K9YA Telegraph

Robert F. Heytow Memorial Radio Club

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The Gathering

Philip Cala-Lazar, K9PL

I've written of this group of closely-knit hams before,* now is as a good a time as any to describe that coterie in greater detail.

Once upon a time in Chicago, 1976 onward, there lived, on five abutting city blocks, seven hams—ranging in age from young teenager to grandfather and from high school freshman to attorney, musician, university instructor, salesman, draftsman and photographer. Far from an exclusively male organization, we were privileged to enjoy the company of a licensed XYL and the married OMs' XYLs.

"…staying too long…"

From my third-floor apartment window I could see a tower-mounted tribander at the foot of my block and a roof tripod-mounted 15-meter monobander one street over and half a block down. Had I stood on my building's roof I could have seen, two blocks distant, a monster KLM log periodic antenna standing tall atop a 55-foot tower, a tower I helped install.

My QRP station's antenna was an invisible, super-sleuth-worthy, 40 feet of jumpered aluminum storm windows. Inside the apartment only the most discerning eyes could spot its short jumper wires, from the outside *nada*.

The catalyst that brought together that seemingly disparate group was amateur radio; the same amateur radio described in old publications as the great leveler where the bank president and the newsboy were equals. More immediately it was the local radio club and its monthly meetings at the neighborhood bowling center. It was at those meetings we first assembled and soon noted our proximity. From that point onward, for several years, that nucleus acquired hams from adjoining communities and inaugurated weekly, then twice weekly, meetings at two venues.

Our Monday evening meetings launched at a Pizza Hut, but we were eventually evicted for "staying too long" at the little-frequented location. We then settled in at a Ground Round–where we encountered no problem with "staying too long."

Saturday afternoons we met for lunch at Bones, a popular eatery in nearby Lincolnwood, Illinois. Monday meetings ended with us returning to our homes. Saturday meetings stretched into the evening, usually at Sy's, WD9BFC (SK), shack for a chat and working the bands–CW mostly, but SSB, RTTY and slow-scan were also plied thanks to the Robot multimode and a Radio Shack TRS-80 computer.

Our meetings served as social gatherings, genial joshing assemblies, tactical sessions for Field Days and contesting and, attracted by force of its "magnetism," new enrollees, integral and fringe, i.e., full and associate members. The Monday group grew from

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Philip Cala-Lazar, K9PL
Editor

Mike Dinelli, N9BOR
Layout

Dick Sylvan, W9CBT
Staff Cartoonist

Rod Newkirk, VA3ZBB (SK)
Contributing Editor
2004 - 2012

Robert F. Heytow
Memorial Radio Club

www.k9ya.org
telegraph@k9ya.org

The Zebra Committee

The Springfield, Illinois 146.685 Repeater

John Swartz, WA9AQN

Receiver Site

A zebra is said to be a horse made by a committee. It cannot be domesticated and its survival depends upon a herd. On the other hand, the American Cream draft horse is a worker, and he is recognized as the only completely American-bred draft horse that remains.

So what does that have to do with amateur radio? Bear with me. (Quit horsing around and no more animal puns, please!)

I arrived in Springfield, Illinois in late 1971. I didn't know anyone, and had no local contacts with the amateur radio community. But I knew the obvious way to find local amateurs is to search out a radio club, assuming there is one.

There was. It was, and is called the Sangamon Valley Radio Club. The SVRC had a long history, reaching back to early 1950s. Meetings were held in the old Red Cross building. There was a shack in the basement of the building, equipped with some vintage Collins gear, courtesy of the Red Cross. The gear, however, wasn't working quite to the standards Arthur Collins had set for it. Suffice it to say the old expression, "Too many cooks spoil the broth" seemed to have been the fate of some of the club gear. ("No, Johnny, I think you got all that smoke because you are supposed to dip the plate current, not. . . .")

"Quit horsing around…"

The club was basically a social group. Members provided communications service to the Red Cross, which had provided a first-aid station annually during the Illinois State Fair. One of the hams sat by the radio at headquarters in case someone at the fairgrounds needed assistance, in which case the ham would pick up the phone and call whomever was needed. The club did stage a fairly impressive show for Field Days, however, with an old military surplus generator to power the then state-of-the-art tube gear, which typically included someone's big kilowatt linear amplifier. But, beyond that, the club had no other long-term commitments or activities other than to hold a monthly social meeting at which the usual lies were told about what DX had been worked.

