New Column! Learning Curve

Amateur Radio

http://www.cq-amateur-radio.com

COMMUNICATIONS & TECHNOLOGY

APRIL 2010

CQ

1945 — Our 65th Anniversary — 2010

- Hamming from the Shadows, p. 64
- CQ Interviews: Grammy Winner Larnelle Harris, WD4LZC, p. 13
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On the Cover: Even hams with antenna restrictions can find ways to get on the air, such as with this temporary apartment balcony antenna. For more on "hamming from the shadows," see World of Ideas on page 64.

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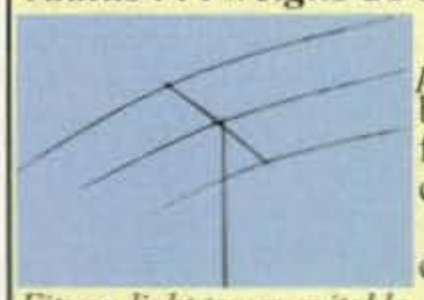

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Model No.	No. of elements	avg gain dBd	avg F/B dB	MaxPwr watts PEP	Bands Covered	Wind sq.ft. area	Wind (mph) Survival	boom feet	Longest Elem. (ft)	Turning radius(ft)	Weight (lbs.)	Mast dia O.D.(in.)	Recom. Rotator	Sugg. Retail
TH-11DX	11	*For Gain and F/B ratio--See...* • www.hy-gain.com • Hy-Gain catalog • Call toll-free 800-973-6572		4000	10,12,15,17,20	12.5	100	24	37	22	88	1.9-2.5	T2X	$1159.95
TH-7DX	7			**1500**	**10, 15, 20**	**9.4**	**100**	**24**	**31**	**20**	**75**	**1.5-2.5**	**HAM-IV**	**$869.95**
TH-5MK2	5			1500	10, 15, 20	7.4	100	19	31.5	18.42	57	1.5-2.5	HAM-IV	$759.95
TH-3MK4	3			**1500**	**10, 15, 20**	**4.6**	**95**	**14**	**27.42**	**15.33**	**35**	**1.9-2.5**	**CD-45II**	**$469.95**
TH-3JRS	3			600	10, 15, 20	3.35	80	12	27.25	14.75	21	1.25-2.0	CD-45II	$359.95
TH-2MK3	2			**1500**	**10, 15, 20**	**3.25**	**80**	**6**	**27.3**	**14.25**	**20**	**1.9-2.5**	**CD-45II**	**$369.95**
EXP-14	4			1500	10,15,20 opt. 30/40	7.5	100	14	31.5	17.25	45	1.9-2.5	HAM IV	$599.95

Tooled Manufacturing . . . Highest Quality Materials

1. Hy-Gain's famous super strong *tooled* die cast *Boom-to-Mast Clamp*

2. *Tooled* *Boom-to-Element Clamp*

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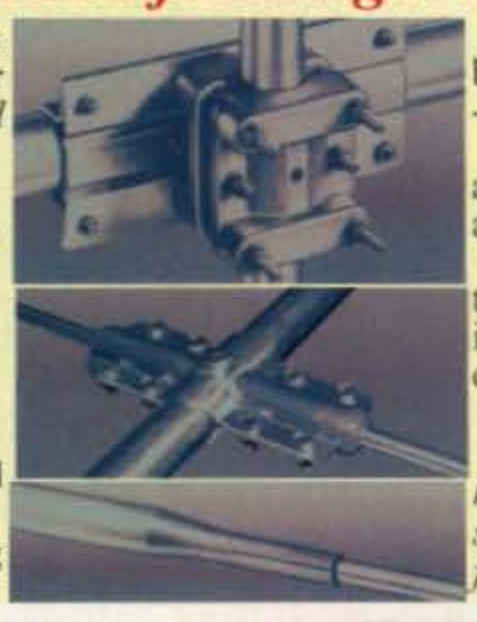

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Young Ham Nominations Sought

Nominations are open for the 2010 Newsline Young Ham of the Year award. Nominees must be 18 or younger and must have made significant contributions to amateur radio and/or their communities through the use of amateur radio. *CQ* is a co-sponsor of this annual award, along with Vertex-Standard, the manufacturer of Yaesu brand ham gear. The winner will be recognized at the Huntsville Hamfest in August. Complete information and a nominating form may be downloaded from <www.arnewsline.org>. Deadline for receipt of nominations is May 30, 2010.

Ham Killed in Power-Plant Explosion

A ham from Missouri was among five workers killed in a Connecticut power-plant explosion in February that received national media attention. Chris Walters, NØHVK, of Florissant, Missouri, was a safety manager for an electrical subcontractor at the Kleen Energy power plant being built outside Middletown, Connecticut. The accident occurred as workers were purging a natural gas pipeline. Its cause was still under investigation at press time.

Walters was 48 and a father of three. According to the *ARRL Letter* and *Newsline,* he was working temporarily in Connecticut after being unable to find work near his home. Walters was active in the local ham radio community around Middletown, joining the Shore Points Amateur Radio Club and volunteering for various community events.

Herbert "Pete" Hoover III, W6ZH, Silent Key

Herbert Hoover III, better known to hams as "Pete," W6ZH (ex-W6APW), passed away in early February at age 82. Pete's grandfather was President Herbert Hoover and his father was former ARRL and IARU President Herbert Hoover, Jr., the first W6ZH. An active ham for many decades, Pete was an early supporter of AMSAT, was one of the founders and first directors of the ARRL Foundation and was a longtime member of the ARRL Long Range Planning Committee.

[Web version only: Pete's family asks that those hams wishing to make contributions in his memory consider one of the following charities: Doheney Eye Institute, 1490 San Pablo St., Los Angeles, CA 90033; Hoover Institution, 434 Galvez Mall, Stanford University, Stanford, CA 94305-6010; Herbert Hoover Presidential Library Assoc., 302 Parkside Drive, West Branch, IA 52358; House Ear Institute, 2100 W. 3rd St., Los Angeles, CA 90057.]

ARRL to Seek Limited Revision to 97.113

The ARRL Board of Directors has instructed the League's staff to file a petition with the FCC, seeking to add a provision to section 97.113 of the rules to specifically permit a ham to operate "on behalf of an employer" in emergency drills and training exercises as well as during actual emergencies. The question of appropriate ham radio operation by employees of public safety agencies and other organizations has been a hot-button topic for months, ever since FCC staff said the rules prohibited operation on behalf of an employer, even when an amateur was acting as a volunteer, on his/her own time. The ARRL Board's action came during its January meeting and was reported by CEO Dave Sumner, K1ZZ, in his editorial in the March issue of *QST* magazine.

CQ magazine's parent company, CQ Communications, Inc., and a group of three amateurs including Gordon West, WB6NOA, have each already filed petitions seeking similar changes.

End of the Line for LORAN-C

LORAN-C, the low-frequency **LO**ng **RA**nge **N**avigation system that has guided ships and airplanes for more than 60 years, has been shut down by the U.S. Coast Guard. According to the AMSAT News Service, the shutdown came on February 8. President Obama had called the system obsolete, now that virtually all ships and airplanes and many land vehicles, carry Global Positioning System (GPS) devices. The shutdown is expected to save the federal government some $38 million a year. The only drawback to the move is that there is no longer a backup system in the event of a massive GPS failure.

New Tech Question Pool Revised Already

Just a month after being released to the public, the new Technician Class question pool has already been revised by the Question Pool Committee of the National Conference of Volunteer Examiner Coordinators. *Newsline* reports that a post-release review turned up more than 50 typographical errors and the need to further clarify some questions and answers.

There are 400 questions in the pool from which each 35-question Element 2 Technician exam will be made up. The new pool will be used in exams beginning July 1, 2010 and will be in use for four years.

ARRL Brings Back Updated "Novice Roundup" Contest

It's been 15 years since the ARRL stopped running its Novice Roundup contest, which served as an introduction to ham radio contesting for thousands of new amateurs. Now it is bringing back an updated version, dubbed the ARRL Rookie Roundup, to encourage hams licensed for three years or less to try their hands at on-air competition. The event will be split into three mode-based segments, starting with an SSB competition this month, followed by RTTY in August and CW in December, according to the *ARRL Letter.*

More experienced hams will also be encouraged to operate, but they will be limited to making contest contact with rookie stations; rookie stations will be able to contact anyone for points. Scoring will be done online, in real time, using a scoring system at <www.getscores.org>, which is also where interested hams may go for additional information and to download the required logging program. More information will also be in the April issue of *QST.*

Slow-Scan TV from the ISS

Crew members on the International Space Station used the station's ham gear in January to transmit slow-scan TV (SSTV) images back to hams on Earth. The signals are downlinked on the ISS's standard transmit frequency of 145.800 MHz and may be decoded using widely-available free software such as MMSSTV (http://mmhamsoft.amateur-radio.ca/), according to the AMSAT News Service.

The images shot in January showed either crew members inside the station or views out the window of Earth. Many of the photos have been collected and archived on the AMSAT website at <http://www.amsat.org/ariss/SSTV/>.

(Continued on page 10)

Additional and updated news is available on the Ham Radio News page of the CQ website at <http://www.cq-amateur-radio.com>. For breaking news stories, plus info on additional items of interest, sign up for CQ's free online newsletter service. Just click on "CQ Newsletter" on the home page of our website.

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HC-1.5KAT

HF 1.5kW Auto Tuner

HL-2.5KFX *Auto Band Set and QSK*

Solid-state HF 1.5kW Linear Amplifier

Photo : From 1eft HC-1.5KAT (HF 1.5kW Tuner with Auto Band Set Feature), HL-2.5KFX (HF 1.5kW MOSFET Linear) and IC-7700 Transceiver

For DXpeditioners

HL-1.1KFX

HF 600W Linear

HL-1.2KFX

HF 750W Linear

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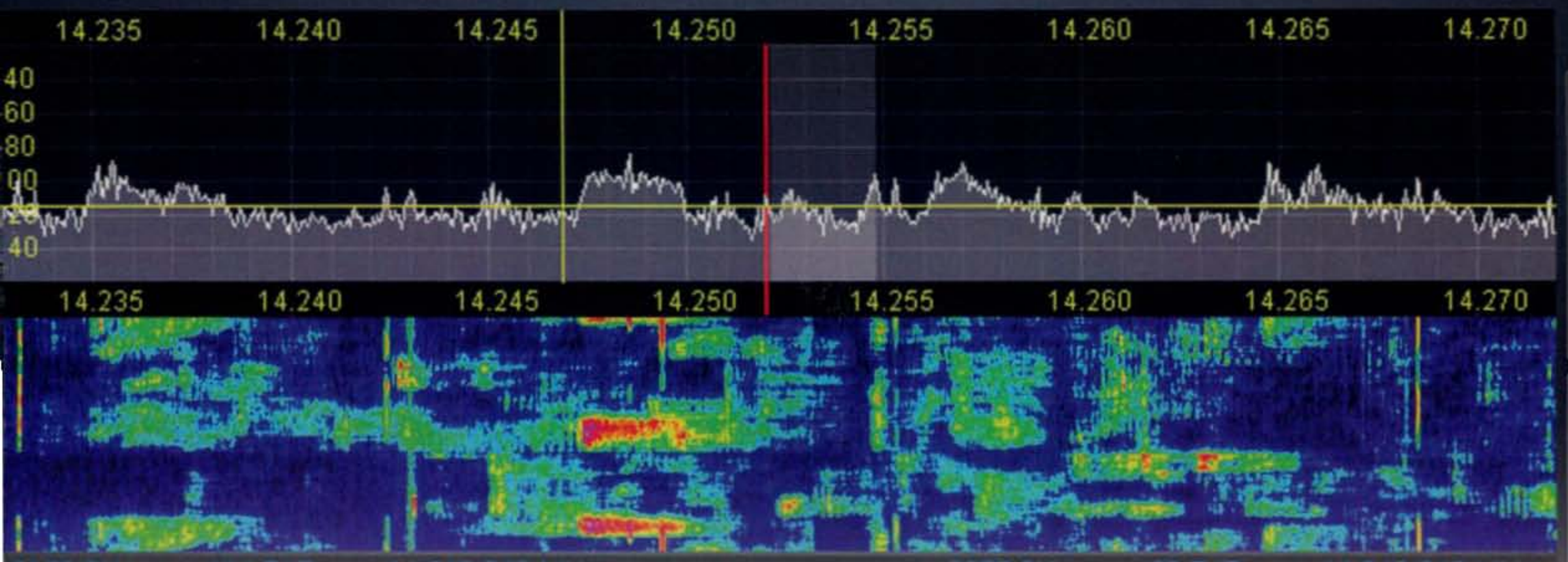
ON THE COVER: Ira Sachs, W9HNV, of Chicago, Illinois. Cover photo by Larry Mulvehill, WB2ZPI.



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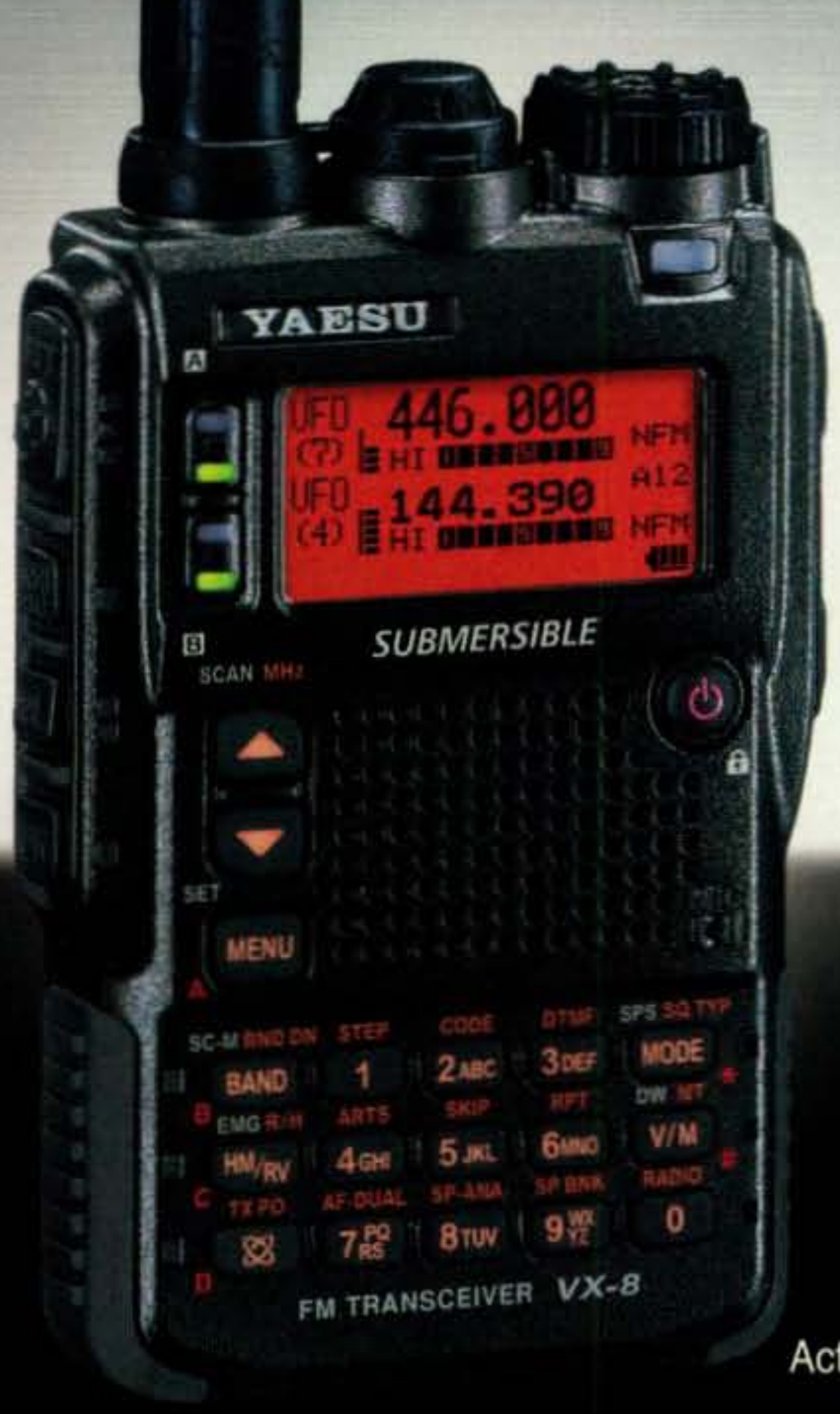

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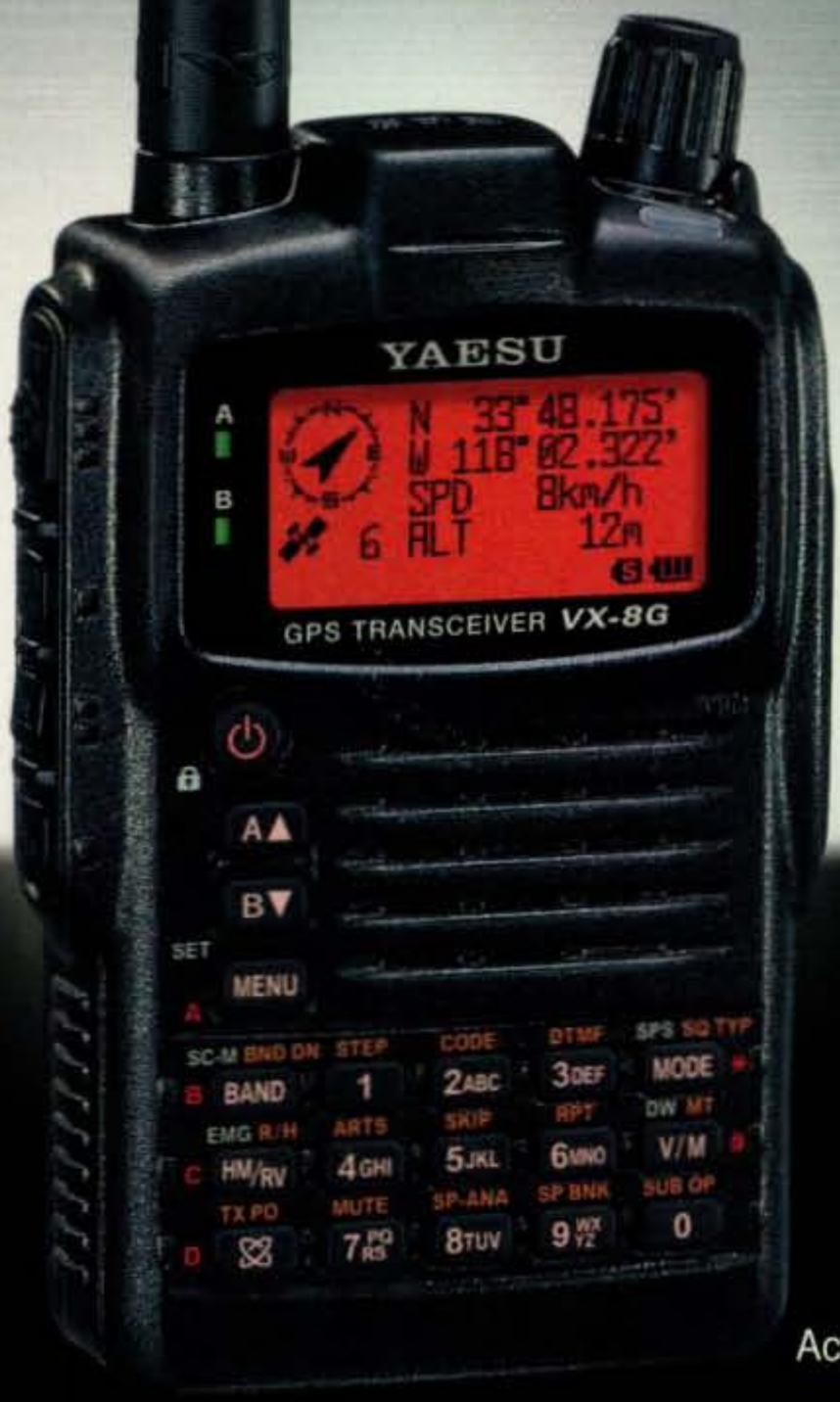
144/430 MHz
FM 5 W Dual Band Handheld

VX-8GR

(7.4V 1,100 mAh Lithium Ion battery/FNB-101LI and battery charger/NC-86A included)



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Attached to the radio (microphone input) using the optional GPS Antenna Adapter CT-136

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Screen Example

Dual Band (Spectrum Scope function)


Navigation (with GPS antenna unit attached)

Mono Band (Spectrum Scope function)

APRS®


Barometer

Timer

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* SmartBeaconing™ from HamHUD Nichetronix

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a CQ editorial

zero bias — BY RICH MOSESON,* W2VU

The Young and the Digital

Back in January, *CQ* Propagation Editor Tomas Hood, NW7US, started a Facebook page for *CQ*, as well as separate pages for our other magazines (*Popular Communications, CQ VHF,* and *WorldRadio Online*). This forced me to join Facebook, something I had been resisting for a long time, and that led to some fascinating discoveries.

First of all, without any promotion at all, the *CQ* page quickly gathered about 500 "fans." With minimal promotion in the following weeks—a note on our website—that number jumped to about 1500! Looking at the list of fans, and of those hams who started sending me "friend" requests, I quickly saw a pattern emerging. About half the "fans" are outside the United States and Canada, and a disproportionate number (compared with our typical readers and our general perception of today's hams) are young and/or female.

Coupled with FCC statistics showing that over 30,000 new hams were licensed last year in the United States (and over 100,000 in the past four years), it is becoming obvious that there is a growing number of newer hams out there, many of them young, who are not being reached in traditional ways. Like other young people today, they're not big on joining clubs or doing much of anything analog. We are not reaching the majority of them in the traditional way ... but the response we are getting to our Facebook page is a very loud message that they are out there, they know who we are, and they want to engage ... but on their terms, on their turf. Today's young people "hang out" on social networking sites. That's where they keep in touch with their friends, meet new people and exchange information about hobbies. It's up to us to go where they are, and our Facebook page is the first step. Getting our writers and readers on there and involved is the next step, and it's already beginning. Propagation Editor NW7US, who took the initiative to set up the page, is actively greeting those who post messages and is himself posting regular near-real-time propagation updates, something that simply is not possible in a monthly magazine.

Last night, I posted photos from the chilly Orlando Hamcation® hamfest (see below). Just before the March issue came out, Kit-building Editor Joe Eisenberg, KØNEB, posted a note alerting fans to what his column was about and encouraging them to watch for it. CQ WPX Contest Director Randy Thompson, K5ZD, has started a WPX Contest page on Facebook. Elsewhere on the internet, Public Service Editor Richard Fisher, KI6SN, has a blog site serving as a supplement to his printed column. Several of our columnists have their own websites. As time goes on, I'm sure that more of our editors and authors will make their way to our Facebook page or other sites, and engage readers and potential readers in conversations that build on their columns in the magazine.

This is a natural progression for us. If you look back at *CQ*'s original "mission statement" in the January, 1945 issue (before anybody had ever heard of a "mission statement"), one of our goals was for the magazine to be an ongoing conversation with the readers, *about* ham radio, but not *on* ham radio; rather, in the printed pages of each issue of *CQ*. Today, such conversations extend beyond the printed page and onto the internet. We encourage you to join us on Facebook if you're a member, to meet your fellow hams (who may be a lot younger than you are!), discuss things, make skeds, etc.

*e-mail: <w2vu@cq-amateur-radio.com>

American Resurgence

I'm writing this a couple of days after returning from the coldest Orlando Hamcation® I can remember in more than a decade of regular attendance. Early-morning temperatures were in the upper 30s and I needed to wear gloves while wandering the flea market. I even needed to keep my jacket on inside for the first hour or so on Saturday morning. Chilly weather aside, it was an excellent show as always, and it was great to "meet and greet" so many of our readers. At one point during the show, one of our "neighbors" in the exhibit hall pointed out that all of the companies in our row were selling products made in America. This included transceiver manufacturers Ten-Tec and Elecraft, as well as Buddipole and GAP antennas, Times Microwave, and us. Beyond our aisle were Vibroplex, DZ-Kit, MFJ/Ameritron/Hy-Gain/Cushcraft, W2IHY audio products, Heil Sound, HexBeam, and others that I'm sure I'm missing. But the point is that while the transceiver market continues to be dominated by our friends from Japan, the ham radio industry in the United States is alive and well and growing, just as ham radio itself in the United States is alive and well and growing.

