuals "who took examinations for operators' licenses during the war years…." Amateur radio examinations continued during the war years, but no new licenses were issued. (See: *K9YA Telegraph*, February 2010, "The Moment," Erwin R. Gaines, W5OTP, p. 7)

February 22, 1946
Barriers Beset Restoration of Amateur Radio

The "barrier" was the shortage of equipment available to new and newly reinstated ham radio operators. Much of that shortage stemmed from hams selling their gear to the military at the onset of hostilities. Ops will have to bide their time as electronics manufacturers gear up their peacetime production and for surplus military gear to increase in variety and quantity.

Now, some six months after V-J Day, "25 countries have reactivated their amateurs… permitting two way communication with the United States." Those

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Dear Hiram

Dayton Hamvention® 2013

Bob Cashdollar, NR8U



Hamvention® Fleamarket
Photo: N9WAT

Well, Hiram, we made it through another Hamvention® weekend. "Fritz" Tender, WD8E, again made the trek with me, and it was a good thing because he was driving.

Going over to Dayton Friday was a bit hairy. Just before Springfield, on I-70 we saw an accident on the eastbound side, which had traffic backed up in both lanes for a good four or five miles. Further on in the westbound lane traffic came to a halt in both lanes just before the exit to Springfield, Ohio. We ducked off the interstate and took a tour of downtown Springfield before popping back on the interstate on the west side of Springfield. Made it to the Hamvention® around noon, which was our original goal.

Did I mention it was also very foggy Friday morning?

We did our usual divide and conquer attack with Fritz inside and me walking the flea market. The sun eventually burned through the remaining overcast and the day turned warm and sunny. It was so nice; in fact, I lost track of time wondering up and down the aisles of the flea market and missed the power line interference forum at 2:30 p.m.

"…a sign of things to come?"

Oh well, I guess I can live with some power line noise for another year.

The flea market on Friday was fairly well attended. I would say the spaces were about 90 percent occupied with an assortment of "stuff." There seemed to be more non-ham sellers than I remember the last couple of years. I wonder; did the guy selling leather belts really do well enough to justify the price of his space? He looked a bit lonely when I passed his spot. At least the people who used to sell bundles of white socks don't seem to come any more.

There seemed to be an abundance of HF radios this year or maybe I just noticed them more. Vintage radios also seemed to be everywhere I looked.

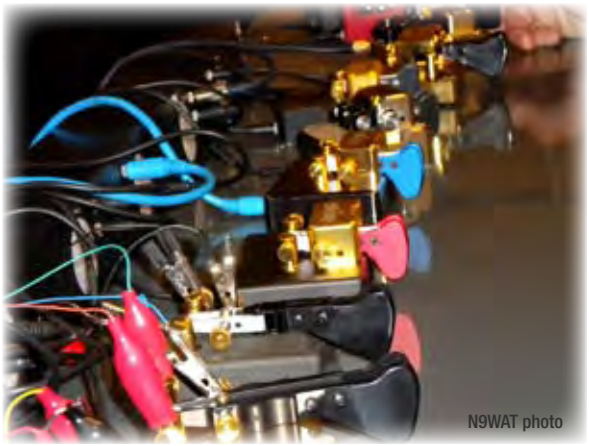
Passing through "audio alley" on my way outside, I was handed a card in front of Bob Heil's stand. Bob was standing out front so I walked up to him and asked him for an autograph. He promptly whipped out a Sharpie® pen and signed his picture on the card. We had a brief conversation and I told him how much I enjoyed Ham Nation on the Web.

We got out of the Hamvention® late in the day and checked in to our hotel. We had reservations for the 160-meter dinner at the Crown Plaza hotel in downtown Dayton. In years past, we had gone to the Plaza for the DX dinner, but it has moved to another venue. The 160 dinner was packed and when we arrived just before the dinner started we were separated and seated at different tables. It kind of worked out as I was able to talk to people I would probably never had a chance to speak to if we had been on time. Little did I know, but talking to different people would be a theme of the weekend.

Saturday morning dawned a bit overcast again. The local weather reports were for a chance of showers during the day.

Arriving at the Hamvention® site the first thing we noticed was how full the parking lot was for 8:30 in the morning, maybe a sign of things to come?

Back in the day, 1994 to be exact, I bought a tee shirt from the good folks at the Waffle House on Needmore Road. For some unknown reason, I saved the shirt and only wear it to Dayton on Saturdays and an occasional local Field Day. This year, the shirt seemed



N9WAT photo

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to be a conversation starter wherever I went Saturday. People stopped me and asked if was a real shirt (?), was I making some kind of statement (about what?), where could they get one, etc.

