

K9YA Telegraph

Robert F. Heytow Memorial Radio Club

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Sky BUDDIES

A Book by Jeff Murray, K1NSS

Philip Cala-Lazar, K9PL

Dash the dog-faced ham is back, he's a little wiser, a little older and, best of all, he's earned his Novice class amateur radio license. It's been a long year waiting, but *Sky BUDDIES: SECOND BOOK OF DASH! THE*

DOG-FACED HAM is here. I eagerly anticipated more Dash the dog-faced ham since my July 2009 review of Jeff Murray's, K1NSS, *lid, kid, space cadet*. Because the author promised a sequel I closed that review with "...hopefully soon..." and, with the arrival of *Sky BUDDIES*, Jeff again delivers the goods.

Goods like the good friends who accompanied Dash in their pursuit of gear and on-the-air adventures. And goods we of like pursuits remember wistfully and Jeff depicts faithfully, like the:

- Monogram models "Missile Arsenal,"
- Eico 720,
- Gotham vertical,
- Hammarlund receiver—with optional clock,
- Heathkit DX-35,
- Cosmophone and much more.

It's a familiar story, universal in fact, the stuff of fond memories: choosing your first QSL card, assuming a radio persona, finding radio pals and elmers, integrating the newly-minted ham into the family structure, planting a vertical antenna sans radials and learning there is so much more to learn. And, for those new hams launched in the 1950s and 1960s, the impact of

the ever-present Cold War on a service slightly suspect by virtue of its globe-spanning reach and potential for misdeeds. (See: *K9YA Telegraph*, "CONELRAD for Hams," August 2009.)

Another recollection undiminished by time: bicycling to the local electronics emporium presided over by an owner with legendary radio prowess and a slightly mysterious and foreboding history. These were men with personalities crusty on the outside and, sometimes, crusty on the inside too.

K1NSS possesses the discerning and analytical eye, long memory and artistic skills essential to capture and deliver mid-century hamming in his graphic novel. Anyone who was a ham, wished to be a ham or wonders what that golden age was all about, will experience a very nostalgic shock of recognition and gain awareness as they are transported to that era.

My own amateur radio experience, despite a slight transposition in time and place closely parallels the people and milieu described in *Sky BUDDIES*. Other readers, too, will surely find their personal stories paralleled.

CONTINUED - SKY BUDDIES ON PAGE 8

"Jeff again delivers the goods."

Inside This Issue...

<i>Sky BUDDIES</i>	Page 1
<i>This Ain't eBay</i>	Page 2
<i>Superheterodyne Receivers</i>	Page 4
<i>Talking with Radio Rescue's Bob...</i>	Page 6
<i>Making Keys with NT9K</i>	Page 7

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This Ain't eBay

Hamvention 2010

Steve Wolfcale, N9WAT



John, AAØBP, Chuck, NIØC, and Steve, N9WAT (left to right)

Our excursion to Hamvention started out with a very positive omen, for the first time we actually received our club flea market spaces and tickets by mail. In past years we have waited in very long lines to be given the tickets with no explanation as to why they were not processed months before when we mailed the application and money. Good job Hamvention staff! My luck continued on the drive to Dayton, no construction delays and traffic

moving at the speed limit plus. At the Fairborn Holiday Inn friendly and trouble-free check in awaited me thanks to Hank, K8DD, and the QRP ARCII team's block reservation system. My colleagues Chuck, NIØC, and John, AAØBP, rolled in from St. Louis in time for us to have a nice dinner at the hotel restaurant.

Friday morning we slept a bit later than normal because John and I were both fighting colds. This on top of a navigation error resulted in us arriving at the flea market about 15 minutes after setup time whereupon security would not let us enter. Several other late arrivals waited for a flea market official and were eventually let in, however, considering two of us were feeling under the weather, we decided to park the cars and enjoy the show. We spent most of the time outside in the flea market, but did venture inside for stops at the Vibroplex, Begali and Elecraft booths, and to pay our dues at the Fists booth. The day went fast and we left early to beat the traffic. That evening we had dinner at a Mexican restaurant and enjoyed the QRP homebrew contest and vendor displays at the hotel.