Column Realignments

This issue contains the final "World of Ideas" and QRP columns written by Dave Ingram, K4TWJ, before he became a Silent Key in January. Dave's passing has resulted in some realignments of our columns, a process that had actually begun before he became ill and that is not yet complete.

Last month, we introduced a new column, "Ham Notebook," by our longtime Beginner's Editor, Wayne Yoshida, KH6WZ. This column allows Wayne to continue exploring his many interests without being tied to keeping things on a newcomer's level. While we didn't plan it this way, "Ham Notebook" will become somewhat of a spiritual successor to K4TWJ's signature "World of Ideas" column, in that it will be wide-ranging and go where Wayne's interests take it, much as "World of Ideas" was guided by Dave's wide-ranging interests. As part of this initial transition, we asked Rich Arland, K7SZ, to continue "Beginner's Corner" on an every-other-month basis, alternating with "Ham Notebook." Dave's passing changed that plan somewhat.

In this issue, we introduce "Learning Curve" by K7SZ, which will appear monthly and will merge elements of both "Beginner's Corner" and K4TWJ's "How it Works" column. While the column will retain its beginner's focus, it will also offer information that far too many of us old-timers have either forgotten or forgot to learn in the first place. Rich starts out this month with a look at basic considerations for setting up a ham shack, a topic of value to beginners and veteran hams alike.

Editorship of our QRP column (Dave's final installment is on page 85) will be assumed as of the June issue by well-known low-power operator Cam Hartford, N6GA. We welcome Cam to our staff. Still to be worked out are the specifics of how we will continue to provide regular coverage of topics that Dave regularly covered in "World of Ideas," including code keys, crystal sets, and projects involving tube rigs. For now, we will be looking for feature articles on those subjects.

Finally, we've got some great articles this month, including an interview with Grammy winner and CW aficionado Larnelle "Stu" Harris, WD4LZC, Professor Heisseluft's annual visit to our pages and a thought-provoking article on "Dictators and Amateur Radio" by a ham who grew up behind the Iron Curtain and is now free to write about it. 73, Rich, W2VU

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Turning Power	600 in.-lbs.
Brake Power	**800 in.-lbs.**
Brake Construction	Disc Brake
Bearing Assembly	**Dual race/48 ball brings**
Mounting Hardware	Clamp plate/steel U-bolts
Control Cable Conductors	**8**
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Wind Load (w/ mast adapter)	**1.5 square feet**
Turning Power	350 in.-lbs.
Brake Power	**450 in.-lbs.**
Brake Construction	Disc Brake
Bearing Assembly	**Dual race/12 ball bearings**
Mounting Hardware	Clamp plate/steel bolts
Control Cable Conductors	**5**
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HDR-300A Rotator Specifications	
Wind load capacity (inside tower)	25 square feet
Wind Load (w/ mast adapter)	**not applicable**
Turning Power	5000 in.-lbs.
Brake Power	**7500 in.-lbs.**
Brake Construction	solenoid operated locking
Bearing Assembly	**bronze sleeve w/rollers**
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Control Cable Conductors	**7**
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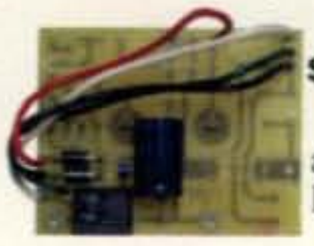

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announcements

Missouri QSO Party – This annual event, sponsored by the Boeing Employees' Amateur Radio Society, St. Louis, will be held 1800Z April 3 through 0500Z April 4, and again beginning 1800Z April 4 though 2359Z April 4. The object is to make as many QSOs with as many Missouri amateur radio stations and to contact as many different Missouri counties as possible. Logs must be submitted no later than May 4, 2010. For complete contest information, go to: <www.w0ma.org>.

• These Special Event stations are scheduled for April:

K4S, from the Venice Sharks Tooth Festival, Venice, Florida; Tamiami ARC; 1300–1900Z April 11 on 21.313, 18.153, 14.236 MHz. For direct QSL send QSL and SASE to Jack Sproat, W4JS, 1419 E. Manasota Beach Rd., Englewood, FL 34223-6341. DX may QSL via the Bureau.

N4C, from the 38th Annual Raleich (NC) Hamfest & ARRL State Convention, Raleigh ARS; 8 AM to 3:30 PM EST April 3 on SSB approximately 7.235 or 14.235 MHz. QSL information at <www.rars.org/hamfest>.

•The following hamfests, etc., are slated for April & early May:

April 3, **Longmont ARC Swapfest**, Boulder County Fairgrounds, Boulder, Colorado. (Talk-in 147.270; exams 10 AM)

April 3, **Raleigh ARS 38th Hamfest, ARRL NC State Convention, & Electronic Fleamarket**, Expo Center Building, North Carolina State Fairgrounds, Raleigh, North Carolina. Contact Steve Farrarini, KJ4BX, e-mail: <steve.kj4bx@gmail.com>, phone 919-247-8690; <wwww.rars.org/hamfest>. (Talk-in 146.64; exams WA4GIR phone 919-387-9152)

April 10, **Orange County ARC Spring Hamfest**, Town of Wallkill Community Center, Middletown, New York. Contact Don Sayre, AA2DS, e-mail: <AA2DS@hvc.rr.com>, phone 845-342-2056 after 6 PM. (Talk-in 146.76, PL100; exams)

April 10–11, **12th Annual Communications Academy**, South Seattle Community College, Seattle, Washington (offering 30 workshops and seminars related to amateur radio, vendors, EmComm displays, and more). For details go to: <www.commacademy.org>.

April 16–18, **61st Annual International DX Convention**, Holiday Inn Hotel & Conference Center, Visalia, California. Early registration suggested. For details go to: <http://www.dxconvention.org/>.

April 17, **HamEXPO**, Bell County Expo Center, Belton, Texas. Contact Mike LeFan, WA5EQQ, e-mail: <wa5eqq@arrl.net>, phone 254-773-3590, on the web: <www.beltonhamexpo.org>. (Talk-in 146.820, 123.0; exams)

May 1, **Blue Ridge Amateur Radio Society Hamfest & ARRL South Carolina Section Convention**, Piedmont Interstate Fairgrounds, Spartanburg, South Carolina. For details go to: <www.upstatehamfest.com>.

May 1, **Valley of the Moon ARC (W6AJF) ARRL Hamfest**, Sonoma Valley Veterans' Memorial Building, Sonoma, California. Contact Darrel, WD6BOR, e-mail: <wd6bor@vom.com>, phone 707-996-4494; <http://vomarc.org/>. (Talk-in 145.36, –600, PL 88.5; exams 9 AM)

May 1, **48th Annual Cadillac Swap**, Cadillac Junior High School, Cadillac, Michigan. Contact Alton McConnnmell, e-mail: <nu8l@yahoo.com>, phone 231-867-3774. (Talk-in 146.98; exams)

ham radio news

(Continued from page 2)

Arecibo Dish to be on Ham Bands for EME Event

The radio astronomy antenna at the Arecibo Observatory in Puerto Rico is scheduled to be on the ham bands this month, making EME (Earth-Moon-Earth, or moonbounce) contacts as part of the World Moon Bounce Day event sponsored by Echoes of Apollo. Arecibo is expected to be on 432 MHz, and possibly 1296 MHz, the weekend of April 16–18. See "VHF Plus" on page 92 for more details.

Construction Under Way for ARISSAT-1 Flight Unit

The AMSAT News Service reports that construction has begun on the ARISSAT-1 ham radio satellite, which is due to be hand-launched from the International Space Station later this year. ARISSAT-1 replaces the originally-scheduled SUITSAT-2 deployment, which had to be canceled when ISS crew members were forced to dispose of the surplus spacesuit in which the satellite was to be installed before work could be done. ARISSAT-1 will transmit greetings in 12 languages, along with telemetry and other data in several modes, including voice, CW, packet and slow-scan TV. It will also have a 16-kHz-wide transponder for making two-way contacts.

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If you've ever worked "Stu," WD4LZC, you might not have realized that this CW fan makes his living with his voice as an award-winning Gospel singer-songwriter. Ham radio, he says, "is not just about diodes and capacitors."

CQ Interviews:

Grammy-Winning Singer-Songwriter Larnelle "Stu" Harris, WD4LZC

BY DAVID GREER,* N4KZ

Larnelle "Stu" Harris, award-winning Gospel singer-songwriter and CW aficionado, WD4LZC. (Photo courtesy Larnelle Harris)

In 1978, WD4LZC was a newly licensed Novice Class amateur radio operator in Louisville, Kentucky, and like all new operators he was a bit nervous about making his first on-the-air CW contact. When that first QSO began, he sent his name, Larnelle, three times at a slow, but steady 5 words per minute: L-a-r-n-e-l-l-e.

"You know what?" Larnelle asked. "The other operator, an experienced ham, told me, 'We'll have to work on that name. It takes too long to send.'"

Since Larnelle's middle name is Steward, he changed his on-the-air name to "Stu," a shortened version of Steward. It's an on-the-air nickname that stuck, and he still uses it more than 30 years later.

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"I think Stu is much friendlier than Larnelle," Harris said. "Now with the internet, people look me up and tell me, 'I see your name is Larnelle.' I tell them, 'Don't worry about it.'"

Although many hams know WD4LZC as Stu, millions more worldwide know him as Larnelle Harris, accomplished singer, recording artist, and writer of more than thirty inspirational songs. Active CW operators know Stu loves Morse Code, as well.

There's a certain irony in the fact that a man who has a tremendous tenor singing voice and has achieved huge success on the strength of his voice seldom uses his voice on the ham bands. After all, Harris has recorded 19 albums; won five Grammy Awards and more than a dozen Dove Awards (the most prestigious award in Christian and gospel music); has earned numerous other awards, including two honorary doctorates; performed at the White House and the Kremlin; and sung during several Billy Graham Crusades. However, he has no microphone connected to the ICOM IC-756 Pro 3 that sits on his ham shack desk tucked into the corner of his home's family room.

"When I first get a radio," Harris said, "I connect the microphone and make sure everything works. I leave it connected for a couple of weeks and then I put it away. If you look in my log, you will only find a handful of phone contacts."

This ham loves CW. He even thinks about it when he's not on the air from his home station. "As a voice major in college at Western Kentucky University, I did a lot of French, German, and Elizabethan love songs, and some in Italian. Therefore, CW is just like another language to me."

Harris admits to being a multi-tasker by nature, but notes, "CW is the only thing I have found where I cannot do anything else other than listen to the other person on the other end of that key and try to get to know him and try to share in the experience of the day."

"When I first started in ham radio," he continued, "I worked a lot of CW, but I was fascinated by the microphone and I enjoyed that, but now I am trying to take code to another level. I am copying 25 to 30 wpm in my head and that is really exciting to me. When people see me walking down the street, I'm listening to something and they think since I'm a musician that I'm listening to my latest CD. No, I'm listening to code tapes and W1AW at 35 wpm and trying to figure it out."

Among Harris's most recent accolades are being inducted into the Gospel Music Hall of Fame in 2007, and in 2008, into the CQ Amateur Radio Hall of Fame based on his many professional achievements. In 1993, he was given the Silver Bell Award from the Ad Council for his song "Mighty Spirit," which was the theme song for the longest running public-service announcement in TV history, done for the Points of Light Foundation.

Harris has an infectious enthusiasm for many aspects of his life—his family, his love of God and his strong faith, his music, an interest in other people, golf, and of course ham radio.

In the Beginning

Harris grew up in the small central-Kentucky town of Danville, population 15,000. He was a Boy Scout in Danville, but knew nothing of ham radio. After

Harris has performed at venues all over the world, including the Kremlin and the White House. Here he and wife Mitzy, KA4TEW, pose with then-President George H. W. Bush and First Lady Barbara Bush. (White House photo, courtesy Larnelle Harris)

Larnelle Harris has won five Grammy Awards and a dozen Dove Awards. Here he is performing at a Dove Awards ceremony. (Photo courtesy Larnelle Harris)

graduating from college, he and his wife Mitzy bought a home in Louisville. Across the street was a neighbor who operated Citizens Band radio. Soon Harris bought a CB radio and the two often stayed up late talking across the street.

"I was always really fascinated that from antenna to antenna, without anything in between, you could make contact with someone," he said. "I was just so enthralled with this communication."

On a fateful trip to Ohio to perform at a church, the local pastor noticed the antenna and single-sideband CB radio in Harris's car. The minister invited Harris to his home for lunch. He said, "You need to come home with me," Harris recalled. The pastor was a ham.

"I went to his house for lunch. You know, presentation is everything," Harris said. "The room was dark and we walked in there and he hit the switch and lights came at me from every corner of the room. There was all this stuff and I didn't even know what it was. What I was interested in was 2 meters, and so he got on 2 meters and made an autopatch call. I got into the car and drove home that night from Ohio, and then got a book on getting a Novice license and a tape and started learning the code."

"I was hooked," Harris said, a broad smile breaking out on his face. Within six months Harris had his Novice license. He remembers going into a Louisville-area TV shop for something and saw that the owner was a ham. Harris told the owner that he'd been studying for his license and the owner suggested sending some CW to see if he was ready for the Novice Class 5-wpm code test. He didn't tell Harris he was giving him his test.

"I copied it perfectly and then I took the written test and got my license. I started working on my General license right away," Harris said.

Harris recalls the evening when he returned home from a performance and walked into his bedroom at 11 PM and told told Mitzy, "Honey, I'm ready!" Ready for his General Class 13-wpm code test, that is.

"I jumped in the car and drove to Chicago to take my General test. I got there at about 4 AM and needed gas, but nobody would open up for me so I just sat in my car until the station opened. I went to the FCC office and I passed that exam," Harris said.

This was in the years when ham exams were given only by FCC examiners. The present-day Volunteer Examiner program was still two or three years away, and the FCC only sent examiners to Louisville on a quarterly basis. That's why he drove to Chicago for the exam. Several years later, Harris obtained his Extra Class license.

Mitzy, Larnelle's wife of 38 years, is also a ham. She is KA4TEW. Mitzy is a teacher and has a Masters Degree in special education. "I just knew two married people would have fun on 2 meters," Larnelle said. "I knew this was God's plan for us," he said, with a loud laugh.

"I got her ready for the Technician test," Harris said. "I had been nominated for a Grammy Award. I got home and we had tickets to Los Angeles (to attend the Grammy ceremony) and I rerouted us through Chicago, rented a car, and drove to the FCC office so she could take that test. She passed. Had she failed that test, it would have been a miserable trip. However, she passed it and she had a great time. But she did it under great duress," Harris said, his story of the incident punctuated with frequent deep laughter.

Harris bought Mitzy and himself matching Kenwood duoband FM mobile radios from the Ham Station in Evansville, Indiana and installed them in their cars. But getting his wife to use the radio regularly proved a bit of a challenge and he eventually dropped the ham radio issue with her. It generated too much friction, Harris said, flashing that grin that husbands use when they know they've been licked.

Harris's children—Lonnie, an electrical engineer, and Teresa, who has a business administration degree and works for a bank—aren't hams, but he has hopes Lonnie might eventually get his license. Both children easily learned Morse code as youngsters but forgot it. Now Harris is working on

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his grandchildren. One granddaughter is quite curious about Morse code, he said.

Lonnie and some of his engineer friends have even volunteered to install a Hy-Gain Hy-Tower multi-band vertical in his father's spacious back yard.

In the Shack

Much of the time, WD4LZC uses a Bencher BY-1 CW paddle. He also professes great love for his Vibroplex® semi-automatic key, a "bug" to CW fans.

"I prefer a bug," he said. "I started using a Vibroplex I bought at the Ham Station. I keep going back to it. I'm getting proficient again with it.

"There's something about that bug. It's individual. You work me a couple of times with that bug, and you probably recognize me. Not so much with the keyers," he said. "I really enjoy the bug. I think it's just something else to master."

On the air Harris can often be found on 40 meters CW, although he likes other bands, too. He has also dabbled some with PSK-31 using the MixW software program and found that enjoyable, but he always goes back to his beloved CW. Ham radio, after all, offers something for everybody, he said.

"If you enjoy sideband, then you do that. But I'm so much into CW that some of my friends think I'm putting them down because they aren't. I don't have a lot of time, so when I'm on the air, I want to be learning." One of his goals now is to learn to copy CW at 40 wpm.

"There are some guys I hear on the air every morning. These guys are good. They are back and forth; they're running full break-in, so keeping up with that is a real challenge. I just love that. I really enjoy that," he said.

More Than Diodes and Capacitors

It's not at all surprising that a man of such strong faith in God and a desire to help others also sees his ham radio experience as a way to reach out to others.

"I don't preach to anyone on that radio," Harris said, pointing toward his ICOM HF radio. "But I happen to believe that if I know how to treat them and I'm going to be more interested in them than they are in me, then we're going to have a good conversation ... and he's going to tell his wife, 'I just talked to this guy. I don't know what it is but I feel a little better today.' If that happens one time, then I've used that little radio for its intended purpose. I know what its expressed purpose is but this is its intended purpose with me at the key. I can't force things in your life, but we're going to be friends when we're done here. I get on the air now and I have people calling say, 'Stu, I just wanted to say hello.' They don't know that's made my day. I think that's the unspoken commodity that amateur radio has.

On the air, Larnelle goes by the nickname of Stu. The five-time Grammy award-winning singer and songwriter has been a ham since 1978. He says the challenges of ham radio are "totally unlike anything that I do," adding, "It's fascinating." (N4KZ photo)

"My ministry continues here even though I'm not going to preach a sermon; I can't do that. And I'm not going to say anything bad because it's too much trouble to send.

"I can't tell you how many times having a conversation on this thing has made my day," Harris said.

Harris uses a computer log to keep up with his contacts, often making notations about people and the events in their lives. He recalled his several CW contacts with a ham who was facing back surgery. The next time they work each other, Harris is ready to ask him how his surgery went.

"This is not just about diodes and capacitors," he said. "That's just the vehicle. That's just what we get to use."

"I don't know how you bottle it or market it, but that's the element that will sell ham radio." It's what will sell ham radio to those who have little or no interest in it, Harris said, and to a technologically driven generation sold on texting and cell phones.

"There is a great mystique to ham radio—to a guy who solders together some components and sends a signal all the way to England," Harris said. "But outsiders saw the CW requirement as a way to keep them out. Now ham radio needs to be more user-friendly. I think ham radio now understands that."

Want to Know More About WD4LZC and His Music?

Larnelle Harris is known mostly as a solo performer, but also spent years performing with the groups "The Spurlows" and the "Gaither Vocal Band." He also has recorded several duets with noted gospel singer Sandi Patty. Several can be viewed on YouTube. If you'd like to learn more about Larnelle Harris and his music, here are a few online resources:

- Go to Google and type in Larnelle Harris. You will get 48,600 hits.
- Go to YouTube at <www.youtube.com> and you will find 150 videos of Larnelle Harris performing.
- Or go to <www.Larnelle.com> to learn more about his music, many awards and accomplishments, and more. Larnelle is offering a special discount to *CQ* readers who order through his website. On checkout, enter the code CQLARNELLE in the promotions box and the discount will be applied.

Harris's favorite mode is CW, and despite having a hugely successful career using his tenor singing voice, he seldom operates voice while on the ham bands. Here he is demonstrating his Vibroplex® bug, which he says is his favorite way of sending CW. (N4KZ photo)

Harris didn't agree with the FCC decision to drop the mandatory Morse code proficiency exam for General and Extra Class licenses, but feels what's done is done and it's time for ham radio to move forward. He appreciates the work of the ARRL and the work of lobbyists to keep the ham radio bands, he said. He has rejoined the ARRL after a period of not being a member.

Interesting People, Interesting Travels

Harris's musical career and great faith have taken him to some of the world's top landmarks. He has performed several times at the White House and has a photo in his living room of his meeting with then-President George Bush, Sr. "You know, it's something to be there and getting ready to start and the president comes walking down the hall," Harris said.

The long-time musician talks at length about his faith and the positive impact he hopes to have on people. He feels strongly that's his mission in life—not to overtly preach to people, but to carry a message of love and hope through his music. And ham radio is a tool for reaching out to people as well.

"I want to be that guy singing those songs along with others, all of us in the ministry. I don't do anything to slap you in your face," Harris said. "I performed at a wine-and-cheese tasting event in Jerusalem. I sing anywhere I get a chance. The guy who introduced me at the event, when I got done, said, 'You know what? If that's Christianity, I'm going to take a look at it.'

"I just want to be the person God is calling me to be whether it's on ham radio, whether it's at the Kremlin, or whether it's in this house."

In 1991, following the downfall of the Soviet Union, a Colorado evangelist invited Harris to accompany him to Moscow to perform in the Kremlin. While there, he and others delivered 4-million Bibles to ordinary citizens, many of whom expressed their extreme gratitude.

When not performing across the country and world or recording—often in Nashville, Tennessee—Harris gets on the ham bands quite a bit. "The challenge of code and of antennas and all this stuff is totally unlike anything that I do. It's fascinating," he said. "I'm pretty much of a ham radio *operator*, because I don't use the formulas and all that stuff all the time. ... If I want to be an expert at something, it's that I want to be an expert communicator.

"I don't have all the answers. And just because someone interviews me—and people want to interview those who have won awards and gotten some attention in the world—doesn't mean I'm not an expert on stuff. I have the ups and downs. I do have arguments with my wife. I have arguments with my children. But we all love each other, and we've held together all these years.

"Ham radio is one of those things I have gravitated to because when I'm operating that key and expressing some interest in that person on the other end of that key, I cannot think of anything else at that moment. I have to think about them and what I'm doing, so ham radio has been a tremendous addition to my life. It's a very neat thing."

WD4LZC Named to FOC

In late 2009, Larnelle was named to the prestigious First Class CW Operators' Club (FOC). One of the primary goals of the UK-based organization is to "foster and encourage a high standard of CW operating ability and behaviour on the amateur bands."

Becoming a member isn't easy. You don't apply for membership in FOC; you need to be nominated by someone who has worked you on CW on at least two bands within the past year. Then you have six months to round up four FOC members as additional sponsors. They need to come from at least two continents, with at least one being from the UK, and each must also work you on two bands in order to support your nomination! Thus, becoming an FOC member is quite an accomplishment. *CQ* congratulates WD4LZC on this achievement.

The arrival of spring means that it's time to prepare for direction-finding fun on the streets and in the woods.

Get Ready for Foxhunting Season

BY JOE MOELL,* KØOV

On New Year's Day, did you resolve to try something new in ham radio during 2010? Did you promise yourself that you would improve your physical fitness? Have you been looking for ways to get the whole family involved in ham radio activities? I have three words for you: hidden transmitter hunting. It's a technical challenge, a fitness builder, a source of intrigue and adventure, plus great ham camaraderie all rolled into one activity.

Amateur radio operators have been tracking down signals since the 1930s, starting at hamfests with one-tube transmitters and hand-carried crystal sets. Later, it became known as "foxhunting" and that name has persisted ever since. There is a pursuit aspect to it, of course, but that's the only similarity to the centuries-old horse-and-hounds sport that is now banned in Britain.

Gear for RDF (radio direction finding) can be much more complicated nowadays, but it doesn't have to be. The vast majority of transmitter hunts take place on the 2-meter band with the participants using their handie-talkies and home-made beam antennas. It's simple, inexpensive, and an excellent way to learn soldering and home construction skills.

The folks at *CQ* magazine know a great ham radio activity when they see one, which led them to begin promoting an annual weekend of foxhunting activity back in 1998. This year's CQ Worldwide Foxhunting Weekend will be May 22–23.

As Foxhunting Weekend Moderator, I have the pleasure of getting reports and photos from hams who have discovered a new way to enjoy their hobby. What's more, the skills they learn are very important when it's time to find sources of interference, either accidental or intentional. Some of them are now helping Civil Air Patrol and search-and-rescue agencies, using RDF to track downed aircraft and persons in distress.

In the Car or On the Trail?

After more than a half-century, mobile transmitter hunting (sometimes called T-hunting) is still the most popular form of RDF contesting in the USA. Every weekend, hams gather in vehicles bristling with antennas, including some rotating Yagis and quads. One or more other hams have an adventure planned for them.

To win a mobile T-hunt, a vehicular team must get to all those radio foxes first, or do it with least mileage added to the odometer. The winning criterion depends on the local hunt rules and so does the reward. The best team usually wins the job of transmitting next time. That can be just as much fun! Will they find the perfect hiding location to keep the mobile hunters driving for hours?