Nevertheless, the local amateur community included some very accomplished amateurs of varied interests, and the club provided a way to meet some of them. These included some DX'ers, a traffic handler or two, the then ARRL Section Communications Manager, and some very accomplished engineers and technicians. A number of them worked for government agencies installing and maintaining radio systems for various departments of city and state government, including the Illinois State Police and at least one local company that specialized in electrical and electronic equipment. Not all focused much attention on the club, however. Having a club station was not a priority, but a perk of the relationship with the Red Cross. Like so many in the amateur community, each member had his own passions and pursuits and it was very seldom the club station went on the air.

Two club members were John Sams, WA9KRL, and Ed Proctor, then-W9GEG. Both served as officers of the club at various times in the mid-1970s, and both were keen VHF/UHF engineers, technicians and practitioners. They were contemporaries and employed at the old Sangamo Electric Company headquarters in Springfield.

The mid-1970s was a period of transition in amateur radio, with the recent advent of "repeaters" bringing a new dimension to amateur VHF/UHF operating, and being the source of an incentive for some died-in-the wool HF'ers to venture beyond their comfort zones. It was a time before amateur radio had been overtaken by the intensity of EMCOMM concerns, which now permeate our culture. It was a time when DX'ers found 2-meter frequencies to use instead of telephone trees to notify each other when some juicy DX had been spotted and worked. (I have never heard of anyone spotting a DX station before he worked it. Have you?)

Robert F. Heytow
Memorial Radio Club

www.k9ya.org
telegraph@k9ya.org

Sams and Proctor were intrigued by the possibilities of expanding the utility of the VHF and UHF spectrum in Central Illinois. Until I met them, I don't think I had even heard of repeaters, much less given serious consideration to VHF/UHF communications. The possibilities of new VHF/UHF amateur radio communities were just emerging. Sams and Proctor were tinkerers and experimenters in the best amateur radio tradition, intent on pushing the boundaries of the comfortable operating parameters that had characterized VHF/UHF, with amplitude modulated and CW signals. Repeaters utilized frequency modulated signals and could provide vastly improved signal clarity while taking advantage of the broad coverage made possible by mounting the repeater station atop a 10-story building. Effectively, a small portable FM transceiver could communicate reliably over a radius of 50 or more miles by the enhanced signal from the repeater's elevated antenna. Sams and Proctor had great fun tinkering. Their collaboration gave birth to a new and significant service for the amateur community. Little did they know their efforts would bear fruit not only for amateur radio but also for the larger community for more than 42 years.

Another of the cast of local characters was a ham named Norm, WA9HUY. And the term "character" aptly applied. Norm was not a "radio club" type guy. Norm has since gone SK, but he was a very active trader of gear. He had a huge inventory of "stuff." Much of this "stuff" came as surplus from myriad sources around the capital city that frequently replaced radios subjected to very heavy use. Norm's garage was an archetype for the typical hamfest flea market. He donated the gear Sams and Proctor used to assemble Springfield's first amateur repeater.

"the intrepid Two"

In an effort to try to prepare for a local, county-wide, emergency exercise planned, Sams and Proctor jerry-rigged a system comprised of Motorola 80D TX/RX strips (all tubes, 5894 final) and a copious quantity of clip leads to interconnect the stuff. Not having resonant cavities to permit the installation of the repeater at a single site, but with access to the incredible selection of surplus gear at Norm's, the two boy geniuses assembled sufficient equipment to permit the installation of the repeater's receive site on one hospital, St. Johns, and the transmit site on the other hospital, Memorial, located about a mile away. The two sites were linked using similar 450 MHz tube TX/RX strips. Both hospitals were fortunately served with elevators to nearly the top of their 10 and 14 story heights, leaving only a short climb for the Intrepid Two when they needed to install and work on the hollow-state system. That basic configuration, a split-site system located at the hospitals, is still in use today.

The repeater went "live" from its two-hospital site in late summer or fall of 1972, and its success (and possible utility for emergency service) was duly noted by the hospital officials, sealing the presence of amateur radio on their roofs. The site choice also afforded the luxury of a built-in emergency power source.

XMTR Site

Sams and Proctor did not have to fret over the bureaucracy of frequency coordination which is involved in the installation of new repeaters in today's more congested VHF spectrum and regulatory world. The frequency pair (146.28/146.88) of the Springfield "machine" had been determined by the crystals available at Norm's emporium. That pair served the Central Illinois amateur community well for many years.