One of the best conversations it started was with a couple of young guys who were attending their first Hamvention®. They were just amazed at what they were seeing and you could hear it in their voices. Brought back a lot of memories of my first times coming to Dayton.

It did rain a bit later in the day and that forced people to come inside which created the usual pinball effect as you walked around inside. One of the first things you learn at Dayton is you don't need to say, "Excuse me" as you walk around because everybody is bumping into everybody else.

While inside I checked out the American Radio Relay League area and they seemed to have everything under control. The Radio Society of Great Britain, the Deutscher Amateur Radio Club and the Qatar contingent all had their usual places next to the ARRL. I bought a W1AW tee shirt to show my support for the 75th anniversary celebration of the station.

The rain stopped finally and a lot of people headed back outside to the flea market, which relieved much of the congestion inside Hara.

I worked my way over to the forums area to go to the antenna computer-modeling forum, forget that! I got there about 10 minutes before the start and couldn't get in the door it was so crowded. I was now 0-2 on attending forums.

I decided to work the inside of Hara arena and check out the displays. The first thing I noticed was Elecraft seems to be expanding their presence at the show. They have a lot bigger display area than I remember from previous shows.


N9WAT photo

This year, you could actually get to look at the displays at the SDR booth,it wasn't crowded three deep like last year.

I may have missed it but overall there didn't seem to be any buzz about new radios or other products.

Luso had a super tower on display. It had a "sold" sign on it, the price was $16,900.

We headed back to the hotel and decided to beat the crowds to a local all you can eat restaurant. Not a chance, the place was packed with guys wearing callsign ID badges. A lady in front of us in line turned and remarked, "Oh right, this is the radio show weekend, it sure makes for a crowded weekend, but we're glad to have you come." The Dayton Chamber of Commerce should find the lady and hire her!



Inside HARA Arena
Photo: N9WAT

> *"…find the lady and hire her!"*

Sunday was packing day and we wanted to attend the collecting and restoring ham radios of the past forum so we got a move on and made the 9:15 a.m. forum with time to spare. It was well attended and we learned a few techniques to use on our old rigs at home.

Fritz had another shift at the League area so I walked outside and surveyed what was left of the flea market. There were a few hangers on, but the place looked a bit desolate compared to Friday and Saturday.

The Hamvention® starts to close down at noon with the final prize drawings starting at 1:00 p.m. As last year, Fritz and I decided to leave early, skip the drawing and beat the crowd out of the parking lot. Like last year, no one called and told us we had won a major prize. We are now roughly 0-35 on winning major prizes.

Looking back over the last three days, Hiram, it was another good Hamvention®. We met old friends we only seem to see at Dayton and managed to meet some new people along the way.

Again, thanks for your efforts many years ago to preserve amateur radio and allow it to grow into what it is today. ■

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Cyclone 40 Kit

A New and Innovative Transceiver, From David Cripe, NMØS



Cyclone 40
NMØS photo

Kitted and offered for sale by the Four State QRP Group.

Arising from Dave's entry in QRP ARCI's 72 Part Challenge Design Contest in 2010, the Cyclone 40 is an enhanced version of the original design. The transceiver entered in the design contest had 72 total parts, performed well and won an honorable mention. This improved version has 98 components and even better performance. The kit features all through-hole parts and easy assembly. The receiver is a superhet design with very good sensitivity and selectivity, tunes the entire 125 kHz CW segment of the 40-meter band and does so at a comfortable tuning rate. A frequency readout (annunciator) is included.

This is a complete kit, including enclosure. A high quality board package includes the PCB, front and back panels, sides, top and bottom. Control and jack labels are silk screened in white letters and contrast vividly with the black solder mask. Holes are predrilled for connectors and controls. The enclosure's ends are "dovetailed" for a very rugged, easy to build and attractive enclosure.

Features and Specifications

General

Enclosure: Predrilled and silk-screened enclosure included.

Ergonomics: A smooth, solid tuning, quiet receiver with QSK and well-behaved AGC.

VFO: Simple PTO design, very stable and quite easy to build.

Sidetone: Included.

AGC: Audio derived, fast and smooth.

Frequency Range: 7.000–7.125 is typical.

Tuning Speed: 10kHz/knob turn is typical.

Stability: 300 Hz the first 5 min after power up, less than 10 Hz/hour afterward.

QSK: Full break-in, excellent muting, really fast!

No SMT parts and only three easy to wind toroids.