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Invite a Scout troop to participate in your club's on-foot foxhunting activities and make it part of your license-preparation classes for youth and Scouts. You might discover a future ARDF champion. (Photo by Joe Moell, KØOV)

A growing number of hams prefer transmitter hunts that are all on foot. What a great way to involve kids and grandkids, because no driver's license is needed (or a ham license, for that matter, since only the hider is transmitting). A cookout and foxhunt at a local park make a great ham club activity on Foxhunting Weekend or any other. Tiny 2-meter transmitters can be cleverly concealed under rocks or up in trees. You might even find one inside a fake boulder or tree limb.

In another kind of on-foot foxhunting, everyone follows an internationally agreed-upon set of rules requiring the transmitters to be set up in a special orienteering course with orange-and-white flags, unique registration punches, or electronic scoring. See the sidebar for more about the rules of this organized worldwide sport, which is called radio-orienteering and ARDF (amateur radio direction finding).

With practice and perseverance, you could win medals and other honors in ARDF, no matter what your age. National championships take place annually in about two dozen countries around the world. USA's will be on Foxhunting Weekend this year, organized by members of OH-KY-IN Amateur Radio Club and the Butler County VHF Society.

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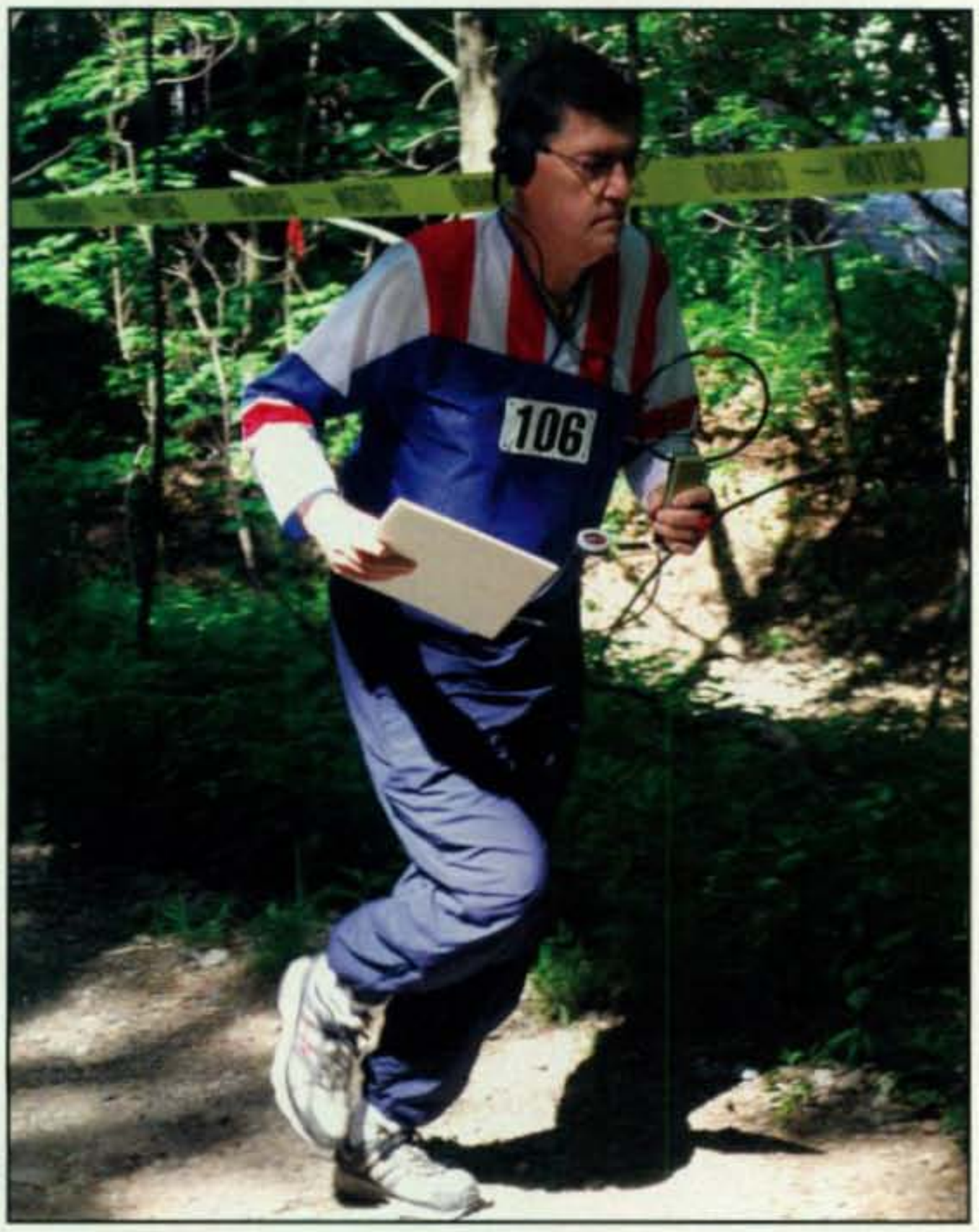

Bob Frey, WA6EZV, runs up the starting corridor at the 2009 USA ARDF Championships carrying his 80-meter ARDF receiver/antenna set. Bob is one of the organizers and course-setters for the 2010 national championships near Cincinnati. (Photo by KØOV)

Headquarters for the 2010 USA ARDF Championships will be in Franklin, Ohio, which is about halfway between Dayton and Cincinnati. Everyone will gather on Friday, May 21 for informal practice and equipment testing on the campus of Miami University. That will be followed on Saturday by the formal 2-meter competition in Hueston Woods State Park with a banquet for all participants afterwards. On Sunday, the 80-meter competition will take place in the Miami University Natural Areas, followed by the medal awards ceremony.

Co-chairs of the organizers are Bob Frey, WA6EZV, and Dick Arnett, WB4SUV. They have trained in the area for years and traveled to the World Championships four times. In 2003, they put on the highly successful Third USA and Second IARU Region 2 ARDF Championships. Bob and Dick are also organizing the annual Foxhunting Forum at the Dayton Hamvention® one week earlier. That popular session is tentatively scheduled for Friday, May 14 at 11 AM in Room 2 of the Hara Arena, although the time may be changed to that afternoon.

Our national championships are open to anyone who can run or walk through the forest for five to ten kilometers while carrying RDF gear. A ham license is not a requirement. For the second year, there will be no registration fees for first-time participants and for participants coming from outside North America. Expect to meet beginners and experts from all over the world, because foreign visitors are welcome. Registration forms are available for download at the event website,[1] which also has lodging suggestions and technical details such as transmitter frequencies.

Radio Foxhunting with International Rules

Around the USA and the world, there are wide differences in the guidelines and rules for transmitter hunts in vehicles. Each group develops the kind of mobile contests that suit the skill and temperament of the local T-hunters, as well as the geography and climate of the region.

Roll-you-own rules won't work when radio-orienteers gather from all parts of the country and the globe to test their skills on foot in the forest. As interest in ARDF spread through Europe three decades ago, a committee of the International Amateur Radio Union (IARU) was formed to standardize the rules. That made it possible to hold the First World ARDF Championships in 1980. As the sport has grown in popularity, the rules have kept up. Their purpose is to ensure that winners have the ideal combination of direction-finding skill, orienteering ability, and physical stamina.

After its start on 80 meters with just three age/gender categories, championship ARDF now has six age categories for men and five for women. Now 60-year-olds don't have to compete against 20- or 40-year-olds. Having more categories also means that more gold, silver, and bronze medals are available to be won.

At national and world championships, there are separate hunts during separate days on 80 meters CW and 2 meters AM. Each takes place in a large forested area. Five transmitters are on the air with distinct identification. Fox #1 is on for 60 seconds, and then it goes off and #2 comes on for a minute. The cycle continues until #5 has finished, at which point #1 begins again.

Competitors receive a detailed color orienteering map of the forest just before they set out on the course. They must navigate from the starting corridor to each of the required fox transmitters (five, four, or three, depending on category) and then to the finish line, using the map and their own RDF gear. Scoring is done first by number of transmitters found and then by elapsed time. There is a time limit, usually about three hours. If you stay out in the forest longer, you are disqualified.

During championship foxhunts, each person competes as an individual. No teaming or human assistance is permitted on the courses. GPS help for navigation isn't allowed either. Competitors may not make transmissions except in emergencies.

Nowadays, the ARDF World Championships take place every even-numbered year in a country that is selected by the ARDF Working Group of IARU. Each participating country may send three competitors in each of the age/gender categories. The next World Championships will be on the coast of Croatia this September. After this year's national championships on Foxhunting Weekend, invitations for membership in ARDF Team USA will be given to the best performers in each category in those championships near Cincinnati and in the 2009 USA championships near Boston.

Don't be afraid to take on the USA Championship courses just because you haven't done much ARDF. Newcomers are always welcomed and encouraged. At last year's championships near Boston, 44 percent of the competitors were first-timers. There is an excellent opportunity for one-on-one training for two full days prior to the championships during the optional "training camp."

Make Your Plans

For many clubs, Foxhunting Weekend kicks off a season of regular transmitter hunts. For others, it's a once-a-year event, like Field Day. *CQ* doesn't impose any rules or offer any prizes for the WWFW (Worldwide Foxhunting Weekend). That's up to you and your fellow hometown hams. You don't even have to schedule it on May 22–23. Any weekend in the spring will be fine!

Some hams prefer formal transmitter hunts with carefully crafted boundaries, specifications for signal parameters, time limits, and so forth. Others are completely content just by

At a recent radio-orienteering session in a southern California park, Max Praglin, KI6SYD (at right), built his own 3-element tape-measure Yagi for 2 meters, then went in the wilderness and found all five hidden transmitters. (Photo by April Moell, WA6OPS)

having one or more signals to hunt—no need for any regulations, they say. Talk it up on the local repeater and see what your friends have in mind.

Planning hunts and building gear can be almost as much fun as the actual transmitter tracking. There are plenty of resources to help you, including a book,[2] an instructional DVD,[3] and lots of websites with photos and videos. *CQ* magazine and *CQ VHF* have featured transmitter hunting on a regular basis over the years, so dig into that stack of back issues.

Start your search at my website,[4] which has the announcement of this year's Foxhunting Weekend, an article on mobile T-hunting that you can put in your club's newsletter, and ideas for equipment that will make a foxhunter out of anyone with a 2-meter handie-talkie.

Every member of your club is a potential participant in Foxhunting Weekend. Better yet, include the whole community, especially young people. Invite a Scout troop to experience on-foot transmitter tracking or to ride along with the mobile hunters. Look for opportunities to incorporate foxhunting into Scout activities such as Camporees, Scout-O-Ramas, and Jamboree-On-The-Air. Other youth groups, such as 4H and Indian Guides, may also be interested.

Whatever your club's RDF contesting style, be sure to keep safety in mind. Don't put transmitters where someone might get hurt getting to them. Make sure that all transmitting and receiving antennas are eye-safe. Always be mindful of your own physical limitations and never take chances behind the wheel or in the forest.

Afterwards, write up the results and send them to me. The list of information in a complete CQ Foxhunting Weekend report is posted with the announcement at my website. We need details of date, location, hiders, and winners. Readers also want to know what was unique about your hunt and what lessons (positive and negative) you learned from it.

Take lots of photos for your club newsletter and please send some to me for a follow-up article. Although digital files are best, sharp 5" × 7" prints might be usable. Resolution of 640 × 480 is the bare minimum. A camera of four to ten megapixels will give images that will make the editors much happier and will be more likely to be used.

In next month's *CQ*, I will be back with stories and photos from last year's Foxhunting Weekend. That will give you plenty of ideas for challenging and inventive hunts of your own. Meanwhile, start talking up the CQ Worldwide Foxhunting Weekend and making plans for your club's participation.

Bob Thornburg, WB6JPI, invented this simple removable window mount for rotating VHF RDF beams and produced some kits for it. That resulted in new T-hunters in the Los Angeles area. Contact him by e-mail (wolfbob@csnsys.com) to see if he has any kits left. (Photo by KØOV)

Joe Moell, KØOV, is ARRL's ARDF Coordinator and Moderator of the annual CQ Worldwide Foxhunting Weekend. He also writes the "Homing In" column on radio direction-finding topics in CQ VHF *magazine. His "Homing In" website <www.homingin.com> is full of information and ideas about RDF equipment and techniques.*

Notes

1. http://www.usardf2010.com
2. http://www.homingin.com/THRDFSinfo.html
3. http://www.arvidnews.com/ardf/index.html
4. http://www.homingin.com

When a piece of gear is on the market for many years, it often is quietly upgraded and improved by the manufacturer. That has been the case, says W9KNI, with the now two-decade old, but still brand new, AL-1200 amplifier from Ameritron.

Amateur Radio's Best Kept Secret

CQ Revisits: The Ameritron AL-1200 HF Amplifier

BY BOB LOCHER,* W9KNI

Back in 2008, I made an all-out run at *CQ* magazine's DX Marathon chase. Long story short, I finished second, tied in score with a combination of 328 countries and zones worked. My score tied that of the winner, OM3EY; however, he won the tiebreaker, having logged his last counter about a week before I did.

Naturally, losing by such a small margin makes one reflect on what could have changed the outcome. There were two countries I heard but did not work in my chase—3B6, Agalega Island, and TL, Central African Republic. I had one shot at the 3B6; I heard him on 10 MHz CW but could not get a QSO. I heard TL stations at least half a dozen times, always on 20 meter SSB. I could never beat the pile-ups. I live in western Oregon, meaning that I would have to have worked a TL over the top of all the American and Canadian DXers to the east of me. That is most of them, and many of them are good—very, very, good. Tuning for TLs never brought me any luck, as their appearances on the bands were random, with no pattern I could ever discern. As a result, all of my attempts for a QSO were initiated by spots on the DX clusters.

The amplifier I was using in the Marathon was an Alpha 87A, a very highly regarded design, and properly so. However, it has one significant flaw for my needs: It requires a 3-minute warm-up before becoming operational.

Virtually every time my spotting network alarm went off for a TL station, I was on the frequency within 30 to 60 seconds, perhaps already tuning the bands, or a room or two away from the rig. Since I was responding to the first alarm for the TL, usually I would find him with not more than two or three stations calling him. Of course, I would call as well, running barefoot while waiting for the amplifier to warm up. However, calling barefoot simply was not enough, and by the time the amplifier clicked on into ready mode three carefully measured minutes later, what had been two or three people calling had turned into a snarling pile-up. My best efforts for a QSO simply were not good enough, and at the end of the year I still needed a TL. I am reliably informed that OM3EY did not.

While a three-minute warm-up is not an issue for many hams, my operating pattern was that of DX Sniper—a fellow who would lie quietly in the weeds looking for a new one, find one, spring up, and hopefully work the DX with one call and then disappear again. If I found a station I wanted to QSO who was not a new one, almost invariably I would call and work that station barefoot. I also worked some new ones barefoot, especially on CW, while waiting for the linear to get ready. However, for SSB DX, especially in Europe and Africa, I needed the afterburner . . . and, I needed it now. *Now*, not three minutes from now.

Yes, I could have run the linear 24/7 whenever I was home and I simply refused to do that. I was inefficient, not exactly environmentally friendly, and expensive, both from the perspective of

Front view of the Ameritron AL-1200 amplifier. (Photo courtesy of Ameritron)

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The AL-1200 tank compartment with the Eimac 3CX1200A7 tube and chimney installed. (Interior photos by the author)

the electricity used and for the hours that would have been clocked up on the tubes. Add to that the issues of additional heat in the shack and of the constant blower noise and you can see why I chose not to do that. It became clear that if I was going to continue my normal operating pattern, it was time for a different linear, one that would feature instant-on capability.

Seeking an Instant-On Amp

Of course, there were other requirements. For me the main one was that the new amplifier would have to offer full, uncompromised legal-limit capability—1500 watts output with a high duty cycle. I studied the market and developed a mental matrix of the currently available legal-limit linears. My "instant-on" requirement eliminated the majority of the offerings. I ended up with two linears that use a pair of 3-500Zs, one using a 3CX1200A7 and two solid-state models.

On the face of it, solid-state amps have to be very attractive. However, solid-state amplifiers running at the 1500-watt level offer no margin for error. If the amplifier attempts to transmit into a non-resonant antenna without protection, the RF amplifier transistors become history almost instantly —very expensive history. For this reason, the amplifiers offered have extensive circuitry to protect the finals, in one case featuring a broad-range antenna tuner built in, the other offering an external antenna tuner that is nonetheless closely coupled to the amp using computer techniques. If the amplifier does not like the antenna load to which it is hooked up, it will either reduce the power output or shut itself down completely, measures necessary to protect the final transistors. In any case, the prices of the two solid-state amplifiers were beyond my budget range. I mentally moved on to examining the tube amplifiers.

Tube amplifiers that met my requirements used either a pair of 3-500Zs, reliable and relatively inexpensive glass triodes, or the Eimac 3CX1200A7, a ceramic triode with external anode. While properly speaking, these amplifiers are not "instant-on." They all are specified to be ready to go in under 10 seconds. That was close enough for me.

I had had long experience with 3-500Zs and had great respect for them, but the idea of the ceramic and external anode triode intrigued me, as these tubes tend to be far more robust, and with all else being equal, tend to offer much longer life. My checking around also discovered that of all the power tubes used in amateur radio amplifiers, the 3CX1200 was the most durable, trouble-free tube out there. Ameritron, too, has stated that it has had the fewest warranty issues with that tube compared with all the other tubes used in its various amplifiers. Certainly, the grid dissipation specification of the tube is far higher than that of any other RF power tube used in the Amateur Radio Service.

The AL-1200

I began to research the one currently available amplifier using that tube, the Ameritron AL-1200. First, of course, I checked pricing. Street price for a new AL-1200 was about $2900, shipping paid. That did not disqualify it. I went to the Ameritron site (http://www.ameritron.com), read the materials there, and downloaded the manual as a .pdf file. While the manual is not the best I have ever seen, it did appear to be inadequate.

Over the next several months, I checked online reviews (virtually all of which were favorable) and asked various DXing friends if they knew anyone using the amplifier. I was surprised to find out that a very considerable number of the people I talked to owned one themselves, used it regularly, and happily recommended it. Also, equally interesting, in almost every case they were still using the original tube that came with the amplifier.

By current equipment standards, the basic design of the AL-1200 is old. The amplifier was first offered in 1985!1 This is not a bad thing, as a solid and established design that is well proven would likely offer me many years of service (I like to think of myself in the same way, since I started life a lot further back than 1985!). RF power amplifiers is one field in which there is a real advantage to a mature design; all the bugs have been worked out. That's exactly the case with the AL-1200. While there had been some minor problems with early models, virtually all of them have been resolved via upgrades over the years.

I went ahead and ordered one. The amplifier arrived in three separate boxes: the amplifier chassis, the power transformer, and the transmitting tube. The power transformer weighed just about exactly the same as the chassis and tube together. I took off the cover of the amplifier. Nice. The screws all were machine screws threaded into welded-on nut inserts, a mark of quality. I looked at the chassis. Whoa! The surface finish looked different. I looked closer . . . yes! A stainless-steel chassis! I was beginning to be seriously impressed.

I opened the transformer box and lifted it out carefully. Again, it was another very positive experience. The transformer is virtually identical in size and weight to that of the Alpha 87A. Both transformers use hypersil technology, which results in a somewhat smaller and lighter transformer for a given power level. I carefully installed the transformer into the amplifier, hooked up the wires as per the manual by shoving connectors over mating clips, and then plugged in the tube. While I had the amp open, I went over all the solder connections carefully, something I had learned to do when I worked at Collins Radio years ago. Everything I saw looked fine, without exception.

While the top was open, I followed the instructions to enable 10- and 12-meter operation. While I will not describe it here, suffice it to say it was ridiculously

quick and simple—easily accomplished in under a minute with a simple hand tool.

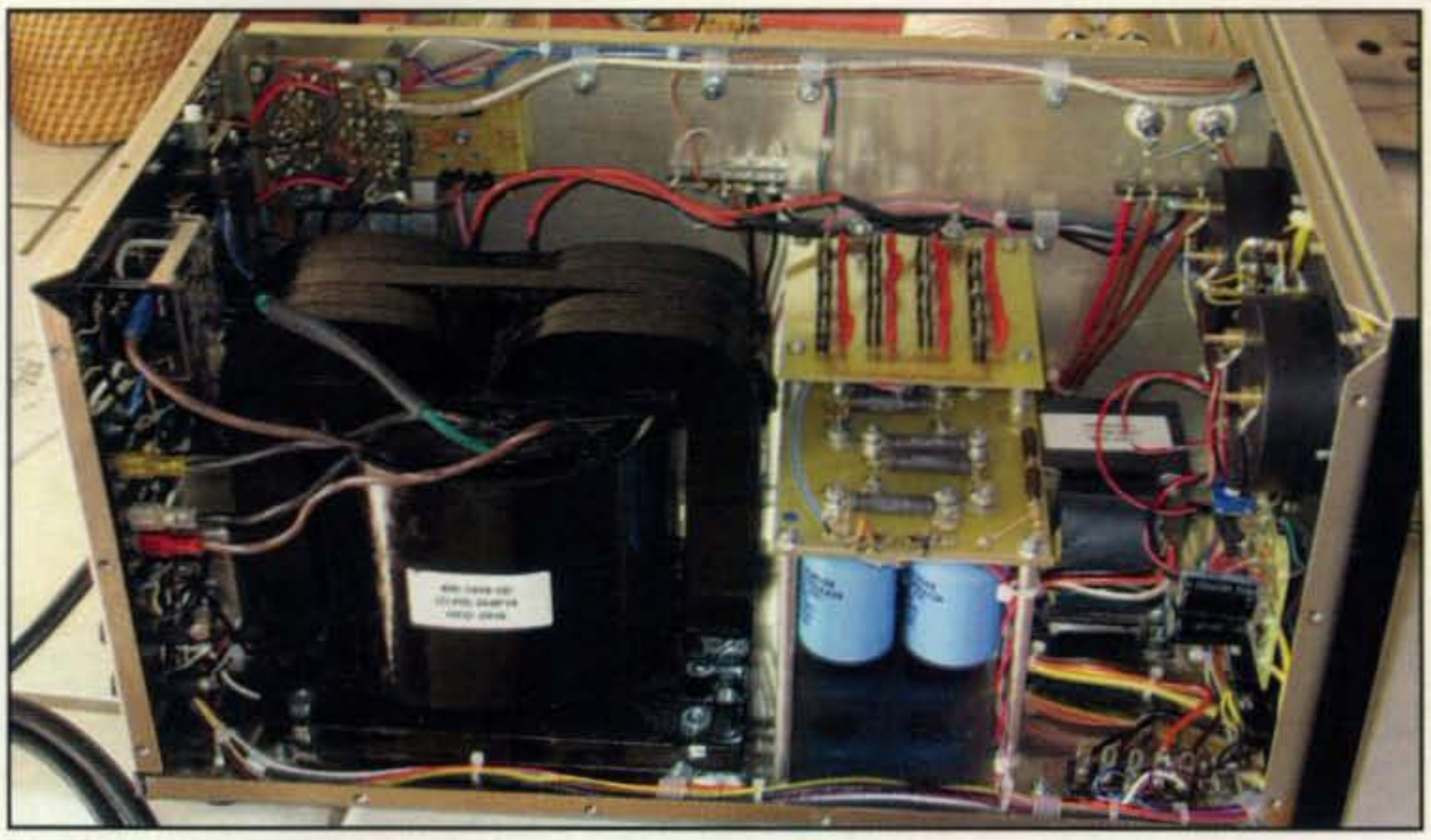
Powering Up

I replaced the cover and was ready to go. I plugged in the amplifier, and then nervously turned on the power switch. All was well. The plate voltage came up as per the meter, the pilot lights lit, and the blower began making noise. I turned off everything, summoned my neighbor, and the two of us lifted it into position in my shack (I had hurt my back earlier in the year lifting an amp out and was resolved not to do that again). Within minutes, everything was interconnected and I was ready to put the amplifier on the air. I put the bandswitch on 20 meters; set the switches, plate, and tuning knobs as per the manual; made sure I had the right antenna connected; put the external RF output meter to the high range; set my K3 power output to 10 watts; found a clear frequency; and applied power. The power output meter lifted a little.

I quickly tuned the plate control and the power output jumped to over 100 watts. I peaked the output annd then applied more drive, enough to bring the output up to near a kilowatt. The grid current was running about 250 ma, which was high for that power level. I advanced the load control a bit, which gave me another 100 watts output and reduced the grid current to under 200 ma. Looking good—very, very good. I added more drive and the power output effortlessly moved to 1500 watts. I tried retuning the plate and load controls, noticing that the plate current dip, the grid current peak, and the power output all coincided at the same point. The K3 was showing 80 watts output, and the amp grid current was again at about 200 ma. Sweet!