Saturday we arrived feeling great and in plenty of time to set up our flea market spaces. Several before-opening shoppers descended on us snapping up a few treasures. One guy asked if we were there yesterday concerned that he was at fault for somehow missing

us. The rest of the day was entertaining as always with the usual cast of characters. We had a few expensive items this year. John and I had both checked eBay to see what our items were selling for prior to deciding asking prices. In the inevitable negotiations we explained this as our rationale for setting the price. The buyers I spoke with accepted this, but one buyer indignantly told John, "This ain't eBay." My favorite customer of the day was a guy who stopped to tell me why my antenna tuner was priced too high. After a 15-minute conversation I agreed to lower the price somewhat whereupon he hit the throttle on his scooter and announced he had two at home and didn't need another one. The three of us have come to look forward to these experiences—it makes for an entertaining day in the sun.

Saturday night we attended the QRP ARCI banquet. Our table was lucky with several door prize winners including me netting a C3MI keyer kit. Other major prizes were awarded including Begali keys and Elecraft radios. As usual the food was great and the event was organized and managed flawlessly.

Sunday morning we set up with the few items we had left. Among them Chuck's 1946 Zenith TransOceanic. All day Saturday people had stopped to take pictures of this classic but no takers. By the end of the day Saturday Chuck

was wavering on selling it and Sunday morning he

"...he hit the throttle..."



Girls Selling Hamvention T-Shirts from Atop Motorhome



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announced it was going home with him. We knew from competitive intelligence that another flea market vendor had several TransOceanics for sale. Sensing my opportunity to further the sport of collecting boat anchors, I congratulated Chuck for deciding not to sell the fine old Zenith and suggested that instead he “double down” by going over to the other vendor and buying another one. He didn’t go for my proposal, but I could tell he gave it serious consideration.

Mid-morning the St. Louis contingent rolled out for their drive home and I stayed to witness the prize drawing. This is held in the arena while the vendors take down their displays. Tickets are drawn and all unclaimed door prizes handed out, you must be present to win. This takes some time because of the large number of tickets that must be drawn to find one person present. At the end of this the grand prizes are drawn, but you need not be present to win these. I walked away empty-handed, but that was fine since I was staying an extra night in Dayton and in no hurry to leave.

Monday I met up with a friend from Wisconsin and we toured the National Museum of the U.S. Air Force at Wright-Patterson Air Force Base. Exhibits cover military use of aviation from the very first days of biplanes to present day. We were especially interested in the B-36 bomber since my friend had served in a Strategic Air Command B-36 squadron. This massive Cold War bomber capable of carrying nuclear payload over long distances is an amazing aircraft. With three huge push props and two jet engines on each wing it is very unconventional. If you attend Hamvention and have never been to this museum I highly recommend it.

“...*TransOceanics* for sale.”

On the drive home Monday afternoon I wondered what role eBay plays in Hamvention and hamfests everywhere. With the ability to do advanced searches of closed auctions, it is easy to see exactly how much similar items sold for and even determine their condition and features. On eBay the seller pays fees and the buyer generally pays shipping. At the hamfest, selling prices will generally be lower, but no per item fees are charged the seller. The buyer makes out because there is no shipping charge. My guess is the buyer makes out slightly better at the hamfest and sellers make out slightly better on eBay. It really doesn’t matter because as any business school student will tell you the supplier cannot control or resist a change in the channel of distribution. This is determined by the consumer.

eBay is the dominant method of trade for virtually all collectibles nowadays. So, while Hamvention is not eBay, I believe eBay sets prices because a seller can be relatively sure their item will sell online at a certain price.