Dimensions: 4.4" x 3.6" x 1.9"

Power Connector: 2.5 x 5.5mm coaxial, center positive. Should be fused at 1A, fast blow at power supply.

Antenna Connector: BNC

Receiver

Configuration: Superheterodyne, 11 MHZ IF, 4 Crystal IF Filter.

Sensitivity: MDS (Minimum Discernible Signal) -125, Typical, below the normal 40-meter band noise level.

Selectivity: Four crystal, 500 Hz IF filter

IMD3: 90 dB typical, better than most commercial gear!

IP3: +10 dBm typical–another very good number

Frequency Readout: 3 or 4 digit CW, 1 kHz or 100 Hz resolution (user selectable), developed by Adrian Hill, KCØYOI.

Band Edge Marker: A band edge marker is heard at 7.001 MHZ.

Headphone Jack: 1/8" stereo, standard earbud/ Walkman® headphone compatible

DC Current Consumption: 30 ma typical at 13.6 VDC.

Transmitter

Configuration: Stable, Wide Range VFO (PTO design), Efficient Class E Final.

Spectral Purity: All harmonics and spurs are 50dB or more below the carrier.

Output Power: Approximately 4 watts into 50 ohms DC Current consumption: 500ma typical at 13.6 VDC. Will operate down to 9V DC.

Key Jack: 1/8" stereo, grounded shell, switching the tip keys TX. Contacts accessible for add-on keyer.

All proceeds are applied toward funding OzarkCon.

Cyclone 40 Yahoo Group:

http://groups.yahoo.com/group/cyclone40/join

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USS *Lexington*

Scott Laughlin, N7NET

The aircraft carrier USS *Lexington* served proudly during World War II. After decommissioning it was moved to Corpus Christi, Texas where it is now open to the public.

Over the years a number of my friends have served in the U.S. Navy, some on carriers. I visited the USS *Lexington* in late 2012. There is a world of things to see and understand on the USS *Lexington*. However, my greatest interest was the radio room.

My request at the ticket booth summoned Debbie Crites, marketing director. The guide who knew the radio room best was off for the day, but she quickly located a substitute. He led me three decks above the hangar deck and through a hatch.



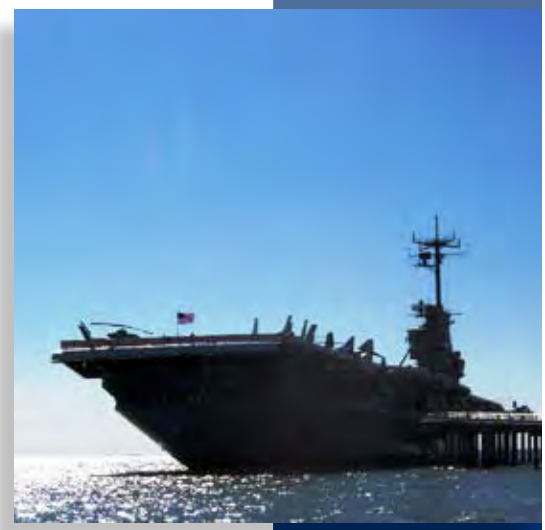
The radio room was larger than I expected. Though much of the equipment had been removed, it seemed there was adequate space to accommodate three or four people.

I felt that if I listened closely I might hear the sound of Morse as I stood there trying to fathom the awesome responsibility borne by those radio operators–whomever they were.

I was immediately reminded of an article written by Coast Guard operator Jeff Herman, KH6O, "The Story of the Coast Guard Operators."

As a Coast Guard Radio operator, he monitored the late 500kc emergency frequency, listening for distress calls.

Upon receiving a distress call he plotted the signal's location. Then, using his powerful radio transmitter, he contacted other ships within steaming distance and directed them to that location.



USS Lexington

Responding to one particular distress call from a sinking ship, he learned there were no ships within steaming distance. The crew's fate was sealed. Jeff stayed on frequency, staying in touch with the operator until the radio room flooded.

I glanced around me and considered how a person might exit this radio room when the transmitter ceased to function, and all hope was lost. But I found only steel plates, no portholes, no escape hatches. The only way out was through the hatch we entered.

Without a doubt, during battle, this radio room could be operated from one or more remote compartments located elsewhere in the ship. Whatever the case, the duty of a radio operator aboard a warship is not one for the faint of heart. ■



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"My Wife is Good for Something"

I'll Explain Later…

Duke Wahl, Jr., WA9WJB



I've been building a 6-meter squalo antenna. It's supposed to be omni-directional, economical, and simple to build, but the SIMPLE part has some problems. I tried to buy all the parts at Menards, and so far spent roughly $19 (minus labor, garage workspace, tools, and all the new four-letter words).