I keyed the rig with a brief test call after again checking to confirm that the frequency was clear. Good . . . No complaining noises from the power supply; indeed, no change in noise whatsoever as I keyed the rig, with 1500 watts output. I began making a setting chart for the tuning positions of the amp for various modes and bands.

I moved the rig to SSB and switched the AL-1200's bias voltage-control switch from CW to SSB. I found a quiet frequency and again tuned up the linear, finding that the tune-up points had changed slightly from the CW portion of the band, not an unexpected development. I went from band to band, noting the settings and the drive power required. I found that at 10 meters my K3 had just enough drive to attain 1500 watts output level.



The left side of the amplifier showing the plate transformer installed as well as the plate-voltage diode board and electrolytic filter bank (to the right of the transformer).

Tuning the amp on the WARC bands (30, 1, and 12 meters) was simple as well. I checked the SWR between the exciter and the amp. I do not have numeric values, but certainly it gave the K3 no problem. I tested the amplifier on 30 meters. The FCC power limit on 30 meters is 200 watts output. My K3 is capable of just over 100 watts output on that band. If I need a QSO on 30 meters, I see nothing wrong with using the AL1200 to get me up to 200 watts output—a solid 3 dB over the barefoot K3. I found that with the bandswitch set on 20 meters, the AL-1200 would tune nicely on 30 meters and give me 200 watts with about 12 watts of drive from the K3.

On the Air

In subsequent weeks, on-the-air usage confirmed that the AL-1200 was pretty much everything I had hoped it would be. In chasing new ones for the 2009 CQ DX Marathon, five new ones in a row all were first heard while the amplifier was off, and all were in the log in under three minutes—and all of them worked at full legal power output, thanks to the essentially instant-on feature of the AL-1200. That list included TLØA in the Central African Republic. Exactly what I had hoped for, and what I had bought the amplifier for.

One concern I had regarded going back to an amplifier with manual tune-up from having an auto-tune amp. Auto tune is very nice indeed, and allows essentially instant band changing. However, with logging charts or pre-tune marks, manual bandswitching of the AL-1200 is very quick – easily under 10 seconds. I tested the accuracy of tuning by a tuning chart . I was always within 2 or 3 percent of maximum output, close enough to be very competitive and without punishing the amplifier.

Design Highlights

The design of RF power amplifiers has always fascinated me. As I studied the AL-1200, my respect and admiration for the amplifier increased considerably. The amplifier was designed by Tom Rauch, W8JI, a well-known DXer and RF engineer. Tom's design is clean and simple. As near as I can tell, and based on my friends' comments, the components are all rated to handle the job at hand. Nothing is excessive; there is no overkill, but everything needed is there.

Of particular note is the bandswitch – a hefty, well-regarded ceramic switch with multiple decks. It passes through a thin compartment behind the front panel that contains the tuned inputs, so that no mechanical linkage is required to another switch to change input and output circuits when changing bands.

Several things I particularly admired: One is the plate choke. In the days before the WARC bands, plate chokes gave designers fits in trying to develop a choke that had no resonances near any of the ham bands. The problem was considerably exacerbated by the addition of the WARC bands. Several designs beat the problem by switching in additional inductance for some bands. However, the choke in the AL-1200 disdains such techniques. It works reliably over all the ham bands from 160 meters to 10 meters (OK, I admit I did not test

it for 60 meters). Also to its credit, Ameritron will sell the choke to any interested home builder for a quite reasonable price, as indeed it will sell all the other components of its amplifiers on a part-by-part basis.

The plate circuit of the amplifier uses an especially clever technique I had never seen before. The circuit for 160 and 80 meters is a pi-L network. The advantage here is that the pi-L configuration requires a much lower value of loading capacitor, although at a higher voltage rating. On 40 meters and above, though, the circuitry uses a conventional pi network, so that the variable loading capacitor which is adequate in a pi-L network for 160 and 80 meters (with switched-in fixed padding capacitors) is also adequate for 40 meters and above. The combination is nicely balanced so that the variable loading capacitor offers excellent tuning range, something not every linear has managed. I do not know if Ameritron invented the technique, but I have not seen it in use elsewhere and it is certainly clever and effective.

The simple and clean design of the amplifier offered me another advantage, at least as a technician, I understand every bit of the circuitry and can pretty well repair any part of it myself. For me this would not be true of some of the fancier auto-tune rigs.

A Few Nits to Pick

What's not to like? I have three complaints. For one, the blower is loud. I had hoped it would be quieter than the 87A. It is not. Legal-limit linears typically have to get rid of close to a thousand watts of heat when key down at full output, and to do so enough to keep tubes or transistors from failing requires a lot of air movement. Moving air makes noise. The AL-1200 offers four different blower speed levels, changeable by moving a wire inside the box to a different terminal. The manual states that the lowest setting is enough for regular operation, but the highest level should be used for extended contest or RTTY operation. Well, from my perspective a pile-up is a contest, hopefully of brief duration. I left the blower at the factory default setting—the third level of four. It is not quiet.

My second complaint deals with the logging scale for tuning up. The loading control had a logging scale from 1–10, curiously with three divisions between the major numbers. However, to log in the decimal system, four divisions would have been needed. In any case, the plate control has an old-fashioned band graphic borrowed from early transceivers, showing the likely ranges for different bands. On some bands it is correct; on others it is completely wrong. Worse, the plate scale does not lend it self to repetitive settings like the load control. The Ameritron AL-800, a sister linear of later origin that uses a pair of 3CX800s, has such a scale. The AL-1200 would benefit from it as well.

My last complaint is the incandescent meter lamps. While my lamps have not failed, they inevitably will. They would be improved by being replaced with white LED lamps, and I understand that, in fact, Ameritron will be doing so soon.

I regard these complaints as minor issues. They are not serious detractions from what is a rugged, affordable, full-legal-limit-output linear that is equally at home in a 48-hour all-out contest effort or sitting turned off but ready and waiting for the alarm bell to go off, when it will be ready for action in under ten seconds. This linear has already clearly proven it is a classic.

So What's the Secret?

Part of the title of this review is: "Amateur Radio's Best Kept Secret." Actually, there are two secrets, and neither should be so. For one, the AL-1200 is a robust full-legal-power amplifier for 160 meters and the HF bands that offers essentially instant-on performance. For reasons that escape me, Ameritron's marketing simply does not promote the near-instant-on capability of the amp, which was, for me, the defining reason for its purchase. Indeed, I came to the amplifier because it uses a tube which I knew to be essentially instant-on, and found out that the AL-1200 is the only production amp on the market today offering this feature. However, the more I found out about the amplifier the better I liked it.

Close-up of the plate-voltage diode board and electrolytic filter bank.

The other secret is how many hams are using this amplifier. It has become clear to me that there are thousands out there, and they are paying the amplifier the highest compliment. Very few of them appear on the used market, and almost always when they do they are from an estate sale.

My AL-1200 is the eighth linear I have owned as a ham. I think there is a very good possibility that this is my last one.

For more information or to order, see your favorite Ameritron dealer or contact Ameritron, 116 Willow Road, Starkville, MS 39759; telephone: 662-323-8211; web: <www.ameritron.com>.

Note

1. *CQ* first reviewed the AL-1200 in October 1990.

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IC-718

The Icom IC-718 covers 160-10 meters. This radio is very easy to operate with one touch band switching, direct frequency input via keypad and auto tuning steps (senses the rate at which the tuning knob is turned). The receiver section features IF Shift, Adjustable Noise Blanker, RIT and formerly optional UT-106 DSP Automatic Notch/ Noise Reduction. These big rig features give you the necessary tools to fight interference. You get 99 regular memories and 2 scan edge memories. You can scan memories or scan between two specific frequencies. The transmit section features up to 100 watts of RF output and AF speech compression to increase average audio output. A Morse keyer is built-in. The meter shows output power, ALC and VSWR. The layout and basic operation of this rig is simple, but through a menu system you can adjust many operational parameters such as: peak-hold on the meter, mode lock out, RF/SQL knob behavior, key type, etc. The TS function allows you to vary the tuning increment to your liking. The easy-to-read, large LCD and front firing speaker make this rig ideal for either mobile or base installations. The IC-718 comes with the HM-36 hand mic and DC power cable. The IC-718 requires 12 VDC at 20 amps. 9.7 x 3.8 x 9.5 inches 8 Lbs 6 oz. The IC-718 is a great value, providing reliability and DSP at a 'used rig' price. With **free carry case** for a limited time. *Order #0718* **$599.95**

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The Lauton Institute, already a pioneer of advanced technologies such as the development of stealth and cloak technologies, reveals the latest application of mind-reading technologies.

A CQ *Exclusive:*

Reading the Mind: Taking Contesting to the Next Level

BY PROFESSOR EMIL HEISSELUFT*
Lauton Institute, Grossmaul-an der Donau, Austria

"Only Muggles talk of 'mind-reading.'" — *Harry Potter and the Order of the Phoenix*

It wasn't long ago when contest operators did everything manually, from tuning their receivers across the band, to sending the required contest exchanges, to logging successful contacts. The advent of computers and other digital devices speeded the shift to automated operations, accelerating the pace of contest activites, and in the process boosting scores for single- and multi-operator stations into the stratosphere. So all-consuming has been the quest for higher scores within the contest community over the last three decades that few perceived the revolution taking place behind the scenes in an area that will revolutionize contest operations within the next 10 years: mind reading! As you might expect, standing at the forefront of research in this exciting area is none other than our very own Professor Emil Heisseluft. The good professor, with some prodding by your editor—OK, maybe a little begging was involved—now has consented to reveal the research being conducted by the Lauton Institute in cooperation with the Badger Amateur Radio Society (BARS) at the University of Wisconsin-Madison in this revolutionary scientific discipline. — W2VU

In the pages of April 1977, *CQ* magazine, dear readers, I alerted the ham radio community to the threatened takeover of the amateur ULF band at WARC 79.[1] Specifically, broadcast interests were seeking exclusive use of the bands below 3 kHz that at the time were available to radio amateurs for experimentation. We at the Lauton Institute, in particular, had been using this band to perform research on information transfer through paranormal perception—that is, perceptual channels may exist in the ULF band and at lower frequencies that permit information to be conveyed by extrasensory perception (ESP). The seminal piece on this science, of course, was written by Puthoff and Targ.[2]

The results obtained by Puthoff and Targ were in agreement with some unpublished results of ESP experiments I

**e-mail: <heisseluft.emil@mashuga.orf.ar>*
Professor Heisseluft is currently in the U.S., where he is consulting with the University of Wisconsin-Madison on the development of next-generation mind-reading software for use in time-sensitive, interactive applications, including those involving competitive activities. Mail may be conveniently sent to the professor c/o CQ magazine, 25 Newbridge Rd., Hicksville, NY 11801

(A) (B)

Fig. 1– (A) The "Hinter der Wieke" in Bad Salzuflen, Germany. (B) A rough sketch of a visual impression received by me at 1600 GMT on August 28, 1958, in Grossmaul-an Der Donau, Austria.

Fig. 2– One new mind-reading device shows letters on a screen that flash one at a time. When the user thinks of a letter, and then that letter finally flashes, brain waves send a signal to the computer that it recognizes as "Hey, choose that letter." It is slow, but it works for crafting short messages such as tweets for Twitter. (Credit: UW-M[9] [funding for the project came from the university, the National Institutes of Health, and the Wisconsin Alumni Research Foundation])

performed as a student under Professor Jerzy Ostermond-Tor, ex-YM4XR.[3] These experiments actually were performed in 1958 while Ostermond-Tor was on leave to lecture on communications at a small university in Bad Salzuflen, Germany. By agreement, Ostermond-Tor was to concentrate on his surroundings, whatever they were, at 1600 GMT every day. I, in turn, sequestered myself at the Lauton Institute each day at that time and attempted to sketch the visual impressions that I received.

The results were amazing! One sketch, of the "Hinter der Wieke" in Bad Salzuflen, made on August 28, 1958 (fig. 1), bore a remarkable resemblance to the buildings viewed by Ostermond-Tor. That the image was not a truer reproduction of the original scene may have been due to the occurrence of a minor geomagnetic storm on this particular day, and the fact that our experiments were conducted during the day and not during the more-preferred times in the middle of the night.

This result, and the results of our subsequent experiments at the Institute, convinced me that paranormal perception exists, and that some individuals can perceive information that is not presented to them in conventional ways. It also got me thinking about how certain individuals may be able to use their minds to *control* computers and machines—perhaps even various modes of transportation—through suitable computer-based graphical user interfaces (GUIs). And think what this could do in medicine … how it could help people who are otherwise impaired because, say, of spinal-cord injuries, to function!

The Latest Developments in Mind Reading

Of all the academic work being performed in universities around the world, none equals that of our own Institute *except for the endeavors of the University of Wisconsin-Madison (UW-M)*. In 2001, for example, this farsighted center of academic excellence opened the $10-million W. M. Keck Laboratory for Functional Brain Imaging and Behavior.[4] According to the University, the Laboratory is "unique in the world for focusing cutting-edge imaging technologies, each with different capabilities, on issues relating to brain activity and behavior. Linked with the Waisman Center[5] and Medical School's Health Emotions Research Institute,[6] the new laboratory builds on more than a decade of emotion research at the university." Other work being conducted at the Wadsworth Center in Albany, New York, was equally compelling.[7]

What has been accomplished? Consider this. Justin Williams, a UW-M assistant professor of biomedical engineering and his doctoral student Adam Wilson, in collaboration with researcher Gerwin Schalk and colleagues at the Wadsworth Center, *and Professor Emil*

Heisseluft of the Lauton Institute, developed an interface that involves a keyboard displayed on a computer screen. To date, the system, as shown in fig. 2, has succeeded in crafting short messages such as tweets for Twitter. Astute readers will recognize the helmet being used in this research as one of the football helmets from the Grossmaul-an der Donau's famed *Grossmaul Goslings* football team, which took European Union honors for the past five years running!

According to Wilson, some of his subjects with practice have been able to "text" up to eight characters per minute, though it is a slow process at first. But consider the possibilities!! Think what this would mean to someone who is disabled and who has no other means of communication, perhaps, but the use of his/her mind.

Applications to Contesting

Given the results achieved by researchers using Tweets, the Lauton Institute, through the auspices of *CQ* magazine, approached principals in the Badger Amateur Radio Society (BARS)[8] about the possibility of a joint effort to develop a *Contesting Radio Application Protocol (CRAP).* The purpose of CRAP would be to implement mind-reading techniques in CW contests. Contact with BARS through *CQ* was facilitated by several Lauton Institute alumni who had taken their undergraduate work in the Department of Electrical Engineering at UW-M. Many, in fact, had operated BARS amateur radio station W9YT, which is housed in room 1047 of the Engineering Center's building on the main campus. The response was immediate and enthusiastic, with funding for the first two years secure and more than adequate.

Work now is proceeding apace to build prototypical CRAP software that will feed the receiver and transmitter controls as well as the logging system to be used. Results of the Institute's work will, of course, be shared with the UW-M and Wadsworth Center biomedical engineering research teams as well as many other organizations across the globe. This will ensure that the synergies already in place will help to focus and accelerate work under way in the various research initiatives now being addressed using this technology.

Summary

New advances in mind-reading technology pioneered by the Lauton Institute, the University of Wisconsin-Madison, and the Wadsworth Center in Albany, NY, have produced an interface that allows the user to send Tweets using his mind. Professor Heisseluft, under a grant from UW-M's Badger Amateur Radio Society now is moving ahead aggressively to produce a contest interface that should be ready for its debut in the CQ World-Wide DX (CW) Contest scheduled for November 2016. *CQ* magazine, for its part, is in the process of creating a new category for all stations using this new technology.

Notes

1. Heisseluft, E, "Broadcasters Threaten Takeover of Amateur ULF Band at WARC 79," Lauton Institute, *CQ*, April 1977.
2. Puthoff, H. E., and R. Tart, "A perceptual channel for information transfer over kilometer distances: Historical perspective and recent research," Proc. IEEE, Vol. 64, No. 3, 1976.
3. Heisseluft, E., "D.O.S.E. Awarded to Prof. Ostermond-Tor," *CQ*, April 1969
4. Mattmiller, B., "Reading the mind: New lab sharpens brain imagery," Brains & Emotions Research, University of Wisconsin, March 30, 2001 (http://www.news.wisc.edu/packages/emotion/5970.html)
5. http://www.waisman.wisc.edu/
6. http://www.healthemotions.org/
7. LiveScience Staff, "Brain Interface Creates Twitter Messages," LiveScience, April 23, 2009 (http://www.livescience.com/technology/090422-mind-reading-twitter.html)
8. http://w9yt.engr.wisc.edu/
9. Ibid

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The Deerfield Fair is a New Hampshire tradition extending back 130 years. Good communications are essential, and the NEAR-Fest hamfest organization cemented its relationship with the fairground board of directors (NEAR-Fest is held at the Deerfield Fairgrounds) by becoming the communications vendor and coordinator for the fair.

One strategy for making sure your hamfest site remains available, says the chairman of NEAR-Fest, is to make your group a resource for your hosts as well as a client.

How to Keep Your Hamfest's Venue… or Making Friends With Your Radios

BY MICHAEL CRESTOHL,* W1RC

We in New England have been very fortunate to have enjoyed a wonderful semi-annual regional hamfest known as "Hosstraders," which was held at five venues in New Hampshire during its 34-year run. These events were "overnighters" at several fairgrounds, and without question the most beloved of these sites was the Deerfield (NH) Fairgrounds, where the hamfest was held from 1976–1992. Since May 2007 this wonderful venue has been the home of the New England Amateur Radio Festival, *aka* NEAR-Fest.

As NEAR-Fest General Chairman and "Benevolent Dictator," my principal job is to foster and maintain positive relations with the Fair Association's Board of Directors. These are the folks who decide who can rent the grounds and how much they will have to pay for the privilege.

Since board members are elected annually, directors are always changing. Thus, maintaining cordial relations with them represents an ongoing challenge. I have witnessed several other great hamfests either disappear completely (such as FAR-Fest at Montgomery County Fairgrounds, Gaithersburg, MD) or be seriously impacted (Shelby, NC) as a result of a decision by their respective fairgrounds' board of directors that wasn't in the best interests of the amateur radio community. This was my biggest concern in running this hamfest, because we did not want to lose this wonderful venue. No other fairgrounds I have ever seen even comes close to Deerfield as

*General Chairman, New England Amateur Radio Festival
e-mail: <m@w1rc.net>

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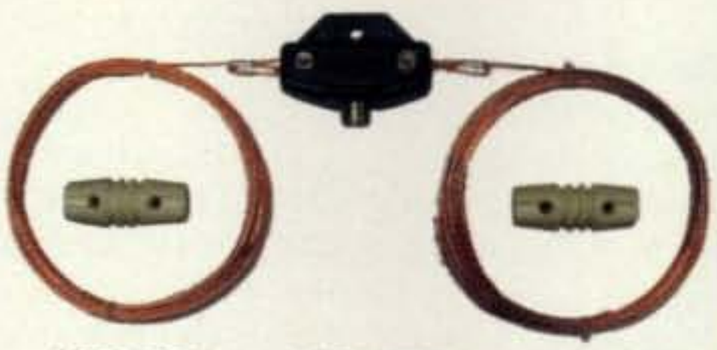

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About NEAR-Fest

The New England Amateur Radio Festival (NEAR-Fest) is a two-day hamfest held twice a year at the Deerfield Fairgrounds in Deerfield, New Hampshire. This year's spring fest is April 30 and May 1. For information, see <http://www.near-fest.com/>.

About the Deerfield Fair

The Deerfield Fair has been held every fall for the past 133 years. The 134th Deerfield Fair is scheduled for September 30 through October 3, 2010 at the Deerfield Fairgrounds. For information, see <http:// www.deerfieldfair.com/>.

such a perfect spot for a hamfest and quite frankly, I can't see myself doing it anywhere else.

From the very beginning, we adopted a highly proactive stance regarding keeping the grounds immaculate and making sure that everyone removed everything they didn't sell. We virtually banned CRT monitors from the flea market. Most people understood our concerns, but a few miscreants who didn't get it had it explained to them in language that even they could understand by our Sergeant-at-Arms, Paul DePetrillo, W1PRA. In addition, we added two Fire Wardens to our roster—a couple of former firefighters—to enforce the Fair Association's no-smoking policy and our outdoor cooking rules. However, because of problems with other groups in the past, our relationship was tenuous at best, even with these efforts.

Seizing an Opportunity

In the summer of 2008, an opportunity presented itself when the fair director, who was my point-of-contact, called and asked if I would like to serve as Superintendent of Radios for the fair itself, as the person who had been doing it no longer wanted the job. This was a big deal. The Deerfield Fair is the oldest agricultural fair in New England, having been held annually for over 130 years. It's a real old-fashioned, "down home" kind of family fair that allows no alcohol or gambling, and the traditional gang of "carnies" simply are not permitted to participate.

Notwithstanding, I live 90 miles from the fairgrounds and would have had to commute for five days, so I recommended someone who lives considerably closer as a very suitable candidate, particularly since he has experience in the two-way business. This is how it came to pass that Ed Anderson, N1IWV, NEAR-Fest's Treasurer, became Superintendent of Radios at the 2008 Deerfield Fair.

Ed's experiences would make an article in itself, but suffice it to say that there were several issues with the rented radios. The vendor was arrogant and rude. He made it abundantly clear that he didn't care for amateur radio operators very much. There were only two channels in use, the equipment was old and tired, and so were the batteries. Clearly the system needed a major upgrade, and I could see another opportunity to show the board members that the radio amateurs who rented their fairgrounds twice a year could be a valuable resource to them in the future . . . and the future was now!

Creating an Opportunity

Ed and I met with the board in late October. Our first order of business to discuss was expanding the number of UHF frequencies for which they were licensed. We felt that having more channels available would be a major factor in improving their communications capability during the fair. The board

Caricature of author Mike Crestohl, W1RC, and co-Radio Superintendent Mike Raisbeck, K1TWF (T-Woof), during the Deerfield Fair.

agreed and asked me if I could help them do this. A motion immediately was passed empowering NEAR-Fest to act as their official agent in dealing with the FCC.

With the help of a frequency-coordination company, I was able to add ten frequencies, which were granted by the FCC in early January, so they now had 12 channels available to them instead of two. I also modified their ULS file and named "NEAR-Fest, Inc." as their "dealer."

I then proposed to my NEAR-Fest colleagues that we offer to rent radios to the fair at a significant savings over what they had been previously paying. We could buy surplus commercial equipment at reasonable cost (at the hamfest, of course) and program the radios with their frequencies. I quoted a rental price that was about half the going rate, which the board eagerly accepted ... so now NEAR-Fest was in the radio rental business. Ed and I, along with Mike Raisbeck, K1TWF, signed on as Superintendents of Radio for the four-day event so we would now be in the unique position of NEAR-Fest being one of the vendors and the three of us becoming temporary employees of the Deerfield Fair.

Motorola GP300s and HT1000s were my radios of choice for several reasons, mainly because they are reliable, rugged, computer-programmable, and cheap. Since the radios' power source is a major factor in ensuring reliability, we purchased all new batteries from our old friend and NEAR-Fest exhibitor, Dave Rosenbaum of W&W Manufacturing (aka Battery Tech), who gave us a heck of a great deal because he understood what we were doing. Thank you, Dave!

Becoming "Family"

We created a "Radio Plan" that used colors to refer to the different channels and set up several "talk groups" such as tick-

eting (green), parking (yellow), facilities & maintenance (red), public safety (blue), and so on. A major high point arrived in August when Ed, Mike, and I were invited to attend the traditional "Superintendents' Cookout" held at the fairgrounds the Saturday before the fair opened. I ate the best beef sirloin tips I had ever had at that cookout, and more importantly, the invitation meant we were now part of the Deerfield Fair "family."

In 2008, the Superintendent of Radio's "office" had been located in the Administration Building, but since this was a secure area requiring a wristband required to enter, it was not the best place for us to "hang out" during the fair. Thanks to John, the Director of Maintenance, we set up an ad hoc radio shop in his office that provided all the amenities and comforts of life, such as a refrigerator, microwave, etc. Ed and I set up the rack chargers in strategic locations throughout the fairgrounds, gave the new batteries a good 18-hour initial charge, and distributed the radios to the people on the list provided by the fair committee.