As it turns out, the Springfield repeater unwittingly became an early example of a linked system. In a neighboring community about 60 miles to the south another repeater was put on the air with a different input/output pair having been selected. But their link between their receive and transmit sites also used the same frequency as the link in Springfield. When the surf was up, it was good fun talking to each other. We don't know whether their crystals had also come from Norm's Crystal Bank.

As is the practice today, repeaters were considered separate stations and required to send their identification signals in conformance with rules. The Morse identification was generated by a mechanical wheel, however, and was accompanied by clanks that would not have been acceptable for a CW signal on the HF bands. It worked.

Repeaters were also required to have separate licenses and callsigns from those of their owners or operators.

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www.k9ya.org
telegraph@k9ya.org

Field Preparation: Generator Edition

From the Series: The New Clandestine Operators

Harold Mandel, W4HBM

Genset Panel in Trailer

In putting together a portable station for mountaintop operating, the time to deploy and strike must be considered, as this affects time on the air, with only a fixed stay on site as the "time budget." Using a myriad of Pelican cases, and unloading, setting up, stowing and the reverse for ending ops used up much too much time. So, a decision was made to build-in the station to the trailer, as much as possible, and leave most of the Pelicans behind. (Here's to my Army Ranger buddy Vince, who showed me how a Pelican can be used as a bathtub and washing machine.) That unit can come along in the truck.

Eliminating the carrying and deploying the start battery for the portable genset means one less piece of gear in the elements and one less piece to unload and reload.

Battery

The Briggs and Stratton 7 kW genset starting battery compartment is meant to hold a storage battery of certain dimensions. The manufacturer specifies a valve-regulated, lead-acid unit with 600 cold cranking amps capacity. When I went to the battery supplier for my work where we equip mining vehicles, he was unable to come up with a part number that matched the size and CCA requirements, as were several other suppliers, but this was two years ago. That meant adding an external battery line with suitable Anderson connectors so a storage battery could be quickly attached, detached and even replaced with something readily available—WallyWorld, etc.

This year I found the exact battery the manufacturer recommends, on eBay, and went so far as to modify the genset's interior battery wiring to use either the external marine battery or the internal battery, and that makes field set-up much easier. The right battery is a WPX30L-LS, a generic title, made by several manufacturers. My battery arrived with a small wall-wart charger, which when measured, delivered 14.5 VDC at 95mA. The charger is equipped with an LED status light, and a cut-off circuit so the battery doesn't "boil." If ever you utilize a valve-regulated lead acid (sealed AGM) battery, remember the formula for charging:

0.3 C {10} A For my battery, which is a 30 ampere-hour unit, the C {10} rate is "30 ampere hours" divided by "10 hours," or, 3 amperes. Then, "0.3" times the "C {10}" rate is 0.3 * 3, or 900mA.

Smart Charger

Most "smart" chargers have more than one charging rate and cut the charge completely off when the battery reaches a certain resistance, indicating the difference in voltage to a reference reminder in the charger. The full charge should end up under the rated voltage, to wit: a 6-volt battery will end up fully charged when the charger output is from 7.2 VDC to 7.5 VDC. A 12-volt battery will end up fully charged when the output voltage is from 14.4 VDC to 15.0 VDC.

> *"…your battery paste has begun to expand."*

Any more oomph, and the electrolyte paste in the battery cells will form water, then steam, and then NOT be able to reclaim the water back into elemental hydrogen and oxygen. At this point the paste electrolyte will begin to overheat on the "micro" basis, and the paste electrolyte will begin to expand. Inspect your AGM batteries with a vernier depth gauge plotted from the very tip of the positive terminal to the battery case, and compare with the reading obtained from the negative terminal. If there is more than 0.020" difference, *with the positive terminal plate higher than the negative terminal plate,* your battery paste has begun to expand.

Thermal Runaway

If allowed to continue, the paste will dry out too much for any reclamation, then will change internal resistance and will heat up faster and to a higher temperature. The battery is then into the phase called "thermal runaway." The ramifications of this condition range from electrolyte (acidic) paste leaking from around the terminals, to the battery case splitting open, to an

Robert F. Heytow
Memorial Radio Club

www.k9ya.org
telegraph@k9ya.org

actual explosion as the hydrogen gas in the presence of the oxygen gas ignites when internal plates touch, short together, and make an internal spark.