Measuring and building the main loop was a simple plumber's delight, and done in about an hour, but the gamma match part was a bit of a headache. I finally used a variable capacitor and adjusted the 10.5" copper tubing rod for 1.2:1 match at 50.1 MHz.

The variable cap measured 40pF. The closest standard value is 39pF, which would have worked great, except I had none, let alone one with a HIGH VOLTAGE rating. Nobody makes doorknob caps anywhere near that value.

I summoned all my telepathic powers to communicate with the Great Spirit, Rube Goldberg. He has not failed me, and this time, even HE out-did himself. The epiphany came to me in the form of a double-sided PC board. "Ah-yeah-duh," said the Great Spirit as it left me.

Fine adjustment of the PC board capacitor was made with tin shears, and finished with a metal file. For waterproofing, Crazy Glue® was used. It soaked into the porous edges and set in seconds. The 40pF HV capacitor was now ready for installation.

One side was soldered to the SO239 pin; the other side was soldered to the copper tubing of the gamma rod. I had already adjusted the gamma rod height to match the SO239 pin, so when the PC board capacitor was installed, the gamma rod was at an angle. I'm sure the antenna gods will take off points, got that....

Working it all out I was so elated I told my wife, Ginger, how I solved my problem and mentioned Rube Goldberg. Not knowing whom Rube Goldberg was she said, "You're a real MacGyver, aren't you?" Gee, I never thought of it like that, a modern day MacGyver, I'll take it!

I included my feet in the photo for size reference (10.5D). Incidentally, the PVC support frame had to be changed because of the gamma match. PVC pipe is very cheap, easy to cut, easy to mess up and do the whole job over again without breaking the bank.

All connection joints were waterproofed with MOR-TITE® caulking, spray-painted grey to match my roofing shingles, it doesn't stand out very easily, and installed with hose clamps. The paint did not affect SWR. It remains to be seen if the antenna will withstand a Chicago winter, a grim thought.

"You're a real MacGyver…"

The 6-meter squalo antenna is installed and working as designed. The SWR is very good, the mounting went smoothly, and although it is a little crooked on the horizontal mounting mast, it shouldn't affect how it operates. This is the first time in my ham radio history that I had a working antenna before I had a radio to use it with.

For those of you techno geeks that must see it, look at the pictures and ignore my big feet. ■



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communications were taking place on 10-meters, "[t]he only channel available to American hams for foreign contact… [it] is erratic in its performance." Though amateurs would like to have additional pre-war bands (20-, 40- and 80-meters) opened, as had already taken place in other countries, in the U.S., "the military services are still clinging to them…."

The 1951 Restructuring

Science News Letter for July 14, 1951, reported on the newly introduced Novice class license, "Amateur Radio Made Simpler" and noted the radio service had grown to "more than 90,000 federally-licensed amateur radio operators."

Chicago Daily Tribune
February 2, 1951
Six New Groups Set Up By FCC For Radio Hams

The big news, effective July 1, 1951, was "[s]ix classes of amateur operator licenses in place of the present three" and "[f]ifty kilocycles of additional spectrum space between 3,800 and 3,850 kilocycles for radio telephone operations."

Further, Class A, B and C licenses would soon be renamed and implemented on specified dates. This article included rather nebulous and, perhaps, not yet officially gelled, descriptions of examination requirements: Novice, July 1, 5-wpm, *elementary radio knowledge*; Technician, July 1, *covering novice qualifications plus operational experience*; Conditional, previously Class C, March 1, 13-wpm, *wider general knowledge*; General, previously Class B, March 1, *somewhat higher qualifications*; Advanced, previously Class A, no date given, *covering knowledge of both radio telephone and radio telegraf* ["telegraf," an example of the Tribune's decades-long attempt to rationalize the spelling of English words]; and Amateur Extra, January 1, 1952, *for those handling 20 words per minute and having knowledge of advanced radio theory.*

"Today's meme…"

Recognizing that the two-year effort to restructure the amateur radio service had met with "sharp differences" expressed by "amateur radio organizations," two FCC commissioners, Frieda B. Hennock and George E. Sterling, W1AE/W3DF, objected, in part, to the changes, stating *…the added space for radio telephony is insufficient to meet the growth of that type of operation,* [and] *that the new classifications should give larger recognition to old timers in the field….*

The Graying of Amateur Radio

Today's meme, "hams are old and getting older," enjoys a long gestation. The 1946 article noted hams' average age was 30 years, an uptick on "A few years ago amateur radio was a hobby for youngsters." This comports with former President Herbert Hoover's statement more than two decades earlier (1924) at the Third National Radio Conference. Then, as secretary of the Department of Commerce, Hoover said: "Nor have we overlooked… the voice or interest of the amateur, embracing as he does that most beloved party in the United States—the American boy."