I wish I could report that everything went perfectly smoothly from the beginning, but there were a few glitches, mainly with the HT1000s. Ed was manning the fort that first morning, and we realized very quickly that the function buttons that control scanning and other features should have been disabled. I was stuck in a meeting from which I could not extricate myself, but as soon as I could escape, I sped down the 90 miles to Deerfield so I could quickly correct the problem.

Once the HT1000 switches and buttons were disabled, everything proceeded smoothly and the four days passed uneventfully until the fair ended. Ed was just a blur as he rounded up the radios and chargers and packed them in his van. We rode off into the sunset, hoping that the fair people were pleased. On the last day, Ed and I asked Sheryl Bolduc, the Fair Association President, if the board would permit us to host a "cook-out" for our volunteers the evening before our upcoming hamfest. A couple of days later, we received a phone call saying that our request had been granted. This was a very positive sign that they were pleased with the radios.

Eleven days later as we gathered at the fairgrounds to prepare to convene NEAR-Fest VI, we noticed several large trailers and concession stands parked in the center of our hamfest area. There was a Fair Association Board of Directors meeting scheduled for that evening, but we just couldn't barge in and complain about it because everything has to be put on the official agenda by the Secretary. Fortunately, one of the directors came in to turn on the outdoor lights for us, and it didn't take long before things began happening and the offending trailers were hauled off to a parking lot outside of the hamfest area. Our relationship had definitely taken a turn for the better.

Looking to the Future

A week after NEAR-Fest VI, I received a phone call from Sheryl asking me if NEAR-Fest would be interested in again providing the radios for 2010. Apparently, the board was very satisfied with the radio service we provided and passed a motion to invite us back. With this as a consideration, I declared the project a success and now look forward to enjoying a good relationship with these folks for many years to come.

Many amateur radio clubs are facing a similar dilemma when it comes to their hamfest or flea market, even those in school cafeterias and gymnasiums. It seems that every season some well-established fleas and 'fests are disappearing from the calendar because the club or group loses its venue. A little creative thinking will go a long way here, and provided you use commercial frequencies if they are available, you can strengthen a relationship or build a new one while adding a substantial amount to your club's treasury in the process.

Ham radio operators team up with wildlife managers to help promote National Wildlife Refuge Week on the radio.

Hams Gone Wild!

Amateur Radio and National Wildlife Refuge Week

BY RICH MOSESON,* W2VU

The tent full of radio gear was sitting on a slab of concrete underneath a gazebo outside the brand new visitor center at New Jersey's Great Swamp National Wildlife Refuge. We were thankful for the concrete that cold and rainy day in mid-October, since most of what surrounded us was mud. But it was also kind of ironic. Had it not been for the efforts of the woman whose former home was now the refuge's visitor center, most of the 7600-acre nature preserve which surrounded us would have been concrete.

What is today the Great Swamp National Wildlife Refuge[1], home to more than 200 species of birds, small mammals, and aquatic life, and an important stop on the Atlantic Flyway for migratory birds, was once slated to become a major jetport. Helen C. Fenske, a local resident, spearheaded a grassroots effort to block the plans and protect the magnificent natural area just a stone's throw from New York City. Had she not succeeded, the gazebo in which I was sitting might have been a runway.

Each of the nation's more than 500 national wildlife refuges has its own story, some more dramatic than others, and together they form a network across all 50 states (and beyond) of protected areas set aside to conserve fish, wildlife, and plants. Administered by the U.S. Fish and Wildlife Service, part of the Department of the Interior, they range from pockets of preserved natural areas near major cities to entire islands, such as Desecheo (KP5) and Navassa (KP1) in the Caribbean, yet they do not have anywhere near the visibility or recognition of our national parks.

In an effort to raise public awareness of these natural gems, in 1995 the Fish and Wildlife Service (FWS) began to designate the second week in October each year as National Wildlife Refuge Week. Amateur radio has been part of the effort since 2006, although last year marked the first coordinated nationwide effort.[2]

Ham Radio and NWR Week

The first ham to run a special event station in concert with National Wildlife Refuge Week was John Forslin, KC8ULE, of Marquette, Michigan, operating in 2006 from Seney NWR in Michigan's Upper Peninsula. He tried to get some interest from other hams by contacting managers at other refuges and had some success, notably attracting the attention of Mike Thomas, NA5U, who was an integral part of the group

(Courtesy KP1-5 Project)

attempting to get the FWS to approve ham radio operation from Navassa and Desecheo (the KP1–5 Project). One of the project's goals, says Mike, was to develop a long-term relationship between ham radio and the FWS. Toward that end, he had already formed the W5 National Wildlife Refuge Amateur Radio Club, secured the vanity call W5NWR for its operations, and put a station on the air at the Tishomingo NWR in Oklahoma.

After the success of the K5D DXpedition to Desecheo in early 2009, the KP1-5 Project became the national coordinator for NWR Week amateur radio operations, and three of its volunteers were named to an advisory committee to organize the activity and coordinate with FWS in establishing guidelines for refuge operations (see "The KP1-5 Project and NWR Week"). From the beginning, an important part of this activity has been that any group wanting to operate from a national wildlife refuge *must* have written permission from the refuge manager and must coordinate all activities with refuge officials. When the operation became national in scope last year, it also became mandatory for any group operating from a refuge to register with the amateur radio coordinators as well.

In 2009, NWR Week ran from October 11–17, and hams operated from 14 national wildlife refuges and one wildlife management area in 10 states, plus the K4M DXpedition from Midway Atoll NWR in the Pacific Ocean. Several groups had 1×1 special event callsigns for the occasion, such as W2R,

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e-mail: <w2vu@cq-amateur-radio.com>

Special event station W2R operated from a tent under a gazebo behind the visitor center at the Great Swamp National Wildlife Refuge in New Jersey. (W2VU photos, unless otherwise noted)

the station from which I operated at the Great Swamp NWR in New Jersey.

Back in the Great Swamp

W2R was run by the New Providence Amateur Radio Club over a three-day period from Friday, October 16 to Sunday, October 18. I spent a few hours there on Saturday afternoon, in weather that felt more like mid-November than mid-October (in fact, it was warmer here in mid-December this year than it was that weekend in October!). It was rainy and windy with near-freezing temperatures, but sitting in front of the radio warmed you up inside if not outside (a tour of the new visitors' center was helpful for outer-body warming!). I don't remember how many contacts I personally made, but numbers were not really the goal here. It wasn't a contest and each QSO went on for several minutes at minimum, as we explained where we were and what the special event was about. Local organizer Barry Cohen, K2JV, summed up the weekend's activity in an e-mail to club members and station operators:

> Even though we almost froze . . . it was a fine event. I have briefly checked the log; we

The Helen C. Fenske Visitor Center was the home base for the W2R operation. Part of this special event was to mark the dedication of Mrs. Fenske's former home as the refuge visitor center.

Part of the great swamp at the Great Swamp National Wildlife Refuge, a natural oasis just 35 miles west of New York City that was once slated to become a major jetport.

had 97 HF QSOs and an additional 19 on 2 meters. We were on the air all three days and the total elapsed operating time was 11 1/2 hours. On HF we worked 22 states (81 QSOs) and 11 foreign countries (16 QSOs). The most QSOs were with Minnesota (11), California (9), and Florida (9).

You can see the effect of skip: Other than some ground-wave NJ contacts, we didn't work a single station in New England, Pennsylvania, Maryland, etc. The nearest contacts were in Ohio and North Carolina. The skip distance obviously was about 500 miles, but we had nine QSOs in California, four in Oregon, and one in Washington (State), as well as nine in Florida. All four Canadian QSOs were with western Canada, including VY1 in the Yukon. Our "best" DX? Take your choice. We had great, long, informative discussions with South Africa, the Gambia, and Gibraltar.

We only had two of our kids at the event (but they were) on the air almost all the time either on HF or on VHF. ... Every operator (well, almost all) stopped what they were doing to speak with the kids.

The kids also had a special event not related to ham radio. The Visitor Service Specialist at the Great Swamp, Marilyn Kitchell, took them for a ride on a government vehicle into the "back country," which generally is closed to visitors. They saw the impoundments, watched the ducks and heard about their habitat, and saw two great blue herons take off from a lake and fly around. I don't think they will soon forget the experience. Too bad there weren't more kids to go along.

The KP1-5 Project and NWR Week

The KP1-5 Project was formed in 2002 to seek activation of Desecheo Island (KP5) and Navassa Island (KP1) as well as to develop a long-term relationship with the U.S. Fish and Wildlife Service (USFWS). The mission statement of the Project (<http://www.kp1-5.com/mission.html>) states, in part, "While operating from these islands is a worthwhile goal, the KP1-5 Project is dedicated to a long term partnership that jointly benefits the U.S. Fish and Wildlife Service and amateur radio operators worldwide."

With this in mind, the first KP1-5 Project operation from a refuge took place in 2005 when NA5U operated from the Tishomingo National Wildlife Refuge. The following year, KC8ULE promoted the idea of operating from national wildlife refuges in conjunction with National Wildlife Refuge Week. This event generally is held the second weekend in October of each year. This seemed to be a natural extension of the goals and objectives of the KP1-5 Project, so members of the Project joined in to support this and raise awareness of the national wildlife refuge system.

In 2009, KC8ULE asked if the KP1-5 Project would be interested in picking up the mantle for this annual event. The Project agreed and Brad Farrell, K4RT, took the leadership role for the KP1-5 Project. 2009 saw an increase in refuge activations and increased acceptance by the refuges across the country. As a matter of fact, many refuge managers are advocates for amateur radio operations to raise awareness and support for the national wildlife refuge system. To date, over 25 refuges have been activated since 2005 with more being planned for 2010.

To learn more about how to participate, visit the KP1-5 Project website at <http://www.kp1-5.com>. Click on the National Wildlife Refuge Week button for information. The KP1-5 Project encourages you to consider activating one of the more than 500 refuges across the United States in 2010.

—Mike Thomas, NA5U

Bill Hudzik, W2UDT, operates W2R on HF while Theresa Erdek, KC2RYE, logs on the computer.

Note that Barry didn't pass up the opportunity to gently educate those club members who were not familiar with HF operating about the skip zone, putting real-life relevance to a concept that otherwise is just memorized for the purpose of answering a test question.

A Win-Win Opportunity

Overall, the activity was a great way to help promote our national wildlife refuges to hams, to promote ham radio at the wildlife refuges, and of course, to enjoy all the great wildlife viewing opportunities afforded by visiting a National Wildlife Refuge. And oh, yes, it was a lot of fun!

For information on taking part in National Wildlife Refuge Week in 2010, see the <http://www.nwrweek-radio.info> website or contact Mike Thomas, NA5U, at his QRZ/Hamcall address.

Notes

1. For more information on the Great Swamp National Wildlife Refuge, visit <http://greatswamp.fws.gov/>. To find a national wildlife refuge near you, see <http://www.fws.gov/refuges/>.

2. For more information on amateur radio participation in National Wildlife Refuge Week, see <http://www.nwrweek-radio.info> or go to <http://www.kp1-5.com> and click on the National Wildlife Refuge Week button.

Keegan Myers (not yet licensed) makes a contact on 2 meters while control operator Al Hanzl, K2AL, looks on.

What You've Told Us...

Our January survey, in our 65th anniversary issue, asked you to look ahead to the state of amateur radio 65 years from now. First of all, three-quarters of you are reasonably confident that there will still *be* ham radio in 2075 (45% definitely; 30% probably), while 12% said probably not, 11% weren't sure, and only 2% said definitely not.

On the question of what types of signals we are likely to be transmitting then, 43% of you said mostly digital with some analog, followed by 36% who responded "something we haven't thought of yet." In addition, 11% said about half-and-half digital/analog, 10% said digital only and 2% said mostly analog. Two-thirds of you think hams of 2075 will likely still be using Morse code (34% definitely, 32% probably), while 18% said probably not and 7% each said not sure or definitely not.

Asked about the size of ham gear in 2075, 36% feel it will be somewhat smaller than today, 34% much smaller, 12% about the same size, 1% bigger, and 16% feel there will no longer be discrete ham radio gear. Looking "under the hood" of future ham gear, 40% believe that most circuits in 2075 will be based on a new device we haven't thought of yet, while 35% feel everything will be in software, as an "app" on a multifunction device, 22% think circuits will be a mix of transistor-based technology and some new current-amplifying device, and only 3% feel our circuitry will still be primarily transistor/IC-based.

Our last question asked what you think the basis of most long-distance ham communications will be in 2075, and half of you didn't even want to take a guess. Of those who did, 38% feel future hams will be using a propagation method we haven't yet discovered; 20% each think they will use either a mix of RF/internet links or the good old ionosphere; 12% say satellites and 10% said a mix of the last three.

This month's free subscription winner is Fritz Tender, WD8E, of Hebron, Ohio.

Reader Survey
April 2010

We'd like to know more about you—about who you are, where you live, what kind(s) of work you do, and of course, what kinds of amateur radio activities you enjoy. Why? To help us serve you better.

Each time we run one of these surveys, we'll ask a few different questions and ask you to indicate your answers by circling numbers on the Survey Card and returning it to us. As a bit of incentive, we'll pick one respondent each month and give that person a complimentary one-year subscription (or subscription extension) to *CQ*.

Since this month's cover features a stealth antenna, we'd like to find out more about your antenna situation.

Please answer by circling the appropriate numbers on the reply card.

1. What, if any, antenna restrictions apply to your residence?
- No legal restrictions 31
- Municipal height/setback/permit rules 32
- Homeowner association (HOA) / deed restrictions (select below):
  - Outdoor antennas allowed with permission 33
  - Outdoor antennas limited to rear yard 34
  - Outdoor antennas prohibited 35
  - All antennas prohibited 36

2. If you live with antenna restrictions, have you tried to get permission to install an antenna?
- Yes, municipal permit approved 37
- Yes, municipal permit denied 38
- Yes, HOA permission granted 39
- Yes, HOA permission denied 40
- No 41

2. Do you have a station at home?
- Yes – HF & VHF 42
- Yes – HF only 43
- Yes – VHF only 44
- No – Mobile only 45
- No – Internet (e.g., Echolink) only 46
- No – Not on air 47

3. What sort of antenna(s) are you using at home?
- Full-view outdoor antenna(s) 48
- Low-profile outdoor antenna(s) 49
- Hidden/stealth outdoor antenna(s) 50
- Indoor antenna(s) 51
- No antenna(s)/Mobile only 52
- No antenna(s)/Internet connections only 53
- No antenna(s)/Not active on air 54

4. If your home station operations are limited, have you tried any of the following alternatives?
- Mobile operating (VHF/UHF) 55
- Mobile operating (HF) 56
- Internet operating (Remote link) 57
- Internet operating (Echolink) 58
- Guest operating at friend's/club station 59
- Home operations are not limited 60

Thank you for your responses. We'll be back with more questions next month.

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Hams in the west made regular contacts with Soviet and eastern European amateurs during the decades of Communist rule that marked the mid-20th century. However, those contacts were brief and generally limited to an exchange of signal reports. Now living in freedom, YO4PX tells us what ham radio was really like "behind the Iron Curtain."

Dictators and Amateur Radio

BY FRANCISC GRÜNBERG,* YO4PX

The opinions expressed in this article are the author's, and although we may not agree with all of them, we celebrate his ability to express his views freely and are pleased to help him do so. —W2VU

Amateur radio has always been viewed by dictators with distrust and fear, as a suspect and potentially dangerous avocation. The ability to transmit messages over the barbed wire of the "Iron Curtain" and across heavily guarded borders, where weapons were pointed more into the country than out, was associated in the Romanian People's Republic, and in the other former or current totalitarian regimes as well, with the activity of spies on the enemy's payroll. In the dictators' paranoiac imagination, these "spies," disguised as radio amateurs, were trying to undermine the "heroic effort of the people for the construction of the new society," another name for the total control and submission of its citizens, the final endeavour of all régimes with socialist, communist, military, tribal, or fundamentalist ideologies.

Risking the simplification inherent to any generalization, the degree of democracy present in a country is directly proportional to the number of its licensed radio amateurs, the liberties they enjoy, and the administrative obstacles they may or may not confront. Today, an indication of such freedom is the absence of bureaucratic hindrances imposed on the importation of amateur radio rigs, getting a transceiver through customs at national frontiers, and the willingness to allow visitors time-limited amateur radio activities.

Former Romanian President Nicolae Ceausescu, seen here at the White House with his wife, Elena, and President and Mrs. Nixon in 1973, cultivated good relations with the West, but ruled his country with an iron fist. Amateur radio licensing and operation were closely supervised and politically restricted. (White House photo by Robert Knudsen)

Western democracies acknowledge radio amateurs' merit, as pioneers of the shortwaves to humanity's benefit and for the services they rendered and continue to render to their communities. Laws in these countries grant radio amateurs and their equipment freedom of movement and activity thanks to reciprocal agreements. The CEPT convention in Europe provided a huge step forward, as it simplified operation for amateurs of the signatory countries.

In Spain, amateur radio is considered a form of art. In Güimar, Canary Islands, a statue was dedicated to amateur radio, with a syrinx (a musical instrument, also called panpipes, consisting of parallel pipes bound together) representing the five (in 1974) amateur shortwave bands. Many American presidents have proclaimed amateur radio a national resource. However, the situation has been quite different in countries with authoritarian governments.

Strict Limits on Amateur Radio

For decades, BY1PK was the only workable amateur station in China, until even it was silenced by the infamous Cultural Revolution. Now we hear many BY calls and, on the VHF and LF bands, thousands of licensed QRP stations. No doubt the tenacious efforts of Martti

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website (in Romanian): <http://yo4px.blogspot.com>*

A version of this article has also appeared on the British Southgate ARC website, <www.southgatearc.org>.

Laine, OH2BH, played a decisive role in this opening to the world.

After many years of silence in Saddam Hussein's Iraq, a single station, YI1BGD, was licensed. This followed a demonstration by Erik Sjölund, SMØAGD, who made some 50 contacts before Iraqi officials who were amazed by the number of hams eager to contact a new country.

North Korea has authorized only a few sporadic operations, the most productive being the activity of Ed Giorgadze, 4L4FN. He made more than 16,000 QSOs before the authorities shut him down. KA2HTV's more recent failure five years ago doesn't offer much hope that the situation there will change soon.

The military junta in Myanmar (Burma) is quite reluctant to issue licenses to foreign operators. However, they occasionally are heard, especially when intended to convince the generals that liberalizing amateur radio could boost the country's image to a world concerned by human rights violations.

Contact with an Albanian station was an unattainable dream during the Stalinist dictatorship of Enver Hodja. Now there are some active stations thanks to powerful associations that championed getting ZA callsigns on the air after many decades.

In Poland, all amateurs were forced to hand over their equipment following the imposition of martial law, inspired by the Soviet Union, in December 1981. General Jaruzelski stifled in bloodshed the protests of the Solidarity trade union, and the SP prefix was absent from the bands for nearly two years.

There are cases when the oppressive régime feels itself impregnable and magnanimously allows the licensing of a few "reliable" residents, intimates of the power wielders, for propaganda's sake to defend itself from the international amateur radio community's disapproval. Some dictatorships, after lengthy negotiations, authorize time-limited activities for foreign operators present as United Nations officials, NGOs (non-governmental organizations), or peace-keeping forces.

However, where tradition is shattered, short instruction courses and donated gear cannot replace the passion and knowledge transmitted from generation to generation, from mentor to disciple, which ensures the perpetuity and development of the hobby. Hopefully, the spirit will reignite in Libya, Yemen, Rwanda, Iran, Sudan, and other countries where amateur radio activity is non-existent or drastically restricted.

Amateur Radio in Communist Romania

In Romania, the dictatorial régime branded amateur radio as well. For 45 years, the state of one's "dossier" was decisive in obtaining a license. In the 1950s, those applicants who didn't have a "healthy origin" (i.e., originated from a family of workers or peasants) could experience huge difficulties, and not only in the realm of amateur radio. Family members living in the West, unfavorable information from the schools' secretary of the Communist Party or from the college or employer's "cadres office" (today's personnel office) regarding an applicant's supposed lack of enthusiasm and attachment to the "Party Line," denunciations containing mostly mendacious and misinterpreted information—all were grounds for denial without explanation of an application or for suspension of a previously issued license.

Impartial historians of Romanian amateur radio should record its decades-long constraints as subordinate to the army. This practice followed the Russian pattern almost exactly. The Securitate (the former Romanian secret police)

exercised relentless control of the licensing procedure through the so-called Higher Radio Commission, overseeing the entire activity of radio amateurs, beginning with assignments to leading positions in the county clubs and in the Romanian Amateur Radio Federation and ending with the accurate inventory of all equipment owned.

In the 1980s, the Radio Control Centres launched a series of residential inspections and license suspensions for varying periods of time. Was it merely coincidence that many holders of those suspended licenses were also members of reputable foreign clubs? This group included the most active and notable amateurs, authentic ambassadors of Romania on the air.

Annual "informative materials" drawn up by the Securitate and presented with the force of "truth" cited "negative aspects" such as "relations with foreigners" (regulated by notorious Law 23 requiring compulsory detailed reports about the nature of these relationships and their progress). The correspondence of amateurs, like the correspondence of all other presumptive "unfaithful" citizens, was inspected and systematically censored. Receiving a transceiver from friends or relatives in Western countries was a terrible humiliation and a matter of suspicion—an opportunity for blackmail.

Not only amateur radio was subject to thorough supervision, though. The presidential couple Nicolae and Elena Ceausescu were deemed profoundly undesirable: computers; video recorders; TV antennas pointed towards Bulgaria, Serbia, and Hungary; TV satellite dishes; books, magazines, and newspapers from abroad—everything enabling the free circulation of ideas and information, not to mention the free movement of Romanian citizens.

We don't yet have sufficient and complete information about the Stalinist trial of George Craiu, YO3RF, and the ordeal of his imprisonment. Old-timers may remember George as "the ambassador of Romania on the air." The charges against him were never made public, but were no doubt connected with his many radio contacts with the West. He was imprisoned until all political prisoners were released, under pressure from western nations.

We also don't know the truth about the conviction of G. Stanciulescu, YO7DZ. He was charged with some economic offense amid suggestions that he acquired his ham gear illegally. He spent several years in prison and was released only when he became very ill and died within a year of his release.

I don't think amateurs are aware of the fact that in the 1987 anticommunist uprising in Brasov, two years before the revolution and the régime's collapse, a ham was among the participants. He was an ethnic German and I do not know his name or callsign. He was charged during the inquiry with "subversive communication with the West," although he was a shortwave listener and possessed only a receiver! The protesters were never tried but reportedly were harshly interrogated and relocated. After 1989, the SWL also faced a defamation lawsuit, because he thought he recognized a member of Parliament on the TV screen as his torturer.

We will never know how many persons abandoned hope of becoming amateurs after their failed attempts to obtain a license.

Moving Forward

To understand the past, a people must become acquainted with it and finally admit to it ... with no hard feelings, no resentments, but fully aware of the truth. This truth must not be silenced or buried under the dust of archives. I think it's important to be uttered, recorded, and known in order to avoid repeating all the tragic mistakes of history.

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math's notes

BY IRWIN MATH,* WA2NDM

A Novel Bandwidth Reduction Technique

While building the digital FM transmission system described in the last two months' columns, we came up with a unique way to reduce the space our signals take up, particularly in crowded bands. You will note that the audio signal from a microphone in the original circuit was converted to a 75-kHz pulse train that was then frequency modulated in an LM555 stage and then applied to a transistor output stage. Well, if we were to simply connect the output of this oscillator/modulator to a digital divider, we could reduce the actual carrier as we will explain below. Fig. 1 shows the modifications to the transmitter, and fig. 2 shows the divider stage.