As the AGM battery manufacturer recommends, a periodic charging at a low rate every few weeks maintains battery health while in storage mode, which is the majority of the time my AGM will be spending.

Twist-Lock

Not wanting to move the generator with all this heavy wire and circuit breakers, etcetera, (even with the pneumatic tires), the choice was made to separate the genset from the cabling with a method for connection at either end. This meant providing the set with a twist-lock male and female, at the genset end, and some sort of disconnect for the trailer bulkhead.

On the trailer bulkhead a 200 amp male watertight Appleton connector was chosen, mainly because the house stationary genset, the Guardian uses the same connector. An emergency swap from either one to either one now means simply moving the sets around and re-plugging.

So now the trailer genset cord consists of a three conductor size 6 AWG SOOW cord with a size 4 AWG flexible rubber wire taped alongside for its entire length, with a 200 amp Appleton female gender plug at the trailer end and a Hubbell 50 amp Twist-Loc male connector at the generator end. The ground cable is fitted with a Burndy crimp lug, single-hole, soldered, at the trailer end, and a solder-tinned pigtail at the genset end, with the genset having a double mechanical clamp fitting on the frame exterior for making ground wire connections reliably.

Ham Lingo

DICK SYLVAN, W9CBT

"CLEAN SWEEP"

The acid test was *not* running the generator, but moving it around by hand just by myself. With the wheel kit under it, the set was able to climb the step into the storage barn with no difficulty and is able to roll up and down the ramp into the back of the mobile station cargo trailer. A spare Pelican case hauls the peripherals and the big battery was built into the trailer battery closet and is now part of the trailer 12-volt battery string. However, these battery terminals have a secondary pigtail terminating in a forklift-type Anderson 200 amp flat connector so an emergency starting cable can be fitted from the trailer supply to the portable genset, which still has the external start cable with matching Anderson connector attached. Nothing like redundancy to fight Murphy.

Genset Power Cord

Total time to set up: Less than thirty minutes and the only tools needed are a crescent wrench to tighten the LP gas fitting, a big screwdriver to tighten the mechanical ground clamps and a railroad hammer to pound in some ground rods. If I run out of steam hauling the portable genset in and out of the trailer, a four-way block and tackle, stored in the trailer, can affix to the genset base and to a cargo ring in the trailer floor, which certainly means Less Work For Mother. ■

Amateur Radio At The Movies - NR8U

The Dish **2000, PG-13 1hr., 41min.**

Strictly speaking, *The Dish* is not an amateur radio movie. It is kind of an oddball comedy/drama movie that is very entertaining. The Australian production concerns the era of man's first landing on the moon and how the television pictures got back to a waiting public on Earth.

What makes it interesting is the use of a giant dish antenna and how it was used to relay the pictures from the Moon.

The movie also gives a chance to see what it was like in 1969 in Australia and elsewhere when Armstrong set foot on the Moon.

Sam Neill and Patrick Warburton lead a cast of actors probably unknown to anyone outside of Australia. I might also add the real dish plays itself in the movie.

The Dish is one of those movies that sort of slip by and on later viewing you wonder how you could have missed it, but are glad you found it.

Robert F. Heytow
Memorial Radio Club

www.k9ya.org
telegraph@k9ya.org

Rose

Part II

Scott B. Laughlin, N7NET

A Complete RS-6 Spy Radio Station

Charlie was working beneath the hood of Ned's car when the postman entered the shop with a certified letter. It was from the Federal Communications Commission. After wiping his hands on a shop towel, he tore the envelope open and read that the amateur radio frequencies were now released for normal amateur use, effective immediately.

Returning to Normal

He felt a certain satisfaction. Things were returning to normal. After finishing with Ned's tune up, Charlie unlocked his radio shack's door and pushed it open. Inside, on the desk, sat both his transmitter and receiver. They were homebrew rigs; projects from four issues of prewar *QST*s. They'd brought the world to his shack. After using a feather duster to fan away accumulated dust, Charlie switched on the power. Leaving them both on standby, he leaned back in his wooden office chair to watch the filaments glow. Somehow it reminded him of his first assignment after finishing radio school. He was to locate and destroy a clandestine radio station in Europe.

"…destroy a clandestine radio station…

He'd been chosen for the task because of his gifted ability to mimic other people's fists. In this case, he'd been chosen to locate a station operating on the coast of Spain. The station's regular contact had been silenced and Charlie had substituted for more than a week.