The drive home was a non-event, just as quick as the trip down and another enjoyable Hamvention trip thus ended. Occasionally I run into a local ham who never attended Hamvention. If you are one of those people, you really need to take some time out and attend this great event. Living so close there is no excuse, and before you go,

check your prices on eBay! ■



ICOM Booth Inside Hara Arena



Convair B-36J Bomber



Inside Hara Arena (Commercial Exhibits)



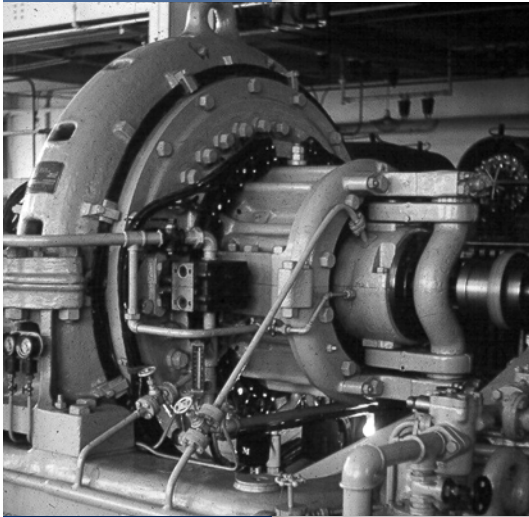
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Superheterodyne Receivers

Part 1 of 2

Paul W. Ross, W3FIS



Alexanderson Alternator

It is always useful when writing about technology to have a good idea of what has come before. Things just don't pop into somebody's head without motivation to solve some problem. Sometimes an idea or solution occurs, and it may be picked up later as the solution to a slightly different problem.

The ubiquitous superheterodyne receiver is just that sort of thing. For a good understanding of the technology, we need to go back into the early days of radio communications.

The first practical RF generators were what we know as "Spark" sets. Basically, this was an electric arc used to excite a resonant circuit, coupled to an antenna.

Detection of a signal was simple in those days. First, the crystal detector that we have explored in an earlier article was used, followed by Lee De Forest's Audion triode.

The spark set's arc was generally supplied by a DC source, interrupted by some sort of mechanical device. This produced a series of sparks, and the resulting RF signal then consisted of a carrier with quite broad sidebands containing the audio rate of the interrupting mechanism. Detection of these signals produced code that sounded like a low-pitched buzz.

Generally, spark sets were limited to around 1 kW in power output. In the desire for more power, Alexanderson developed the Alexanderson Alternator. This was an AC generator capable of generating frequencies up to about 100 kHz at quite substantial power levels. In fact, Alexanderson alternators were in service through the 1950s for VLF communications.

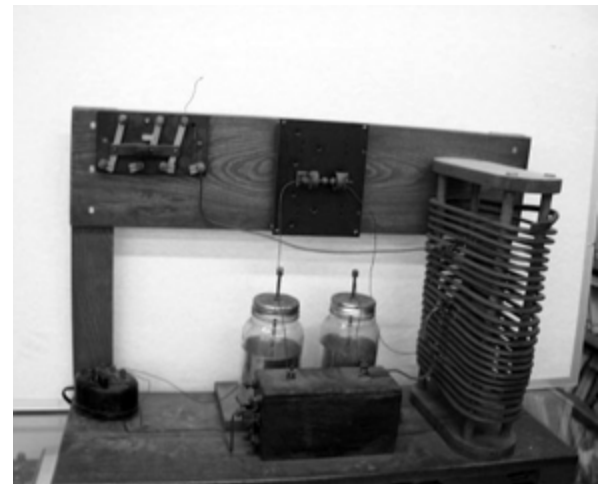
The Alexanderson alternator generated continuous wave signals, in comparison to the signal of the spark set, which was a series of damped waves. When a signal from an Alexanderson alternator was detected, it was heard as a series of clicks, as the signal from the Alexanderson alternator was a CW or continuous wave signal. Try listening to the CW portions of one of the HF ham bands without the BFO turned on, and you will see what I mean.