The divider is a simple, straightforward scheme consisting of three common 7490 decade dividers and a 7404 output stage. This results in a division ratio of 1000, which converts the original 75-kHz signal to 7.5 Hz. Any variation in modulation at the 75-kHz level is reflected in a similar change at 7.5 Hz. You can build the circuit and you will see that it holds true. If the audio varies the oscillator between 67.5 kHz and 82.5 kHz, for example, the divided output

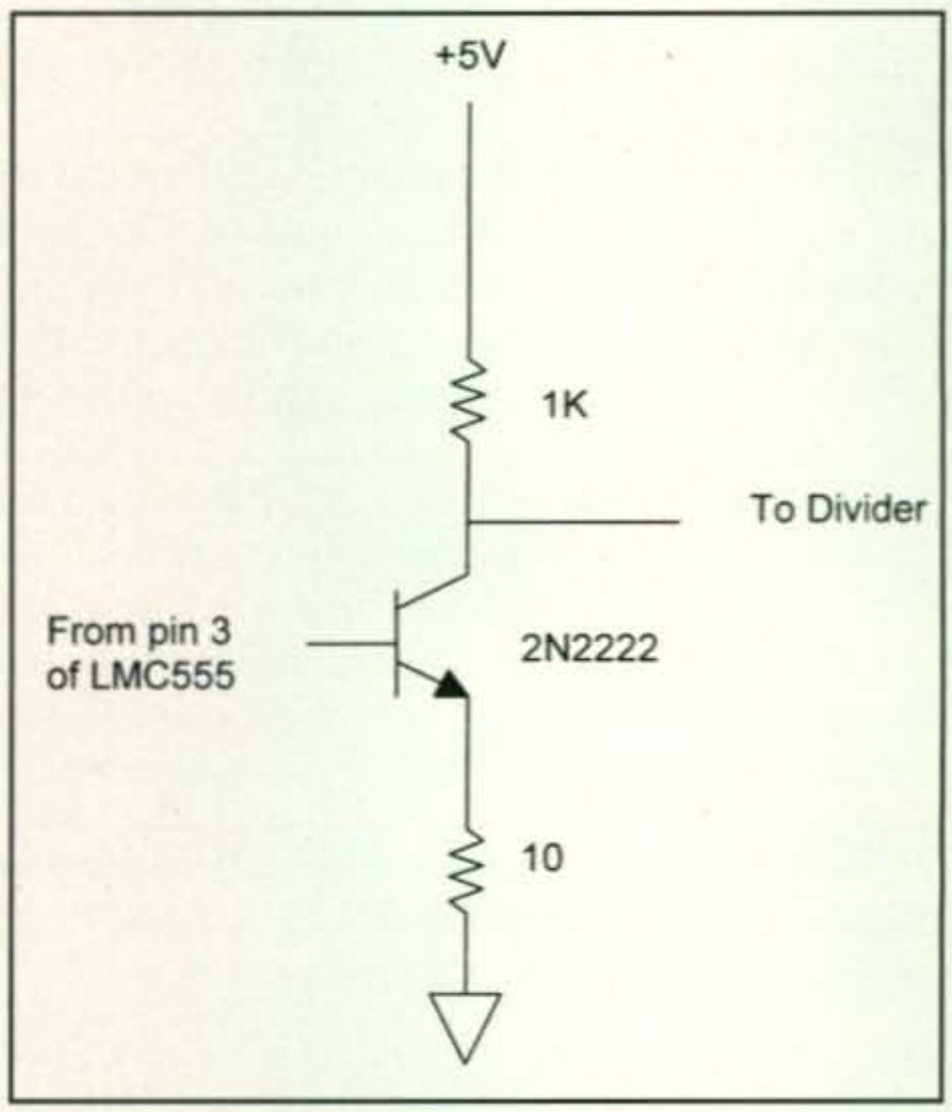

Fig. 1– Modification of transmitter driver stage.

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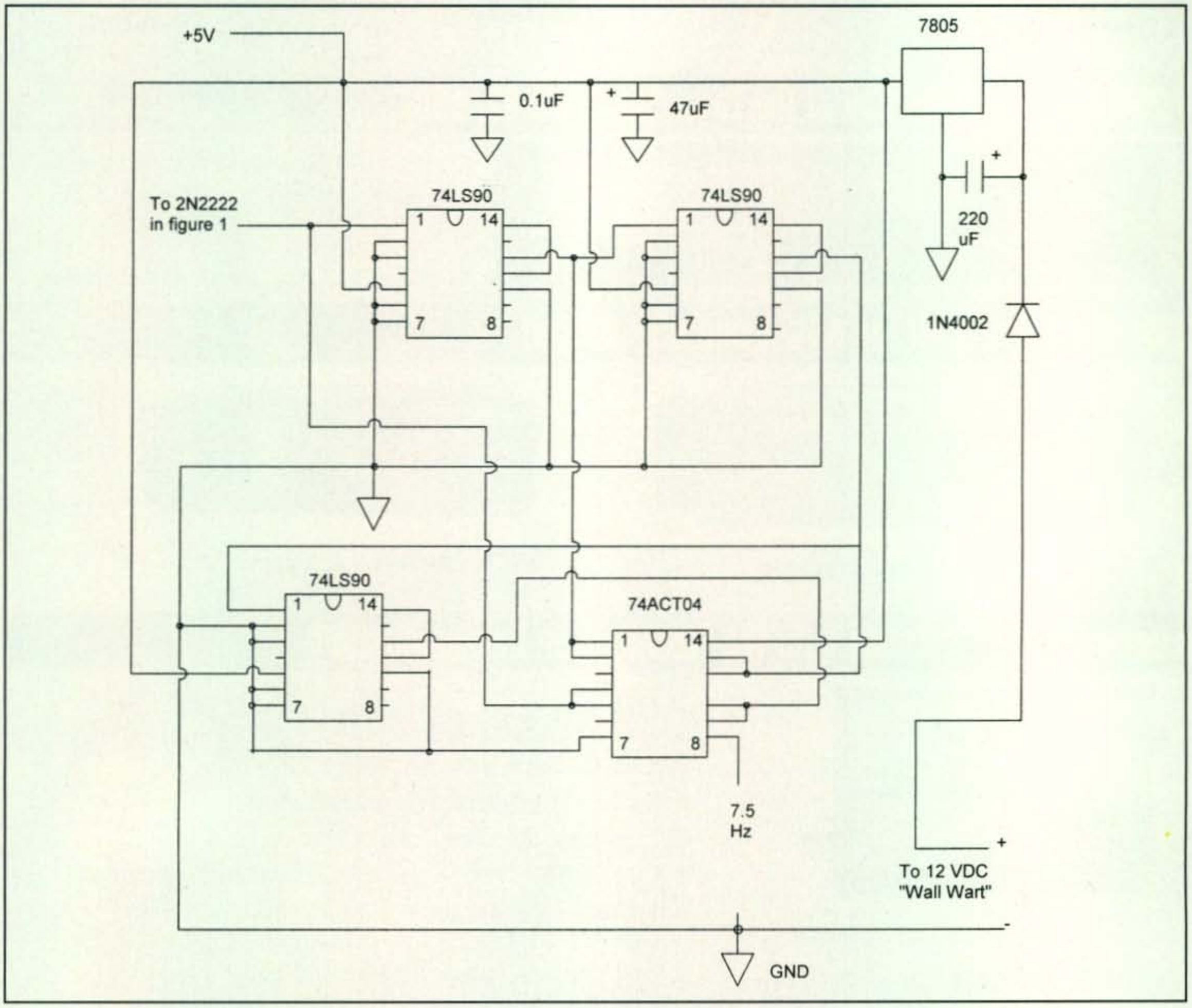

Fig. 2– Simple frequency divider.

will vary between 6.75 Hz and 8.2 5Hz—quite a bit less than normal 3-kHz audio. The actual spectrum taken up as a result of this division will be roughly only 10 Hz! Of course, this will mean that the bandwidth of the audio stages in the transmitter must be reduced to allow the 10-Hz signal to pass, but that is usually accomplished by simply increasing the value of various coupling capacitors.

Now to recover the signal at the receiver. Here the first few stages of the actual receiver must also be modified to allow the 10-Hz signal to pass. Once this is done, the signal is applied to fig. 3, a series of frequency multiplier stages that allow the 10-Hz (actually 7.5-Hz) signal to be multiplied back to the 7.5-kHz range for detection with the original LM568 demodulator. You will note that the multiplier stages consist of center-tapped audio transformers in

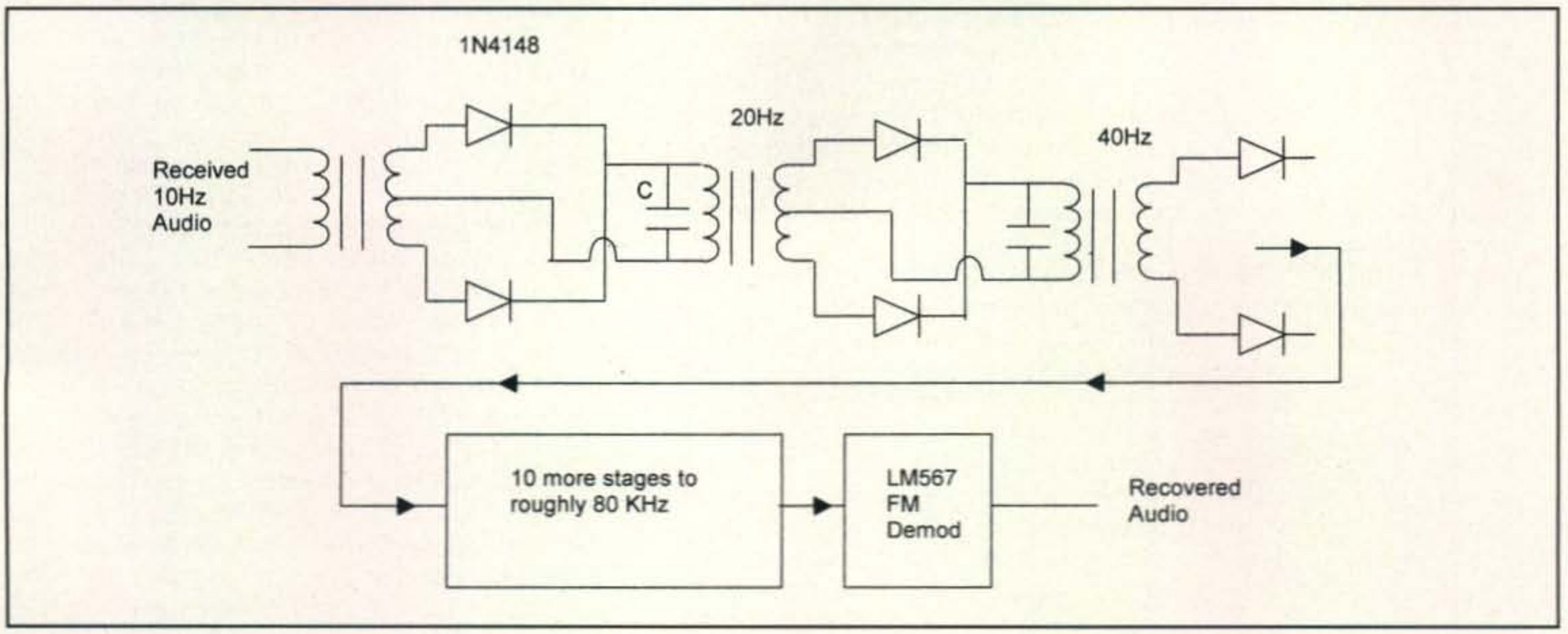

Fig. 3– Audio recovery scheme.

common full-wave rectified circuits using signal-switching diodes for proper operation at the higher frequencies. You will also note that the primary of each transformer is tuned by means of capacitor "C" to assure that the sine waves produced are pure and of the correct frequency. Due to the large number of multiplier stages needed in this configuration, it is possible that additional amplifier stages may be needed between multipliers to assure that there is enough voltage to allow the multipliers to work. These stages, however, can be accomplished by simple op-amps.

Once this is all done and debugged, you will have a system that does not take up any significant bandwidth. In fact, it you were to add still another divide-by-10 stage, you would need even less than 1 Hz of bandwidth between transmitter and receiver.

Just think: By next April 1 (if this scheme catches on), all of the amateur bands will appear wide open with no QRM to speak of.

73, Irwin, WA2NDM

BY FREDERICK O. MAIA,* W5YI

Amateur Radio Emergency Communications

There's more to it than you realize!

The FCC rules say the Amateur Radio Service exists for five reasons. Number one on the list is to provide voluntary non-commercial public service communications—especially emergency communications.

Although the U.S. has other emergency radio services, it is ham radio that is most often the first to respond in times of crisis and natural disasters. When wireline, cell phone, and other conventional means of communications go out, the power is off and the internet is down, when police, fire, and hospital services are overwhelmed, amateur radio operators are there to take up the slack as emergency communications volunteers. They have, in fact, been there in virtually all disasters—hurricanes, fires, ice storms, earthquakes, floods, terrorist attacks, and so on.

Unlike commercial systems, ham radio is not dependent on traditional power and telecommunications networks. There are hundreds of thousands of portable, mobile, and land-based amateur radio stations located in almost every community in just about every corner of the globe. Many have an emergency power source or a station that can be powered by an automobile battery.

Annual "Field Days" are held in the U.S. (and in many countries) to practice deploying auxiliary-powered emergency stations. Since amateur radio operators can use hundreds of frequencies on different local and long-distance bands, they can quickly establish communications to all parts of the world.

Many radio amateurs offer their services as communications volunteers. They set up and operate communication networks locally for governmental, public safety, and other emergency agencies. They also provide non-commercial health and welfare communications to and from private citizens affected by a disaster.

During some emergencies, radio frequencies are not coordinated among different local responders and relief groups. When necessary, amateur radio operators handle communications among these groups if there is no other way for them to link to one another.

The largest disaster response by U.S. amateur radio operators came during Hurricane Katrina, which slammed into New Orleans on August 25, 2005. More than a thousand ham radio operators from all over the U.S. converged on the Gulf Coast in an effort to provide emergency communications assistance.

When a disaster hits, it is generally a ham operator who first reports a major crisis. The recent earthquake in Haiti was first announced to the world by a Haitian ham operator with his station lashed to his automobile's battery.

ARES, the Amateur Radio Emergency Service

There are several ham radio emergency groups. The two major amateur radio emergency communications organizations in the United States are ARES and RACES. The Amateur Radio Emergency Service (ARES) is an organization of amateur operators sponsored by the American Radio Relay League (and in Canada by the Radio Amateurs of Canada).

ARES groups are made up of volunteer amateur radio operators who come together for the common purpose of providing emergency and/or auxiliary communications service to communities, and public safety and public service organizations. Most individual ARES units are autonomous and operate locally.

ARES groups generally are organized by city or county and are made up of volunteers from the local area. There are four levels of ARES organization: national, section, district, and local. Local groups come under the leadership of a county Emergency Coordinator (EC), who in turn reports to a regional District Emergency Coordinator (DEC). This person coordinates the operation of several local county or city ARES groups and reports to the Section Emergency Coordinator. The SEC is appointed by the elected Section Manager (a section is one of 71 geographic administrative areas of the ARRL Field Organization).

Complementing ARES is the National Traffic System (NTS), a parallel part of the ARRL Field Organization. NTS is a system for routing formal written message traffic (radiograms) from any point in the United States to any other. Messages are relayed from one ham to the next, generally via formal on-the-air gatherings called "nets," using a variety of modes such as voice, Morse code, radio teletype, or packet radio.

In times of emergency, radiograms may be used to communicate information critical to saving lives or property or to inquire or learn about the health or welfare of a disaster victim. During these times, NTS works in concert with ARES and other emergency and disaster relief organizations.

NTS does not operate only during disasters. It operates year round and is used to send and receive brief messages as long as they are of a personal, non-commercial nature as defined in the

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FCC rules. Subject to international treaties governing "third party" messages, many foreign countries also allow their hams to exchange radiograms with U.S. hams.

RACES, the Radio Amateur Civil Emergency Service

The Radio Amateur Civil Emergency Service (RACES) is a radio service regulated by the Federal Communications Commission (FCC) and sponsored by the Federal Emergency Management Agency. FEMA publishes a manual (CPG 1-15) entitled "Guidance for Radio Amateur Civil Emergency Service" to assist state and local emergency management officials in establishing and operating the service. RACES is recognized in the FCC's amateur radio rules under Part 97.407.

Many radio amateurs seem to believe that the sole purpose of RACES is to provide an FCC-regulated emergency radio service for local civil defense or emergency management agencies. While this is true, it is not the primary reason why the Radio Amateur Civil Emergency Service was created more than 50 years ago. There is more to it than that. Its history dates back to the Second World War.

During World War II, the Amateur Radio Service was ordered off the air and a new War Emergency Radio Service (WERS) was created from scratch in a process that took six months. WERS was established in June 1942 by the FCC at the insistence of the ARRL, remaining in operation through the end of the war in 1945. The objective was to make use of skilled ham radio operators during crises while the regular amateur service had been silenced.

The stated purpose of WERS was to provide communications in connection with air-raid protection, and to allow operators to continue their role in providing communications during times of natural disaster, as they had been doing as hams.

WERS was the precursor to RACES, a standby radio service created in 1952 to provide a quicker and smoother transition to wartime footing in the event the President ever again needed to silence the regular Amateur Radio Service (and any other telecommunications). The ARRL, however, played no part in sponsoring or administering RACES.

The objective of RACES was to provide a vehicle for public welfare and safety communications during times of "war emergency, civil unrest, or natural disaster." Only civil-defense type and

public safety communications may be transmitted (drills and tests are also allowed, not to exceed one hour total per week).

In the nearly six decades following, and through four wars (Korea, Vietnam, Iraq, Afghanistan, and other "conflicts"), the Amateur Radio Service has never been shut down again, leaving only RACES stations. However, it could happen and contingency rules are there if it does.

FCC rule Part 202 covers telecommunications during wartime emergencies. Section §202.0(a) reads: "During, or in anticipation of, a non-wartime emergency or natural disaster, a telecommunications capacity must exist to provide temporary telecommunications service to State and local government officials and other persons deemed appropriate by the President."

There is even a provision for federalizing all radio services. Section §202.1(a) reads: "The telecommunications resources of the Nation will be available for government use during crises and emergencies, wartime and non-wartime, and to satisfy the needs of the public welfare and safety."

Section 97.407(b) provides that only RACES stations may operate if the President's War Emergency Powers under Section 706 of the Communications Act are invoked. Section §202.1(g) reads: "Section 706 of the Communications Act of 1934, as amended, confers authority to the President in the matter of suspension of all rules and regulations pertaining to the use and operation of telecommunications facilities, public or private during wartime emergencies."

When so activated, RACES will con-

Chris Krengel, KBØYRZ, of Englewood, Colorado, helped his local ARES group to provide communication during a fire just south of Denver. (FEMA News Photo by Michael Rieger)

sist of only those amateur radio operators who have previously registered with State and local governments to provide emergency radio communications for them in times of crises and emergency. Traditional amateur radio operations would be suspended and operations under the RACES rules might be restricted to certain frequencies within the amateur radio bands.

In the past, RACES station licenses were also issued to civil defense organizations. To prevent abuse of station licenses by officials who were not licensed amateur radio operators, limitations on the duration of non-emergency operation and stations that might be contacted were incorporated into Part §97.407. Such RACES station licenses are no longer issued, and any operations under the RACES rules now use licensed amateur radio operators as control operators.

RACES requires registration with a local civil defense organization to allow continued operation in the event the Amateur Service is ever shut down again by presidential order. ARES and RACES involvement within the same area are usually intertwined, with many local governments requiring membership in both organizations. This requirement is actually to the advantage of both ARES and RACES. Dual membership allows ARES stations to stay on the air when, due to presidential decree, only RACES authorized stations may continue to transmit. It also permits amateurs to set up and begin operating emergency networks (nets) under the auspices of ARES in anticipation of a formal request for RACES activation by state or local emergency management officials.

Other Emergency Communications Groups

Many local government Emergency Operations Centers, Red Cross chapters, Salvation Army units, and National Weather Service facilities have permanent amateur radio stations installed. Many radio clubs, independent of both ARES and RACES, also participate in local emergency organizations, or organize local "traffic nets," using VHF (very high frequencies) and UHF (ultra high frequencies). At the state level, hams are often involved with state emergency management operations.

There are also several independent amateur radio networks that assist the public. For example, The Hurricane Watch Net provides essential communications support to the National Hurricane Center in Miami during hurricane emergencies. Recognized by the Coast

Guard, the Maritime Mobile Service Net assists vessels on the high seas and passes health-and-welfare traffic in and out of areas affected by natural disasters. The Intercontinental Amateur Traffic Net (Intercon) handles international third-party traffic (where allowed) and provides emergency communications to areas impacted by fire, earthquake, storms, floods, and terrorist activity.

Some government organizations have their own amateur arms. The Department of Defense sponsors the recently renamed Military Auxiliary Radio System (MARS) program, which utilizes U.S. Government (military) frequencies and private amateur radio operators for homeland-security-type communications. It used to be called the Military Affiliate Radio System.

Like the Civil Air Patrol (CAP), the MARS program is a civilian auxiliary consisting primarily of licensed amateur radio operators who are interested in assisting the military with communications on a local, national, and international basis as an adjunct to normal communications.

The primary mission of MARS is now providing auxiliary communications to federal agencies such as FEMA and Homeland Security. MARS communications are also available to assist state and local emergency response agencies, both public and select private agencies such as the Red Cross.

The National Weather Service "Skywarn" weather-spotter program has a strong amateur radio component. Ham operators in the field provide localized severe-weather information to the NWS. These reports are used to aid forecasters in issuing and verifying severe-weather watches and warnings and to improve the forecasting and warning processes.

The spotters are trained by personnel from the local NWS offices in identifying certain signs of severe weather. Many NWS offices have amateur radio stations manned by ham radio operators during times of severe weather, allowing spotters to transmit their reports directly to the National Weather Service. (CANWARN is the Canadian version of Skywarn.)

Emergency communications and disaster assistance frequently are provided in conjunction with disaster relief organizations such as the Salvation Army and American Red Cross. The Salvation Army operates SATERN, the Salvation Army Team Emergency Radio Network.

The purpose of SATERN is to train and acquire personnel skilled in emergency communications and message handling who will support Salvation Army operations in local, regional, and international disaster situations. SATERN is composed of radio amateurs who provide emergency communications between Salvation Army posts, and pass messages with health-and-welfare information between the Salvation Army and the general public.

The American Red Cross has the primary responsibility for responding to domestic disasters. ARC communication services also keep military personnel in touch with their families regarding emergencies, prepare for and respond to disaster relief situations, and render assistance and service to victims of disaster.

Through various "Memoranda of Understanding" (MOUs) entered into by the ARRL, the amateur community cooperates and coordinates with numerous agencies and organizations to assist with emergency and public service communications. The MOUs set out broad guidelines and expectations of the signatory organizations.

There are MOUs currently in effect with the American Red Cross, APCO-International (Association of Public Safety Communications Officials), the National Weather Service, Department of Homeland Security—Citizen Corps, FEMA, the Civil Air Patrol (CAP), the Salvation Army, REACT (Radio Emergency Associated Communication Teams) and the National Communications System (NCS).

The ARRL is a member of the National Voluntary Organizations Active in Disaster. NVOAD is group of non-profit organizations that share knowledge and resources to help disaster survivors and their communities. The ARRL also conducts three different level Emergency Communications Certification courses for interested amateur radio operators.

The Global Amateur Radio Emergency Communications Conference, or GAREC, is an annual conference held by the International Amateur Radio Union. (The IARU is a federation of national amateur radio societies from around the world.) GAREC provides an international meeting place for the discussion and coordination of large-scale and cross-border amateur radio emergency operations during natural disasters and other emergencies. GAREC was first held in Finland in 2005. GAREC-2010 will take place in Curacao, an island in the southern Caribbean Sea, off the coast of Venezuela.

73, Fred, W5YI

Timeline of Ham Radio History 1945–2010

To help celebrate CQ's 65th anniversary, we've put together a timeline of significant events in ham radio history from 1945 to the present. Each month this year, we'll present five or six years' worth, and then put the whole list on our website when we're done. (Since this is a timeline and not a textbook, we had to be selective. We apologize in advance if we leave out something of importance to you.)

This month, we'll cover the years 1962–1967:

1962–1967: More Satellites, Rigs from Japan and the Dawn of Incentive Licensing

1962: Noted DXpeditioner Gus Browning, W4BPD, begins a round-the-world DXpedition; his travels are documented extensively in the pages of *CQ*. OSCAR-II launched; like OSCAR-1, it is a transmit-only satellite, operating on 2 meters.

1963: ARRL proposes "incentive licensing" to FCC. Intended to promote continuing education among hams by offering greater frequency privileges with license upgrades, it is remembered most for taking away operating privileges from Generals, breeding resentment that some old-timers harbor to this day.

1964: Arizona Senator Barry Goldwater, K7UGA, becomes the first ham to be a major party candidate for President of the United States (he lost to Lyndon Johnson); U.S. Post Office issues two amateur radio stamps; Special Event station K2US operates from the New York World's Fair; Japanese gear begins to appear on U.S. ham market; hams respond to Alaska earthquake; Islands On The Air (IOTA) award introduced.