By 1951 hams' average age increased to 33 years, in 1926, "when radio was younger," it was 26 years. At the opposite ends of the scale it was written that some hams were licensed young as 8, 9 and 10 years and "…there are many well over three score and ten still pounding their keys joyfully…." In 1946 "an estimated 65% of [amateur radio] communicating [was] by code."

Costs

On to a short discussion of costs, in 1946 a station allegedly could be constructed for a meager $25 ($294.35) from used and surplus parts, to $50 ($588.70) using all new parts, all the way to $100,000 ($1,177,405.13) "reputedly spent" by a "wealthy ham." (Dollar amounts in parentheses adjusted to 2012 [http://www.bls.gov/data/inflation_calculator.htm])

Citing the FCC's 1,000-watt power limit on the service, the article's author found the majority of amateur stations were running much less power–100 watts. Included was a nod to QRP operation, "Hams have sent messages around the world with 5 to 10 watt stations…."

Ham Radio Vocabulary

Provided in the 1951 article was the mandatory short-form amateur radio vocabulary to assist the non-initiated: *HAM*, *GA*, *CQ*, *OM* and *YL*. In those less politically correct times, we find in addition to *XYL*, *OW (old woman, if she admits she is married).*

Hams at Peace and War

The new licensing structure opened up the radio service to a larger segment of the American population than ever before. To illustrate that amateur radio could be a stepping stone to greatness, Major

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"Night Flight" MIC

Mail Pilots' Pivoting Microphone



A photo of a mail pilot wearing a combination flying helmet-headphone-microphone accompanied the July 2012 *K9YA Telegraph* review of the 1933 film "Night Flight." In that image the microphone is pivoted above the pilot's head in its non-deployed position. The photograph seen here ran in the February 1931 issue of *Radio News*, "Radio Charts the Air-Course," and depicts the microphone in its deployed position. From the article: "The microphone used by mail pilots is attached to their helmets in the manner shown above. Operation of the plane-to-ground communication system is easily conducted–the pilot merely changing from transmission to reception by turning the switch."

The *Radio News* article described the ground-to-air radio gear installed in Boeing System aircraft and ground facilities. At that time Boeing Systems operated the United States' two longest mail-passenger "flyways": Chicago-Oakland-San Francisco, 1,938 miles and Seattle-San Diego, 1,204 miles. Boeing's 22 ground radio stations were spaced 200 miles apart and claimed to have an "effective transmitting and receiving radius of 200 miles." The aircraft's radio gear weighed 100 pounds, was installed behind the pilot and remotely controlled from the cockpit. The usual trailing wire antenna was replaced by a "streamlined dural mast projecting above the plane in the rear of the pilot's cockpit" for increased effectiveness and safety.

-Philip Cala-Lazar, K9PL

Oops!

In last month's issue, we inadvertently listed Bob Cashdollar's callsign as WR8U, instead of NR8U.

Edwin H. Armstrong and Dr. Allen B. DuMont were named as amateurs who later became "leaders of [the] electronics of today."

In WWI 6,000 radio amateurs served in America's armed forces. During WWII, *The Army and Navy sought the services of hams, finding that these men, accustomed to operating a radio station with a coil of wire, a pair of pliers and their own ingenuity, were well suited to keep sensitive equipment such as radar operating.* What we today admire and peg as that increasingly rare "ham's ham."

It was believed that the thousands of men and women trained in radio and electronics thanks to the exigency of wartime military service and industries serving the war effort were candidates for the expected postwar boom in amateur radio.

Note: *Science News Letter* published 1922 to 1966 was the title of a periodical (now *Science News*) of the Science Service, renamed the Society for Science & the Public. In 1921 journalist, Edward W. Scripps (1854-1926) and zoologist, William Emerson Ritter (1856-1944) founded the Science Service. Its stated mission is "to advance public understanding and appreciation of science among people of all ages through publications and educational programs." ■

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Science News Letter, March 9, 1946, July 14, 1951

Ham Lingo

DICK SYLVAN, W9CBT



PILOT LAMP

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