How did the early practitioners of radiotelegraphy address this problem? Fessenden, one of the early proponents of CW transmission, knew when two RF signals were separated by a small frequency difference "beats" would occur. This is known as a heterodyne. Fessenden then generated two RF signals, differing by this small amount. The result was that instead of the "clicks," we now get an audio tone. This is the basic idea of the superheterodyne system. However, we had to wait for a mechanism

to generate a *local* source of RF at the receiver instead of transmitting a pair of signals. Lee De Forest's Audion tube was the solution.

The development and implementation of the triode vacuum tube enhanced our receiving systems. We can amplify the incoming RF signal before we present it to our detector.

"...a low-pitched buzz."



Early Spark XMTR



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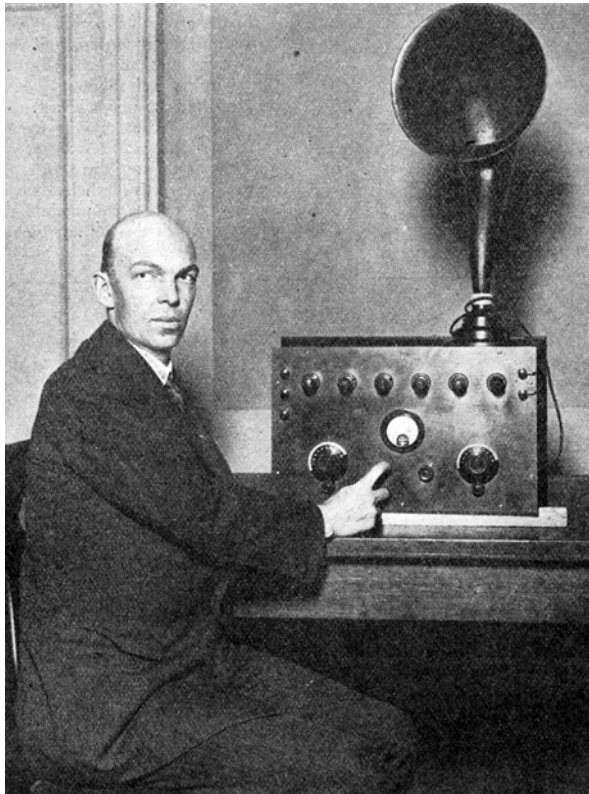
Enter the “TRF,” or tuned radio frequency receiver. However, this design has its pitfalls:

- We need to tune *each* stage of the amplifier to the desired frequency. Before the development of “ganged” capacitors, this provided a knob twiddler’s paradise!
- Triode amplifiers are intrinsically unstable—they will break into oscillation even at very small gains. This means a series of many low gain amplifiers in series. The cure for this was the “Neutrodyne” receiver with negative feedback for each stage to stabilize the amplifier. However, if you changed the tube, you needed to re-neutralize the stage.

Enter Fessenden’s superheterodyne principle. (Flourish of trumpets.)

The unwanted feedback problem was initially reasonably well solved by the Neutrodyne approach. A better solution shows up later with the introduction of the tetrode (two-grid) and pentode (three-grid) tubes, which provide a shield between the control grid and plate electrodes.

The real problem lies with tuning multiple knobs. I remember as a small child in the 1940s seeing an early Freed-Eisemann receiver. If memory serves



Edwin Armstrong with Early Superheterodyne Receiver

me correctly, there were *three* tuning knobs: one for the input circuit, one for between the first and second RF amplifier stages, and one for the detector stage. I recall there being a nice table inside the pretty wooden case with dial settings (not the same for each knob!) for all of the dozen or so stations that could be received. Definitely not a rig for the faint of heart! This was not a design that was going to gain commercial success.

I am reasonably convinced that at least one of the major factors that contributed to the regenerative receiver’s longtime success as a major player was its reduced complexity and cost. There are essentially only two knobs to twiddle.