1965: OSCAR-III launched—first 2-way amateur satellite, with both uplink and downlink on 2 meters.

1966: OSCAR-IV launched—first split-band ham satellite, with signals going up on 2 meters and coming back down on 432 MHz; first US/Russian space QSO; WWV moves from Maryland to Colorado to make room for construction of Goddard Space Flight Center.

1967: FCC issues incentive licensing decision (see 1964; does not take effect until 1968); first iambic keyers appear; CQ establishes DX Hall of Fame.

Next month, we'll look at 1968 through 1973, featuring CQ's 25th anniversary and the beginning of the explosive growth in FM repeaters.

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LDG's first dedicated autotuner for Kenwood Amateur transceivers. Easy to use - just right for an AT-300 compatible Kenwood transceiver. The KT-100 actually allows you to use the Tune button on the radio. The LEDs on the front panel indicate tuning status, and will show a match in seconds, or even less of you've tuned on or near that frequency before. Has 2,000 memories for instant recall of the tuning parameters for your favorite bands and frequencies. If you have an AT-300 compatible Kenwood radio, you can simply plug the KT-100 into your transceiver with the provided cable; the interface powers the tuner, and the Tune button on the radio begins a tuning cycle. The supplied interface cable makes the KT-100 a dedicated tuner for most modern Kenwood transceivers. ***Suggested Price $199.99***

NEW! IT-100

Matched in size to the IC-7000 and IC-706, the new IT-100 sports a front panel push-button for either manual or automatic tunes, and status LEDs so you'll know what's going on inside. You can control the IT-100 and its 2000 memories from either its own button or the Tune button on your IC-7000 or other Icom rigs. It's the perfect complement to your Icom radio that is AH3 or AH-4 compatible.

Suggested Price $179.99

AT-200Pro

The AT-200 features LDG's new "3-D memory system" allowing up to eight antenna settings to be stored for each frequency. Handles up to 250 watts SSB or CW on 1.8 – 30 MHz, and 100 watts on 54 MHz (including 6 meters). Rugged and easy-to-read LED bar graphs show power and SWR, and a function key on the front panel allows you to access data such as mode and status. All cables included.

Suggested Price $249

radio not included

Z-817

The ultimate autotuner for QRP radios including the Yaesu FT-817(D). Tuning is simple; one button push on the tuner is all that is needed - the Z-817 takes care of the rest. It will switch to PKT mode, transmit a carrier, tune the tuner, then restore the radio to the previous mode! 2000 memories cover 160 through 6 meters. The Z-817 will also function as a general purpose antenna tuner with other QRP radios. Just transmit a carrier and press the tune button on the tuner. Powered by four AA internal Alkaline batteries (not included), so there are no additional cables required. A coax jumper cable is also induced for fast hook up. ***Suggested Price $129.99.***

NEW! Z-11Proll

Meet the Z-11Proll, everything you always wanted in a small, portable tuner. Designed from the ground up for battery operation. Only 5" x 7.7" x 1.5", and weighing only 1.5 pounds, it handles 0.1 to 125 watts, making it ideal for both QRP and standard 100 watt transceivers from 160 - 6 meters. The Z-11Proll uses LDG's state-of-the-art processor-controlled Switched-L tuning network. It will match dipoles, verticals, inverted-Vs or virtually any coax-fed antenna. With an optional LDG balun, it will also match longwires or antennas fed with ladder-line. All cables included. ***Suggested Price $179***

Our customers have always known we're #1

Our customers have always known we're #1. But did you know that LDG was the first company with a "no questions asked" two-year transferable warranty on ALL our products, the first company to include all cables with our autotuners, and the first company with 3-D memory in our autotuners? LDG autotuners also have the highest resale value of any autotuner on the market today. Our customers feel good about owning LDG products and so will you! Call us or log-on today!

The #1 Line of Autotuners!

NEW! AT-100ProII

This desktop tuner covers all frequencies from 1.8 – 54 MHz (including 6 meters), and will automatically match your antenna in no time. It features a two-position antenna switch with LEDs, allowing you to switch instantly between two antennas. The AT-100Pro requires just 1 watt for operation, but will handle up to 125 watts. All cables included.
Suggested Price $229

radio not included

NEW! AT-897Plus for the Yaesu FT-897

If you own a Yaesu FT-897 and want a broad range automatic antenna tuner, look no further! The AT-897 Autotuner mounts on the side of your FT-897 just like the original equipment and takes power directly from the CAT port of the FT-897 and provides a second CAT port on the back of the tuner so hooking up another CAT device couldn't be easier.
Suggested Price$199

radio not included

FTL Meter 2.5" face with calibrated scales for signal strength, discriminator reading on receive, and power output, SWR, modulation, ALC action and supply voltage on transmit, all selectable from the radio's menu.
Still Only $49

FTL Meter For Yaesu FT-857(D) and FT-897(D). 4.5" face with calibrated scales for signal strength, discriminator reading on receive, and power output, SWR, modulation, ALC action and supply voltage on transmit, all selectable from the radio's menu.
Suggested Price $79.99

M-7700 For IC-7700. It will display S-meter on receive, or power out, SWR, ALC level or supply voltages, all selectable from the radio's menu. What's more, the M-7700 and the virtual meter on your radio can work together.
Suggested Price $79.99

See AT-1000Pro Review in Nov. '08 CQ

AT-1000Pro

The AT-1000Pro has an Automode that automatically starts a tuning cycle when the SWR exceeds a limit you set. Operates at any power level between 5 and 1,000 watts peak. RF Relay protection software prevents tuning at greater than 125 watts. Tunes from 1.8 to 54.0 MHz (inc. 6 meters), with tuning time usually under 4 seconds, transmitting near a frequency with stored tuning parameters, under 0.2 seconds. 2000 memories. 2 Antenna connections. All cables included.
Suggested Price $599

NEW! YT-100

An autotuner for several popular Yaesu Radios. An included cable interfaces with your FT-857, FT-897 and FT-100 (and all D models) making it an integrated tuner, powered by the interface. Just press the tune button on the tuner, and everything else happens automatically: mode and power are set, a tune cycle runs, and the radio is returned to its original settings. It's the perfect complement to your Yaesu radio.
Suggested Price $199.99

NEW! Z-100Plus

Small and simple to use, the Z-100Plus sports 2000 memories that store both frequency and tuning parameters. It will run on any voltage source from 7 to 18 volts; six AA batteries will run it for a year of normal use. Current draw while tuning is less than 100ma. The Z-100Plus now includes an internal frequency counter so the operating frequency is stored with tuning parameters to make memory tunes a blazingly fast 0.1 seconds; full tunes take an average of only 6 seconds. ***Suggested Price $159.99***

LDG recommends the S9v 31' Vertical from S9 Antennas!
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public service

BY RICHARD FISHER,* KI6SN

Haiti: Praise Well-Earned and Lessons Learned

The catastrophic events in Haiti following January's 7.0 earthquake are grist for EmComm introspection and forward-looking planning as radio amateurs from around the world selflessly served on the front lines of the disaster.

Real-life events have a way of showcasing the best of what amateur radio has to offer in disaster situations. They often reveal areas we can examine, as well, to tackle our EmComm responsibilities even better the next time duty calls.

Lesson Learned

Haitian Operators, a Critical Need: As Arnie Coro, CO2KK, sees it, there are always "quite a few things" to be learned from an experience such as the Haiti earthquake. As IARU Region II, Area C emergency coordinator, he has a keen perspective on EmComm priorities in the aftermath of the January 12 disaster.

"My number one concern is that were very few amateur radio operators in Haiti," he said, "a fact that has been known by IARU Region II executives for a long time.

"In contrast with other nations in my Area C—such as Mexico, Cuba, and the Dominican Republic—the number of Haitian nationals with a valid radio amateur license is extremely small. So we should try hard to promote ham radio in Haiti as much as possible from now on.

"This can be part of the 'big picture' of the reconstruction of Haiti that has to take place there with the resources that should become available.

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William Fourneau, YV5VE, was one of the operators who traveled from Maiquetía, Venezuela to assist in the Haiti Earthquake relief effort. (Courtesy of YV5VE)

"In regard to the ham radio operators (who) went to Haiti with the rescue teams from different countries—such as the Dominican Republic, Venezuela, and Colombia, to name just a few—they knew how to operate, linked up rapidly with the bands and frequencies in use, and kept the traffic going," CO2KK said.

"I did not monitor traffic in English going on 20 meters, because my top priority was helping the 7.045-MHz EmComm net as much as possible."

On that frequency "we had stations from many countries taking part in the effort," he said. "Even including Europeans (who) provided not only actual relays from Italy to the Caribbean back-and-forth when the skip became too long, but also helped with very useful and well-done propagation forecasts.

"Again, we must concentrate our efforts from now on so that young people in Haiti become motivated and interested enough to learn the necessary skills to install and operate an amateur radio station, and proceed to apply for the corresponding license from the Haitian telecommunications authorities."

CO2KK added that "it was very interesting to be able to witness such nice cooperation between radio amateurs who spontaneously spent many hours monitoring our 7.045-MHz EmComm net and stepped in just exactly when needed—without causing unnecessary QRM."

He noted that there were operators from "the Bahamas, the State of Florida, Colombia, Costa Rica, Guatemala, Dominican Republic, Venezuela, Aruba, and Cuba.

"The two net control stations located in Santiago de Cuba city (Fernando Mario Borrajo, CO8WM, and Raul Pardo Garcia, CO8RP) did a really outstanding job and demonstrated once again the importance of having done emergency drills and emergency training programs ahead of the actual situation that required the EmComm net to be activated."

Venezuelan Operators: A View from the Ground in Haiti. "Coming from Maiquetía, we arrived January 21 on the island of Haiti aboard a Venezuelan Air Force aircraft," wrote William Fourneau, YV5VE, who was among the operators on the ground providing emergency communications in the massive relief effort.

"Jose Azpurua, YV5JF, and I, with the (Venezuelan Radio Club), YV5AJ, and colleague Alfredo Medina, YV5SSF," were called upon to be part of the diverse force of radio operators converging on the island. We traveled with an ICOM IC-735 HF transceiver, a home made doublet (antenna) and VHF equipment," YV5VE said.

"We arrived at Haiti's international airport at 1840 UTC," he said. "Our first stop was the Venezuelan embassy, where in the following days our activity would be developed.

"In an early stage, our effort went to establish

and carry on emergency communication to help those who needed to be evacuated," YV5VE explained. "Some of the communication was to assist the Dominican Red Cross," which had already established operations in the area and was handling traffic between the two countries.

In a second phase, YV5VE and YV5JF offered "support to the Venezuelan Armed Forces" in establishing emergency communications. They took part in net operations conducted by CO8WM and CO8RP, as well.

"We continued (operation on) the island, offering our best effort to help get aid to this (region) devastated by the earthquake," said YV5VE. There were also Colombian and Dominican Republic relief workers in the area.

YV5VE and YV5JF said they are "thankful to each and every one of the friendly stations of Venezuela, to our families," and to the people who allowed the operation to be possible. They said the operation allowed "us to live this experience" and to see the power of nature—but to know that "luckily there will always be amateur radio operators" to step in to help.

WX4NHC and MARS, Operators Assist in Haiti. Julio Ripoll, WD4R, shared with us an e-mail sent in January to all operators at the National Hurricane Center's WX4NHC amateur station and MARS Group regarding their assistance in the Haitian relief effort: "At the request of the University of Miami Hospital and Project Medishare, we will be providing support for the UMH Haiti Field Hospital in Port-au-Prince," it said. "UMH has one of the largest field hospitals in Haiti with about 120 doctors and medical staff currently providing services. The purpose of our mission is to provide communications backup between UMH Haiti and UMH Miami for their medical humanitarian mission in the aftermath of the recent earthquake."

At the time of his January e-mail, WD4R wrote that "UMH Haiti has had numerous problems with the satellite systems in place, cell phone service is mostly down, internet is very poor or not available."

The first ham radio jump team—Louis Cruz, N4LDG (WX4NHC), and Jack Satterfield, W4GRJ (MARS)—arrived in Haiti and set up an HF station, VHF station, several antennas, and Winlink HF e-mail system.

"We have been requested to operate for a period of two to three weeks, until improvements have been made to their satellite and internet communications systems to make them more reliable. We are installing a complete HF, VHF, and Winlink station and antennas at UMH Miami at the UM Miller School of Medicine Medical Training and Simulation Laboratory building."

WD4R said volunteers were operating daytime shifts, unless there was "an emergency or special request by UMH." He, along with John McHugh, K4AG, coordinated the effort. We'll have a more complete report on the teams' activities in an upcoming column.

Haiti Puts Radio Amateurs in Focus on the News. A report carried by Tampa Bay-area TV station WTSP is just one example of how the tremendous efforts of radio amateurs during times of disaster are trumpeted by media outlets.

In a story datelined Dade City, Florida, the Channel 10 website chronicled the work of many operators by focusing on one: N3OS.

"Gary Mentro has been a ham radio operator since 1977 and now he's joining a support team that will assist with communications in Port-au-Prince," the story said. "I will be a part of the third

team and at this point, I may be the sole member of the team," N3OS told WTSP.

"Mentro was touched by the devastation that took place in the country and after he saw kids suffering, he wanted to do something to help," the report said. "A child being hurt; it's gut wrenching and I've been torn up. I still choke up about it," Mentro told Channel 10.

The report went on to point out that "ham radio is being put in place at the University of Miami field hospital to handle communications for the hospital, to and from the team on the ground in the country."

Mentro said that "amateur radio is the baseline. We can go anywhere, frequency-wise, and we can go anywhere venue wise—set up and be on the air in a short period of time."

For a look at WTSP video of the N3OS interview, visit CQ Public Service On The Web: http://www.CQPublicService.blogspot.com.

MARS: More Interoperability in Haiti Relief. Leaders of the Army, Air Force, and Navy-Marine Corps Military Auxiliary Radio System programs have put together an unprecedented plan to delegate responsibilities for the three-branch communications support effort in Haiti, MARS announced in early February.

Volunteer MARS operators from each service program have been in Haiti "working with military and medical teams to provide valuable communications support," program officials said.

"Air Force MARS will have primary responsibility for coordinating and releasing public affairs information on the activities of MARS radio operators assisting with the Haiti relief operation," according to the press release. "Navy-Marine Corps MARS will be responsible for recruiting volunteers, who will travel to Florida at their own expense, to serve in Haiti as part of the essential communications link.

"Army MARS will coordinate frequency authorizations and use of digital communications for MARS operations on the island, including the transmission of e-mail via radio links. This capability is especially useful in the absence of internet connectivity."

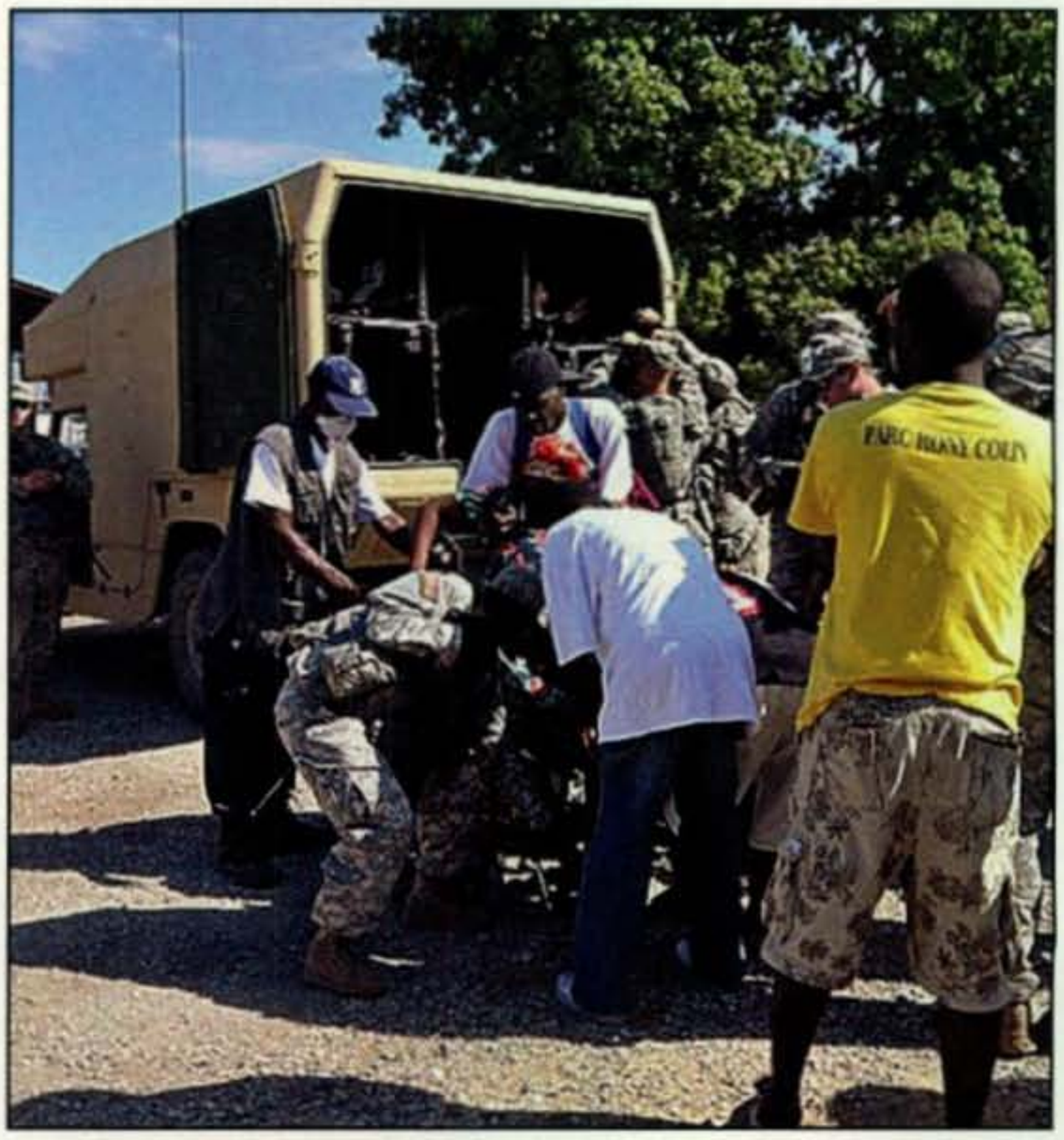
Each of the services' chiefs praised the plan and cooperation: "The delegation of responsibilities among the three MARS services not only makes practical sense, but is an excellent example of interoperability in action," Allen Eiermann, Chief of Air Force MARS, said, "This represents true unity of effort," added Jim Griffin, the Army MARS Chief. Bo Lindfors, Chief of Navy-Marine Corps MARS said the success of the MARS operation to date "demonstrates the value of this contingency communications capability in a real-world emergency."

In a report in the April 2010 edition of *WorldRadio Online* magazine (http://www.cq-amateur-radio.com/WorldRadio.html) a MARS operator whose "experience spans the last four chiefs' tenure" said the February 2 decision "represents a significant break with tradition."

"Like the uniformed services themselves," the WRO story reported, "the three MARS organizations have operated separately since their formation, each with its own command structure, membership qualifications, radio frequencies and net schedules. The result has been that in a disaster situation, it was hard to avoid duplication of activities and overt competition or inability to concentrate scattered assets where most needed."

MARS is a Department of Defense sponsored program, established as separately managed and operated programs by the Army, Navy-Marine Corps and Air Force.

"Members are volunteer licensed civilian amateur radio operators who serve as an organized military auxiliary and



WX4NHC team volunteer Louis Cruz, N4LDG, took this picture of U.S. 82nd Airborne medics assisting an injured woman in Haiti in January. "Conditions there are critical," said Cruz, who trains and teaches emergency preparedness, information security and crisis management negotiations for the U.S. government. (Courtesy of N4LDG)

provide contingency radio communications support to the Department of Defense and to civil authorities at all levels," its press office said. Operators help establish and maintain communications "under emergency conditions, or when conventional means of communications are unavailable, or are likely to become unavailable.

"They also provide health, morale, and welfare radio communications support to members of the Armed Forces, civilian employees, and contractors of the Department of Defense, as well as to civil agency employees and contractors, when in remote and isolated areas, in contingencies or whenever appropriate."

Developing Your "Jump Team"

Bob Hejl, W2IK, writes that his manual *Creating A Viable Jump Team and What It Needs to Function* is "the only such manual on this important subject. According to the manual, jump teams "have the ability to travel distances to a disaster area and supply emergency communications from the 'lion's mouth' for long periods of time."

He suggests EmComm groups, clubs, and anyone "contemplating the creation of a jump team" should check it out at: http://www.texasmars.com.

"Please feel free to past this web address around," he said. A range of topics are covered, from start-up to management and beyond.

The 2010 Atlantic Hurricane Season

If the weather people are right, radio amateurs will want to make sure their EmComm gear and training are up to snuff in time for the 2010 Atlantic hurricane season. It begins June 1. Meteorological forecasting experts are predicting this sea-

U.S. Air Force 1st Lt. Randall Hicks and Navy Capt. Cindy Thebaud carry a Haitian man to a tent after he was treated at a clinic in Carrefour. (U.S. Navy photo by Mass Communication Specialist 2nd Class John Stratton)

son will produce more storms than last year and more than an average hurricane season, according to a report posted on Bloomberg.com. The season runs until the end of November.

Forecaster WSI Corp., based in Andover, Massachusetts, predicts there will be 13 named storms this season. Seven will be hurricanes and three of those will be Category 3 or higher (sustained winds of at least 131 mph), making them major.

Meanwhile, Colorado State University's Tropical Meteorology Project is forecasting between 11 and 16 named storms. It predicts there will be six to eight hurricanes of which three to five will be major.

There were nine named storms in 2009, the fewest in a dozen years. Three of them became hurricanes. It was the first year since 2006 that a hurricane did not cross onto the mainland.

According to published reports, the 50-year average is 9.6 named storms, 5.9 hurricanes, and 2.3 major hurricanes each year. WSI is expected to come out with a new hurricane update this month. The National Weather Service's Climate Prediction Center will issue its hurricane season outlook in May. 73, Richard, KI6SN

worldwide world of ideas

BY DAVE INGRAM,* K4TWJ, SK

Hamming from the Shadows – Part 9

CQ and amateur radio lost a good friend on January 20 when K4TWJ became a Silent Key. Dave had prepared this month's columns before suffering a heart attack on New Year's Eve. Please see notes at the end of this column from Dave's wife Sandy, WB4OEE, and from CQ Managing Editor, Gail Sheehan, K2RED. —W2VU

Our "heads up and keep on smiling" encouragements to enjoy amateur radio amidst today's ever-increasing barrage of CC&Rs continue this month with more views and tips from successful survivors. Particularly noteworthy here is what I call the "Katrina factor." We hams stand ready to help our neighbors, communities, and country with communications that "get through when all else fails," but we need antennas and on-the-air practice to accomplish that feat. Setting up a station (including antennas) from scratch and in the process discovering loose connectors, high SWR, rig entanglements, and misplaced-from-non-use accessories does not help any of us. Fortunately, some home owner associations (HOAs) are beginning to realize those facts—and fortunately some amateurs living in less ham radio friendly areas are able to move into more liberal-minded communities. That leaves many of us stuck in the middle, hoping to glean ideas we can use or adapt to our own unique circumstances, and that is where this column enters the picture. Read on!

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Photo A– A peek in the dark attic of Terry Duehr, KCØVFO, reveals horizontally polarized 2-meter, 70-cm, and 220-MHz Yagis on a rotor-controlled mast attached to the attic floor. The fan on back wall keeps antennas nice and comfy. (Photo courtesy of Terry, KCØVFO)

Toys in the Attic

Terry Duehr, KCØVFO, is a true inspiration to hams near and far. He especially likes the fun side of amateur radio—the fun of setting up a station, operating, and telling folks about all his antennas hidden from view in the attic (photos A through D). He participates in HF and VHF contests (more to see what he can accomplish with antennas in the attic than to formally compete, although he received a top score certificate for his January 2008 VHF Sweepstakes entry).

Terry started with an FT-857D and stacked loops for 6 meters, 2 meters, and 70 cm, plus a 20-meter dipole in his attic (the HOA was quite adamant about its ruling of no outside antennas). As his interest increased, he added an FT-736R with four-band coverage and 222-MHz loop antennas. Next came ground planes for 2 meters and 70 cm plus vertical and horizontally polarized Yagis for 2 meters, 70cm, 222 MHz, and an attic dipole for 20 meters. Keen on HFing, Terry installed a folded dipole painted black and hidden among trees in his back yard. It stayed up two years undetected until the HOA folks "increased its patrols," and now he has taken it down. Soon afterwards, Terry put together a nice mobile (HF) setup and began working DX from his driveway—and the HOA members could only bite their tongues.