From an aging fishing boat, he maintained the scheduled contacts until he had established its location. Then, under the cover of darkness, he went ashore in a rubber raft and made his way inland, carrying some explosives. Using an RS-6 spy radio he maintained contact, and by dawn he'd found the station in question.

It was a shack built of weather-beaten driftwood slabs. Working his way closer, he tried to determine if only one person occupied the station. At last a man stepped from the doorway to relieve himself. Charlie recognized his photo from a QSL card. He was an Italian ham he'd worked many times before the war. He couldn't recall his name, but he distinctly remembered his call sign. Now he had to find a way to destroy the station without getting himself killed.

Head Spinning

Taking a chance, he transmitted the man's ham call sign, and followed it with a random Spanish call. The man's head spun around and he stared at his shack, but he made no move to respond.

This wasn't working.

Charlie repeated the call, and then, using what little Spanish he knew, he added: *if he can copy this meet me on the beach where a creek feeds into the sea I have supplies.* The operator did not respond. Instead, he moved off toward the beach. Charlie waited for sixty seconds before he moved toward the shack to set his charges. After lighting the fuses, he quickly set out for his rubber raft. He was almost there when he heard the explosion. ■

What's Your Story?

Like what you're reading in this month's *K9YA Telegraph*? If so, you're in good company, as amateur radio operators in more than 100 countries agree with you. Know what else? Hams just like you write the *K9YA Telegraph*. Hams participating in the enthralling lifestyle that is the amateur radio experience.

These operators want to read your story. Not sure of your writing skills? No problem, the *Telegraph*'s staff will edit your manuscript. The important thing is to share your story. Remember: "A good story is a terrible thing to go untold."

http://www.k9ya.org/write_for_us.htm

Robert F. Heytow Memorial Radio Club

www.k9ya.org

telegraph@k9ya.org

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According to Sams, "when the FCC decided to license repeaters, Ed and I threw together some 20 odd pages, give or take a few. We had to include a statement of purpose, topographic maps, ERP calculations, equipment specs, HAAT and too many other odds and ends to remember. We were eventually granted WR9AFA. This was used until the FCC decommissioned repeater call signs and then became WA9KRL/R."

Remarkably, the Springfield repeater remains on the air and continues to use that identification to this day. But, in 1978, the Intrepid Two became The Intrepid One. Proctor departed Central Illinois to settle in Georgia when his employer, formerly Sangamo Electric (known best for manufacturing the electric utility meter on the back of your house) was acquired by Schlumberger (which also acquired Heathkit) and relocated its operations to Georgia. Ed now has the call W4ELP, and can regularly be found on 40-meter CW. After Ed's departure, John, WA9KRL, undertook the maintenance and operation of the system on a solo basis.

The equipment evolved from its hollow state components. The conversion started in 1988, including TX and RX units, controllers, ID'er and link equipment. However, in the same classic amateur spirit, the solid-state replacements did not come "off the shelf." Sams was largely responsible for the design, construction and implementation of the systems to control and operate the repeater. The conversion to solid-state did not occur all at once.

"acquired by Schlumberger"

As the VHF/UHF spectrum attracted an increased number of users, and more and more commercial radio installations found residence on buildings and towers nearby. Sams noted, "In 1991 we started receiving a continuous birdie around 146.275 MHz. It would drift in and out, holding the repeater up until it timed out." By then, coordination had become a necessary feature of repeater sites and John coordinated "a new frequency pair on 146.685 and we have been there since."

That almost brings us full circle. John was, and is, the workhorse who keeps the repeater on the air 24 hours per day, 7 days per week, 52 weeks per year, every year. Of its 42-year history, John has operated solo for the last 36 of them.

That takes dedication and integrity. It also avoids the reality that all too often emerges from having too many cooks. Other repeaters have come and gone. One intrepid soul attempted an installation at the top of the Illinois state capitol building many years ago. At a height of 360 feet, it was constantly a victim of birdies, kerchunkers and other strange phenomena that got into the system from a coverage area that stretched virtually across the state from the Mississippi River to the Wabash River just inside Indiana. Maintenance was a serious undertaking, not for the faint of heart or stomach; access to the open air cupola at the top was by a narrow system of stairways up and across the dome, between the outer skin and the beautifully decorated interior that produces dramatic photographs when standing below, looking straight up. It turned out to be a well intentioned, but grand misadventure.