Edwin Armstrong addressed these problems with his development of the superheterodyne receiver. The “beat” note need not be in the audio range (our friend the “direct conversion” receiver shows up here), but can be at any convenient value. In the early superheterodyne receivers, this “beat” or heterodyne frequency was typically in the vicinity of 50 to 60 kHz—more about that choice later.

Now, we can amplify this lower frequency signal as a *single* frequency, detect it, and introduce a *second* frequency (our friend the BFO) to convert the CW signal into a nicely audible audio tone. For voice (AM, at this time) we don’t need the BFO, of course. Single sideband it yet to come, but not that far off.

Now, we only have only two tuning controls—one for the input signal, and the second for the local heterodyne oscillator. We can pick up any needed gain in the amplification of the heterodyne signal (the IF or intermediate frequency amplifier). In fact, we can “gang” the two controls together. Tracking is easier (though not trivial), and we have the possibility for a mass use radio receiver. A large part of RCA’s success under David Sarnoff is mainly due to them holding the patents for the commercialization of the superheterodyne receiver.

In our second article, we will explore some of the complexities of developing a modern superheterodyne receiver. ■



Reginald Fessenden



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Talking with Radio Rescue's Bob Marx, 2AZK

Philip Cala-Lazar, K9PL



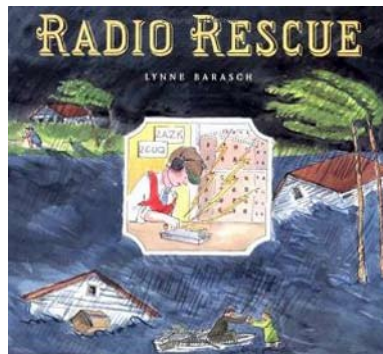
Bob Marx, 2AZK

In late 2009 *K9YA Telegraph* staffer Mike, N9BOR, exchanged a series of e-mails with Bob Marx, 2AZK. Bob is the subject of the book *Radio Rescue* written and illustrated by his daughter Lynne Barasch and reviewed by Mike in the February 2004 issue of the *K9YA Telegraph*.

Asked to describe his start in amateur radio, Bob replied:

As I recall I came home one late summer from go away camp, must have been about

6 or 7 and wanted a bicycle, my parents said no, no, no. Too dangerous with all the autos coming onto the city streets, how about something called radio where you speak with other people? There was a man in our apartment building who did this and they asked him, would he teach me? He was George Freisinger, a photographer for, I think, Underwood & Underwood [supplier of stereoscopic and other photographic images, stereoscopes and an early entry in news-bureau photography]. He said, "Sure," that's how it all started with me.



Freisinger, 2ABT, was the subject of the September 1923 Popular Science article, "Radio Fan Installs \$5,000 Apparatus at Home." (That's \$62,800 in 2010 Consumer Price Index dollars. <http://www.measuringworth.com/>) "Being wealthy, he has spared no expense on his apparatus." His station: "...a 300-watt transmitter, ...a combination transmitter receiver of the navy type, using 20-watt singer tubes for transmitting and a standard honeycomb regenerative hook-up with two stages of audio amplification for receiving." The station also included "...a special type of amateur receiving unit with two stages of audio amplification and ...a three-stage power amplifier."

I'm still completely fluent in Morse, wish it was Spanish—ha ha—he helped me put together a receiver, I was then a BCL [broadcast listener]. I remember failing the first time; cried like a baby, which of course I was. In New York we had Cortland Street, everything you needed electric, etc. Anyway, when Lynne put the book together we found my original license. Incidentally, the part about the sailors is true: I made friends with 2CUQ, he lived on 74th St. He was a music student older than me, we put together a receiver and watched TV from Philadelphia: a little girl bouncing a ball, I'm guessing, in 1923, 4, or 5.

Bob mentions some of his experiences as a preteen licensee in 1920s America.

Yeah, Byrd, worked him almost all the way down to Antarctica. My mom wouldn't let me go with him. I recall having some kind of offer, but I was just a kid. At the same time the New York Times was trying to

keep in touch with the Byrd Expedition. They had a transmitter on the roof of their building on 43rd Street. I went down there once and met them all, fun for a kid. [Likely the 1929 Byrd Antarctic Expedition listed in *QST's* "Finding the Expeditions" for September and November 1929.]

Was still in high school and used to work a few hams in Tasmania and Australia before going to school;

spoiled me rotten for math. The fleet used to anchor in the Hudson River, several battleships a mile or so apart. I noticed them doing their flashing and tried to raise them and was successful, hence that part in the book. I had to go to the roof of my building to see them. The part about the antenna is true. I had a "Hertz," I think, 65 feet across 80/81 Street. Had to take it down pronto.

I recall an ARRL conference at Hotel Pennsylvania, NYC, across the street from the Long Island RR. What is now Madison Square Garden; I won a Hartley condenser for being the most proficient one to send Morse code with heel of foot, backward, in the least time. HI, HI. ■



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Making Keys with NT9K

Bill Crosier, NT9K

I started making keys, because I couldn't buy an Amplidan, and so decided to make my own, and did. The first ones were made from wood with simple hand tools and weren't too bad. As I made more keys, I started introducing concepts from other keys into the design, to make it even better than the original Amplidan. The design has improved over the past few years with each new version. It wasn't long before people started to notice my keys and my waiting list for a key started to grow beyond my abilities. As my health declined, my waiting list continued to grow.

In November 2009, Larry, AE4LD, and Randy, KB4QQJ, approached me about the possibility of designing a signature line of keys for a new key company Larry was starting; a subsidiary of Polymer Concepts to be called Key Concepts, based in North Carolina.

For me, this was a dream come true. For years, I wanted to start my own key company. This is the next best thing, and better in many ways. With my limited list of shop equipment and machining skills, it allowed me to design keys using materials I couldn't have used on my own, in my own shop.

Our first project was a new straight key for the Straight Key Century Club. We worked it out with Tom Peterson, KC9ECI, founder of the SKCC and got the OK to make the new club key for 2010. Our primary goals were to create a high performance key at an affordable price. This key was to be named, "The NT9K Pro-Pump SKCC Club

"...new keys from Key Concepts..."



NT9K's Second Key—A Wooden Version of the Amplidan

Key 2010." That took a bit of an ego check for me, but I got used to it.

The Pro-pump has bits and pieces of all the best keys I know of. If you look closely, you will see GHD, Hi-Mound, Amplidan, LTA, The Elektrisk Buro key, Vibroplex and even a bit of Vizkey, all mixed together with my own touches and lots of influence from one of my key-making Elmers, Ron, G3YUH.

The spring adjuster is my own design and unique, but based on LTA's straight keys with excess screw threads hidden inside the knob and no locknut. The lever is my own design, massive brass with lots of slope to get the skirt low to the desk and at the same time accommodate European-style sending with the top part of the knob. It is equally comfortable either way.

Balance is great on this key and can be set feather-light on the action. The ball bearings make the key smooth and fast. The feel of the contacts closing is crisp and precise with positive tactile feel.

The response to this key was simply overwhelming and feedback from people using it was equally outstanding. Some people claim it is the best performing straight key commercially available. I'd like to think that, but will have to leave that up to you, to decide for yourself.

Look for more new keys from Key Concepts and myself. Some designed by me, and some designed by others. Due to popular demand, look for the next key in the NT9K signature series to be a sideswiper. Other new keys from Key Concepts are coming soon. One will be another, smaller, pump-type straight key named the Patriot and a small, portable key suitable for QRP ops, called the Minuteman: I did not design these two keys.

With my health declining, I don't know how many more keys I have left in me, but making keys is very important



NT9K Pro-Pump - SKCC Club Key



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CONTINUED - MAKING KEYS ON PAGE 8

to me and I plan to continue making them, as long as I have the ability. I still consider myself a novice key maker and still have a lot to learn, but I have always tried to share my designs and made them all public domain. On my Website, you will find step-by-step instructions for making your own keys.