Illinois State Capitol Building

There are other highly reliable repeaters in the area, which have been assembled and maintained by competent, dedicated technicians. One system, by Bob McNeal, K9KGO, provides yeoman service and coverage in the UHF band from nearby Menard County. And, there are other repeaters with more of the latest bells and whistles involving linking and Internet connection possibilities. But those are newer and also many have a greater proportion of commercially built, off-the-shelf components. But, for general FM coverage of the VHF band for the immediate vicinity of Illinois' capital city, none have matched the WR9AFA-WA9KRL/R system for longevity, the ingenuity of original design and execution. It is the first place the locals tune when bad weather threatens, which it regularly does across Central Illinois.

John doesn't ask for help or contributions. From time to time, some of the local faithful will offer cash or labor to assist. John is gracious about it, but sensitive to the fact that some who contribute may eventually feel that doing so gives them influence of some sort. So, he has scrupulously avoided liaisons and entanglements that might tend to compromise the integrity of what has been one of the most reliable and consistent

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Robert F. Heytow Memorial Radio Club

www.k9ya.org
telegraph@k9ya.org

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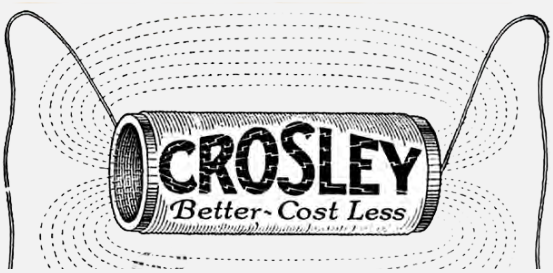
services available to the local amateur community. Some, offended that they can't participate, see it as ego. But, it is born of an ethic of giving to the community the gift of a valuable resource. He didn't just write a check, he labors and loves it. It is what makes the Springfield ".685" repeater the purebred American Cream draft horse, and not a Zebra. ■

Crosley Revisited*



The article in the *Signal* about the Crosley brothers really hit a chord with me. I was able to meet the author, a Crosley descendant, when he was selling his book in one of the local malls. The Crosleys were from Cincinnati, where I lived most of my adult life. One of the things they did was start up WLW, a 50 kW clear channel station located just north of Cincinnati. In WWII, they were asked to set up a Voice of American station, which was built on several hundred acres of farm land not far from WLW. In the 90s the VOA station was decommissioned, the rhombic antennas torn down, and the land sold to the township I lived in for $1. The township did a lot of good things with the land including creating a lake with a walking trail around it, a dog run, and a remote control airplane flying area. Most of the station equipment was removed, but the operating consoles remain in the building. The West Chester Amateur Radio Association was given a free home in the building. An established wireless museum also found a new home there. A few years ago, some Obama stimulus funds were used to refurbish the building that had leaked badly when it rained. Our club there did a lot of contesting and we won a few awards and a trophy in some of the CQ WW contests. It really was the ideal club situation with its own club facilities and equipment that could be operated most any time. Well, enough of reminiscing.

Great *Signal*, as always. 73 - Frank, K8FB

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its original seven to 17 regular attendees, male and female, plus drop-ins.

That magnetism included overheard ham radio talk, call sign t-shirts and, possessing the greatest gauss of all, the table top line up of 2-meter handhelds, including a huge Wilson 7-watter, their rubber ducks proudly erect, drawing hams and wannabes across the dining room floor. "You guys QSO here?" on a snowy December evening is one query I remember warmly.

We were also habitués of the nearby Heathkit store to the non-ham manager's bemusement. A good-natured fellow, he looked on our knob twirling, button poking, back panel examinations and tech jargon exclamations with a quizzical grin and much patience. Even our *ad nauseam* question, "Why isn't the Heathkit demo station hooked to an antenna—for a demo?" was always met with a genial non-answer. After all, we populated the otherwise empty store on slow afternoons and made regular purchases, big and small.

Convivial as we were there was one area of friendly, yet fierce, competition, license upgrades. We worked radio together, practiced Morse on the air and challenged one another with technical questions. Who would be the first Extra Class licensee? ■

**K9YA Telegraph*: "Ham Radio to the Rescue," July 2004; "The Radio Ham," October 2004; "QRP," May 2005; "AKA, Big Fat Cat," January 2006

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www.k9ya.org
telegraph@k9ya.org