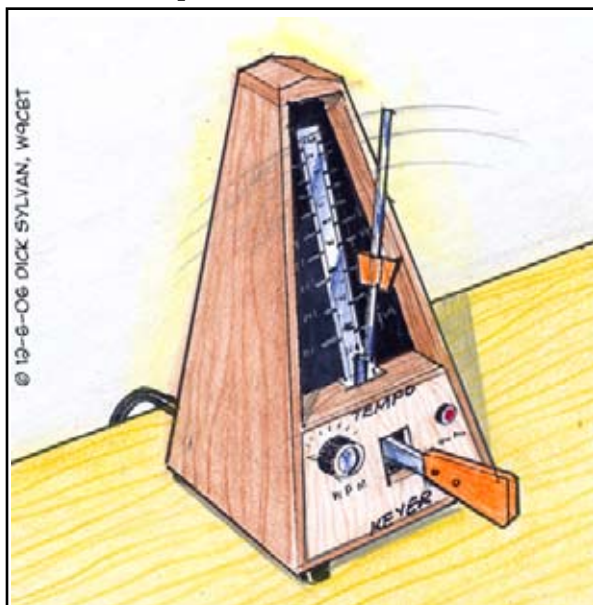
I get real gratification when I see someone has made one of my keys. I only took one semester of shop class, so if I can make my own keys, you can too! It just takes time and patience. Give it a try, you never know what might happen. At the very least, you will have fun and maybe learn something too. If you make one of my keys, please be sure to share it with me. If you own one of my keys and work me on the air with it, please let me know. You can't imagine the thrill of working others on the air and them using keys I made or designed. It just doesn't get any better than that!

Amateur Radio Legacy: The Ham Radio Spirit

I'm terminally ill and have long since outlived what three different specialists said I would. I think what I will miss the most after I am gone, besides my family, is CW. I want to make keys that will continue to sing CW long after I am gone. That way part of me can never die. I never married and don't have any children, so I want my keys to be my legacy. Something to leave behind that says I was here and I loved CW. Just maybe, someday long after I am SK, people will remember me kindly and will still be using my keys. That's why I want to use my remaining time to make keys.

<http://www.nt9k.com>
<http://www.skccgroup.com/nt9k/keyconcepts/index.html>

Ham Quips DICK SYLVAN, W9CBT



MAKING MORSE'S MUSIC

BANG-BANG!



DAD & I BOTH FOUND IT FUNNY AND WE HAD OFTEN WATCHED TOGETHER BEFORE I BEGAN TO SPEND MORE TIME IN THE CELLAR -- LIKE A MOLE IN A HOLE, HE NEEDED -- WHICH GOT UNDER MY SKIN, EVEN AS MY TVI GOT UNDER HIS.

I CONFESS THAT I SOMETIMES TAPPED MY KEY IN TIME WITH THE STOMPING UNTIL HE SWITCHED TO YELLING.

Stay tuned for Jeff's promised "third stage" in the life of Dash the dog-faced ham.

Sky BUDDIES: SECOND BOOK OF DASH! THE DOG-FACED HAM, written and illustrated by Jeff Murray, K1NSS, 6SJ7 Comics, Lulu.com, 2010

<http://stores.lulu.com/store.php?fAcctID=1351736>
<http://www.dashtoons.com/>

Jeff Murray, K1NSS was a freelance cartoonist in the late 20th century, published by alternative papers including the New York Press, San Diego Reader and the City Paper(s) of Baltimore and Washington. He also drew local editorial cartoons for the Beacon chain of suburban Boston weeklies. In 2008 he retired from his day job fabricating more serious things like conductive gaskets for Boeing, Raytheon, British Aerospace, General Dynamics and Segway Scooters. K1NSS lives in New York's Hudson Valley near Woodstock.



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