Terry was indeed having a ball with his rotatable stacked Yagis in an approximately 400-square-foot area of his attic, but he finally became disenchanted with the HOA and its CC&Rs. I understand he recently purchased property in the country and is looking forward to the move—and installing a tower to support his toys. Terry says he will always remember the days of toys in the attic, of knowing the HOA was cruising the neighborhood with leery eyes while he was inside having a blast. Life is good, friends. Just don't allow yourself to be discouraged by closed-minded HOAs. Thanks for the views, Terry!

KZ5R Revisited

A number of friends have asked us to revisit what has become one of the most encouraging setups in our "Hamming from the Shadows" series—that of Bob Rumsey, KZ5R, and his magic rock-supported SteppIR vertical antenna (photos E through F). Others have heard of KZ5R's setup and asked for more details, so we again checked with Bob and found him having a ball on all bands from 40 to 10 meters. He is also producing his own line of custom baluns and ununs to help others living in confined areas avoid RFI problems.

Photo B– Here you see one of Terry's first attic-installed antennas, a 6-meter loop. The skyline may not be attractive, but the antenna works great and it is protected from harsh weather to boot! (Photo courtesy of KCØVFO)

Photo D– Indoor station of KCØVFO includes Yaesu FT-736, TS-440, tuners, amps, speakers and more. Home is where the ham gear stays for sure! (Photo courtesy of KCØVFO)

Photo C– A vertically polarized 2-meter beam as seen from another point in the attic. Terry definitely puts attic space to good use! (Photo courtesy of KCØVFO)

Bob lives in a highly restricted community of garden homes, so he uses a small, 17-foot SteppIR vertical with a base-loading coil he added for 40-meter operation. Obviously, this is the antenna's weakest band, so I asked Bob how the antenna works out. He said he gets on 40 during early morning hours and works VKs, ZLs, and Asian stations like a champ. Bob has also added a dipole lying flat and undiscovered on his roof and notes the vertical outworks the SteppIR on long-haul DXing. There are some good lessons here. A second antenna, especially one with a different polarization (horizontal vs. vertical) occasionally helps close-in (or DX) coverage because ionospheric-reflected signals may be received at any polarization—vertical, horizontal, or anything between vertical and horizontal. A second antenna also makes a good reference point when you are wondering if your main antenna is working as well as usual, and it makes a good backup antenna if the main antenna is discovered or meets with unfortunate circumstances.

Photo E– The flagpole disguised SteppIR 17-foot vertical with "magic rock" base at the QTH of Bob Rumsey, KZ5R. Bob added a relay-switched base loading coil so the antenna works 40 through 10 meters. It is installed in a clear area for good signal radiation. The hollow "magic rock" was acquired from <www.dekorraproducts.com>. (Photo courtesy of Bob, KZ5R)

Expanding further on the SteppIR vertical's possibilities, I visualize installing one to a home's rear roof eaves or deck rail and maybe including a hinge mount so it can tilt and be hidden during non-use. If the vertical's base is positioned 5 feet or more above ground, angled radials hidden under the eaves or deck could be substituted for ground-buried radials. Further, a hidden loop/length of insulated wire serving as a linear loading section and a straight length of extension coax cable added between a pair of near-base switch boxes or coaxial relays can add 40- or 30-meter coverage. In other words, a 6-foot length of wire plus the vertical's 17-foot height will resonate on 30 meters or a 17-foot length of wire plus the vertical's 17-foot length will resonate on 40 meters. The options here depend on one's location—and they also open the possibility of using a 3/8-wave vertical (on 20 meters and higher) for a tad of gain and less dependence on long ground radials. I have been using a 3/8-wave vertical for several years (1/4 wave plus 1/8 wave equals 3/8 wave), and can say it blows away all the 1/4-wave verticals I have used. There is a hitch in RF feeding a 3/8-wave or one of the new 43-foot (non-resonant) verticals, however: The feed-point impedance is well above 50 ohms and requires matching plus isolation at the feed-point proper. A broadband 4:1 balun combined with a 1:1 unun at the feed point (plus another 1:1 unun at the rig) works very well here, and a transceiver's built-in antenna tuner can tweak the final SWR for a near 1:1 value. What is the difference between a balun and a unun? You inflate baluns for party decorations and you add thin-cut slices of ununs to hamburgers. Seriously, though, BAuns match BAlanced-type antennas (such as dipoles) to UNbalanced feedlines (such as coax cable), and UNuns match UNbalanced antennas (such as verticals) to UNbalanced feedlines.

Photo F– Bob raised the "magic rock" (note shadow) to show us the hidden goodies: the radial connection plate, SteppIR motor and mount assembly, coil and relay switch box, and box-protected unun to prevent RF radiation from the coax feedline. Note the cables disappearing into the buried PVC pipe that is routed to his house. (Photo courtesy of KZ5R)

Photo G– Inside-box view of the 40-meter base-loading coil for Bob's SteppIR vertical. The coil tap is set for the middle of the 40-meter band, so antenna length can be remote-tuned for lowest SWR on any desired frequency. A pair of Tohutsu coaxial relays and a jumper between them bypass the coil for 20- through 10-meter operation. (Photo courtesy of KZ5R)

Ununs also act like RF chokes in preventing RF energy from coupling to the coax cable's outer shield, which then radiate in a most undesired manner and produce RFI. Bob studied this effect for a few years and then developed his own line of baluns and ununs for dipoles, beams, G5RVs, off-center-fed doublets and verticals. When installed at the antenna feed point and at the rig, they are proving to be super effective in eliminating and minimizing RFI so hams in restricted areas can maintain a low profile and enjoy on-the-air operations. I understand Bob is also developing a "poor man's phasing unit" for phasing two verticals for 3 dB gain with a broadside/end-fire switching circuit. We thank Bob, KZ5R, for the return visit to us and encourage you to check out his baluns, ununs, and phasing units at <www.balunsdesign.com>.

Shadow Talk

Overcoming CC&R limitations may seem like a major challenge, but it can be done—unless your home owner association is totally closed-minded. The key for success lies in your clever choice of antennas, knowledge of their radiation patterns, how to minimize "tell-

Photo H– Coaxial cables emerging from the ground at KZ5R discreetly attached to the plastic downspout and routed through the attic to the station inside. (Photo courtesy of KZ5R)

tale" signs of RFI, and ability to maintain a professional attitude. The first of that equation, antennas, is heavily influenced by personal opinions (everyone is an authority on antennas, hi). Some folks feel any type of horizontal antenna, regardless of its installed height, is best. Others are quite pleased with a vertical (hopefully with a good ground plane of radials at its base). Generally speaking, most amateurs say use a horizontal-type antenna when it can be installed up high enough so it radiates and receives signals effectively while also being situated far from utility lines to minimize RFI. If that criteria cannot be met (no trees, no towers, too much visibility, etc.), opting for a vertical or ground-plane-type antenna installed in a clear-as-possible area (and disguised as a floodlight support for flagpole, for example) is a good choice.

In any case, visualize your antenna as a primary winding in an open-air transformer and all utility lines (plus consumer electronics) as the transformer's secondary winding. The farther apart and the more the two are positioned at right angles to each other, the lower their mutual coupling. Also bear in mind also that coax cables/feedlines can act like phantom antennas and radiate RF energy where it is least desired. Installing 1:1 isolation chokes/baluns or ununs at the antenna feedpoint and at your rig usually solves the problem.

Once again I must repeat the importance of eliminating any and all traces of RFI, because regardless of hidden or disguised antennas, any interference to telephones, TVs, cable boxes, or surround systems caused by antenna-radiated energy can blow your cover. The quick-and-easy fix for (displeased but congenial) neighbors typically involves getting an amateur radio assistant to operate your station on command (use a handie-talkie link) while you and a neutral third party visit the offended neighbor. Work efficiently and in a logical sequence of steps to eliminate the RFI. Start by disconnecting the antenna or cable from the TV or its converter box. If the interference disappears, installing a good-grade high-pass filter is usually all that is required. If the interference remains, installing clamp-on toroids on audio input cables, speaker leads, and AC power lines usually work great, but bear in mind that all toroids are not made equally. The most effective toroids for choking out HF energy are those with a 31 mix. The next most effective toroids are 77 mix. A good source of 31-mix toroids is <www.radioworks.com>. Remember to maintain a congenial and professional attitude (and you can emerge a "good guy," honest!).

Conclusion

We wrap up the "Hamming from the Shadows" columns with an open invitation for other amateur friends hamming in restricted areas to share views and details of your setup. The more folks who do that, the more encouragement and the more shared information can be given to help everyone. As amateur radio operators, that definitely should be one of our goals. Keep the hobby alive and thriving for us and future generations!

73, Dave, K4TWJ

(Ed. Note: We will continue to feature low-profile antennas in upcoming issues of CQ*. Please share your innovative solutions with us.—W2VU)*

Dave Ingram, K4TWJ's Passing
A Final Farewell to All

From Sandy Ingram, WB4OEE: It is with great sadness that I let you know that Dave passed away Wednesday morning, January 20, 2010. Amateur radio is certainly going to miss his enthusiasm and his wonderful and enduring love for ham radio. He loved to tell the world about ham radio and that anyone could join in with little money, or a lot of money, to invest in the hobby.

My thanks go out to each and every one of you who sent special get well wishes and prayers for Dave ... and now sympathy cards and e-mails. He was in God's hands and I know that somewhere up there he is going to be using ham radio and CW. ... I'm sure he has a key with him on his journey. Maybe he will meet all of you someday in God's great land! 73, 88, and may God be with you all.—*Sandy Ingram, WB4OEE*

P.S.: Watch for Dave's call to appear again in the future. Also Dave has a book that will be on CD and available (within the year) to *all* hams free of charge throughout the world.

From Gail Sheehan, K2RED, Managing Editor, *CQ*: The passing of Dave is a great loss to the amateur radio community and to us at *CQ* magazine. His enthusiasm was captivating and appreciated by so many hams all over the world. His interests in the hobby varied greatly, from crystal sets, tubes, keys, and vintage radio, to mobiling, how best to use your perhaps limited resources to get your signal out there, QRP, and beyond. In his own particular style, he drew the reader into these venues. I will always remember his friendly style, his unique way of telling all of us how great this hobby of ours is. How could I ever forget his words "Golly Miss Molly," "Wow!" and more, but most of all "friends." He considered all of us in ham radio his friends.

Having worked with Dave for so many years, I will miss his unique style and most of all his friendship. Let us not forget, too, the input that his wife Sandy, WB4OEE, had in his life. She was the one who typed Dave's columns, was his "ear," his love, and his support and strength as well.

May you rest in peace, Dave. Thank you for all of your input and devotion over the years. We will miss you.

—Gail, K2RED

learning curve

BY RICH ARLAND,* K7SZ

Basic Station Setup

Remembering K4TWJ

Sadly, the ham radio fraternity lost a great author, outstanding mentor/Elmer, and just plain terrific guy in Dave Ingram, K4TWJ, who passed away after a massive heart attack on New Year's Eve. I have known Dave and read his books and articles for more years than I can actually remember. I am deeply saddened by his passing, as he represented the epitome of what a ham radio operator should be. He always had time for anyone with a question. He was happy to share experiences and offer opinions when asked. Most of all he was approachable. I remember talking to Dave about keys. A few days later a CD of his key collection arrived in my mailbox. What a glorious collection he had! In two words: world class! We traded information, primarily about QRP and homebrewing gear, on a regular basis. He was my friend and I will miss him. God Bless and rest in peace, Pard. *—K7SZ*

Welcome to a new column (sort of) in *CQ* magazine. The magazine's editorial team decided to revamp several long-standing columns and refocus efforts to provide more timely and sage advice for both newcomers to the hobby and those folks who've been around a while and may be interested in trying something new (to them). In this column, which we've dubbed the "Learning Curve," we'll do our best to cover topics germane to furthering your enjoyment of the ham radio hobby, with the focus shared between the operating and technical sides of the hobby. This new column will combine aspects of the two columns it replaces, "Beginner's Corner" and "How it Works."

To kick things off, how about we take a close look at the shack? If you are a newly licensed ham, chances are the first radio you procured is/was a VHF or VHF/UHF handie-talkie (HT). After all, they are cute, there are lots of people to talk to, and they are relatively inexpensive. However, there is much, much more to ham radio than 2-meter FM (or even 440 FM).

Regardless of your class of license, you will want to have a place where you can go and enjoy your hobby without disturbing other family members. This place, quaintly known as "the shack" since the very early days of ham radio, is a place of solace. A place where one can relax, play radio, build electronic gear, read, and just "get away from it all." It's sort of a "man cave for nerds"! (YLs with licenses cheerfully admitted to the same! We don't discriminate!)

The Shack

OK, so exactly where are you going to put this gateway to Nirvana? Might I offer a suggestion? Find some place out of the way of normal family traffic. You really want some quiet and solitude . . . not

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Photo A– Here is where it all happens at K7SZ. This is the IKEA desk that has served me well for over eight years. The "big stuff"—i.e., the boatanchors (Heathkit HR-10 RX/DX-60 TX)—is on the top shelf along with computer monitor. (A flat-screen monitor takes up much less room than the older CRT monitors, it runs cooler, and it does not put out tons of RFI!) The next two shelves hold QRP radios and the Yaesu FT-726 VHF/UHF multimode rig.

Photo B– This is a shot of my new workbench. This bench is really sturdy and goes a long way to providing a place to work on gear, homebrew gear, and perform maintenance.

necessarily for you but for the other members of the family. After all, most spouses and offspring are not really thrilled about listening to CW, a phone pile-up, or a long-winded 2-meter rag chew!

Some other considerations: plenty of AC outlets! Also, an outside wall would be a "nice-to-have" for routing RF feedlines, station ground, rotator control cables, and sneaking new gear into the shack without alerting the spouse. A window is always nice to allow sunlight and to vent out solder smoke while homebrewing gear.

When we look through the pages and gaze lustfully at the cover of *CQ* magazine, we are treated to an abundance of great-looking, well-appointed radio shacks loaded with tons of gear, computers, and radio accessories. Often, when I look over these shacks, I think to myself, "How many radios does one person need to play the ham radio game?" No, it's not sour grapes on my part, but face it: Hams are "collectors." It goes with the territory. Unfortunately, it can become an obsession to collect (dare I say "horde"?) radio gear. I ought to know, I'm as guilty as anyone else in the hobby. My point here is that if you get one good HF transceiver and a V/UHF transceiver, you have just about 95% of ham radio operating covered with only two radios. This also reduces the amount of physical space you'll need to accommodate your station equipment. Don't worry. As you progress in the hobby, I am positive you'll accumulate your fair share of "stuff." It just happens!

The Desk

One shack accoutrement you will certainly need is a sturdy desk to use as an operations (ops) position. Over the years I have used just about everything imaginable. My current ops desk is a multi-level computer desk from IKEA (see photo A). I have used this desk for well over eight years now and it suits my operating requirements to a "T." Original cost was about $125, but it was well worth the money. It is extremely sturdy and can be taken apart for moving. Recently, my wife Patricia, KB3MCT, and I were wandering the aisles of the IKEA store in Atlanta and I came across a very "plain Jane" black desk. It was only $49 (on sale), but it had definite possibilities as a workbench.

Since moving to the Atlanta area, I had been on the lookout for a new test bench for the shack. One of the things I love to do is build gear. I also do a lot of boatanchor (older, tube-type gear) restorations—ergo, the need for a sturdy workbench. After I got the new bench home and assembled it, I added some steel angle brackets to the rear to reinforce the already rugged construction. Now the new test bench sits fully adorned with test gear (photo B), including a 30-pound URM-25 military-surplus RF generator and a 100-MHz scope with room for a *huge* Hallicrafters SX-101 currently under restoration!

All this sits in a small room (8 × 14 ft.) with space left over for two metal shelving units that hold ham radio related "stuff," two book cases (one can never have enough technical literature in one's library), two small filing cabinets (one of which holds up the power supply/battery charger and docking unit for my AN/PRC-74B HF radio set), and an air conditioner. It's homey, to say the least. Not a whole lot of room, but there is enough for me to operate *and* build/restore gear without interrupting family affairs. Once I am ensconced at the ops bench and my 140-pound giant Alaskan Malamute, Oki-Kuma, wanders in and lies on the floor, there's not a whole lot of extra room!

Antennas & Feedlines

Finding a place to hang your ham radio hat is one thing, but getting it set up to play radio seems like a never-ending task. What good are radios without antennas? Where do you put the antennas for best results? What do you do with the feedlines? These are the next series of questions we'll undertake in our "setting up the shack" series.

First of all, your antennas are directly related to the bands on which you operate. Yeah, yeah, I know . . . that's almost too simple, huh? VHF/UHF antennas are relatively small compared to HF antennas. You can put VHF/UHF antennas almost anywhere and they will work. Not so with HF antennas. High-gain antennas are the rule rather than the exception at VHF and higher. A small 4- or 5-element 2-meter Yagi beam antenna will perform quite well in an attic. Don't try that with a 4-element monobander for 20 meters!

My point in all this is to get you to quantify your operational needs and site and erect the antennas that will give you the biggest bang for the buck. There is a host of good books out there that will show you how to build all sorts of antennas from 160 meters into the Gigahertz range. Believe me, between books, this

magazine, and the internet, there is no shortage of information on antennas.

Unless you have access to a well-equipped shop, it will probably be more time/cost effective for you to buy VHF/ UHF antennas than to try to build them, even from well-published plans. Be careful, though, that you understand comparative gain figures, including the difference (approximately 3 decibels, or dB) between dBd (decibels over a dipole) and dBi (decibels over isotropic, which is an imaginary antenna that radiates equally well in all directions, including up and down). Just remember: With antenna gain figures, as with much else in life, if it sounds too good to be true, it most likely is!

VHF/UHF

When I moved from northeastern Pennsylvania to northern Georgia, it was time to disassemble a shack I'd had for over 20 years and transplant it all to our new home. Our old place had about 3700 square feet of area. The new place—1800. Whoa! Reality hits! What to do with all that "stuff?"

Even though I have an Extra Class ham ticket, my first order of business was to get a good VHF station on the air from our new home. Local 2-meter repeaters in the metro Atlanta area have great coverage, so it was a matter of finding one as a "home" machine and getting to know the locals. In our case, it was relatively simple: GARS. The Gwinnett Amateur Radio Society is a large club centered in Gwinnett County, where we now live. The GARS folks welcomed Pat and me with open arms and a lot of great southern hospitality. We had a home! The GARS repeater, W4GR (147.075, + 600 kHz, PL: 82.5) has great coverage due to the talents of Eddie Foust, WD4JEM, and David Adcock, KA4KKF, the two "technical heavies" in the club.

For us, getting access to the GARS machine was a simple matter of erecting an omnidirectional 2-meter antenna. At the 2008 Stone Mountain hamfest we picked up a dual-band (2m/ 70cm) J-pole antenna for $20. What a deal! This I placed on the end of a 10.5-ft. section of chain-link fence top section, available for under $10 at Lowe's and/or Home Depot. I prefer using these top sections, as they are about half the price of similar steel pipe from "The Shack," and they are swaged at one end so they will fit together for stacking end-to-end, enabling the fabrication of a 20- or 30-foot antenna mast at a very reasonable cost.

This simple antenna system costs less than $40 and provides us with consistently good signals into the GARS repeater. Ditto with the Atlanta Radio Club machine, along with several others in the metro Atlanta area.

Since I like to work terrestrial weak-signal VHF/UHF contacts as well as the OSCAR satellites, I also opted for three "halo" type antennas that yield an omnidirectional pattern but were cut for the low ends of the 50-, 144-, and 432-MHz bands, which is where you'll find the SSB and CW action. I stacked these beneath the 2-meter J-pole and have a nice "short stack" that gives me access to the world above 30 MHz at a very reasonable cost.

HF Antennas

Let me start this section simply by saying that more HF DX contacts are made with wire antennas than any other antenna, period. Therefore, just because you don't have the financial resources, physical space, or spousal permission to erect a tower and beam antenna, rest assured that you can work your share of DX and local contacts with one or two well-placed wires. Besides, wire is cheap, and provided you take a few precautions such as using muted colors (black, dark brown, gray, etc.) and small gauge, you can erect some killer wire arrays that will really perform without incurring the wrath of your spousal unit and/or the local homeowner's association.

Although I have never erected one, the day is rapidly approaching when the K7SZ shack will be home to a full-wave, 160-meter, horizontal loop antenna. After all, it's only 529 feet of wire! Seriously, that sounds like a lot of wire, but when you run it around your property in a rudimentary circle (hence the "loop" configuration), it doesn't really look all that big. Get it as high up in the trees as possible, at least 30 feet if you can. Using a slingshot, bow and arrow, fly rod, "spud" gun, etc., cast a line over the necessary limbs, back-haul a lightweight line, and then return with a piece of Dacron™ rope which will hold the antenna wire aloft. Bring the ends of the loop together at the feed point, and couple it to a remote antenna tuner or a 1:1 balun and run coax into the shack. If you use the latter, you will need to use an antenna tuning unit (ATU) in the shack to match impedances for multiband use. Kyle Albritton, W4KDA, uses this loop antenna with the remote ATU at the feedpoint and can operate all HF bands from 160 through 10 meters! Don Keith, N4KC, another very satisfied loop user, has a smaller version of this antenna with an excellent section on his website <http://www.donkeith.com/n4kc/Skywire.htm>. Don offers some unique solutions to keeping the wires in the trees, so be sure to read over his site for some interesting information.

One thing a loop has going for it is that it is a closed system. That means it is quiet compared to a dipole, vertical, Yagi, etc. Cubical quad antennas are a form of loop antenna that is a closed loop design, which is why they are so successful on the higher HF bands (20–10 meters).

OK, if you can't erect a large loop, there is absolutely nothing wrong with a good, old-fashioned dipole cut for your operating frequency. A 40-meter half-wave dipole is only 66 feet end-to-end, while a 20-meter dipole is only 33 feet end-to-end. The ends can be bent, drooped, or otherwise folded, bent, or mutilated, and it will still work with little degradation in performance.

One of my all-time favorite antennas is a 40-meter Extended Double Zepp (EDZ), which is about 90 feet per leg, or 180 feet end-to-end. Now this is a fairly big antenna. However, I have used this design with the ends folded back on themselves and I was able to work a lot of DX over the years. Presently, the 40-meter EDZ is what I have up for 80, 40, 30, and 20 meters. While it will yield a bit of gain on 40, it has about a 3 dB loss on 80 and a little over 6 dB loss on 160! *However,* with the aid of an ATU, I can still work 160–10 meters with this antenna (it is a standard dipole configuration fed with 450-ohm ladder line into an MFJ ATU via a 4:1 balun). Using all new parts, including a Ten-Tec center insulator, it cost me only $60 to build and it works like gangbusters! The center feed point is suspended about 30 feet in the air on an antenna mast made from chain-link top rail sections guyed at the top. Eventually, when I get the tower up, this antenna will be sitting at about 50 feet at the center point, hung off the side of the tower.

Well, that's it for this time around, gang. There is a lot more to say regarding antennas and feedlines, so we have our work cut out for us over the next several installments. In the meantime, get out there and put up a good antenna for whichever mode(s)/band(s) you enjoy. Don't let fear hold you back!

Vy 73, Rich, K7SZ

MFJ 160-6 Meter Antenna

Self-supporting 43 foot vertical -- no guy wires required . . . 1500 Watts . . . exceptional performance . . . low-profile . . . includes base mount and legal limit balun . . . assembles in an hour . . .

MFJ-2990
$359.95

New!

Operate all bands 160 through 6 Meters at full 1500 Watt with this self-supporting, 43 feet high performance vertical! It assembles in less than an hour and its low-profile blends in with the sky and trees -- you can barely see it from across the street.

Exceptional Performance

The entire length radiates to provide exceptional low angle DX performance on 160 through 20 meters and very good performance on 17 through 6 Meters. You can shorten it by telescoping it down for more effective low angle radiation on higher bands if desired.

With an automatic antenna tuner there's no fuss -- just talk!

A wide-range automatic or manual antenna tuner *at your rig* easily matches this antenna for all bands 160-6 Meters. There's no physical tuning adjustments on the antenna -- you simply put it up!

An optimized balun design allows *direct coax feed* with negligible coax loss (typically less than ½ dB 60-6 Meters and less than 1 dB 160-80 M with good quality, low-loss coax).

Fully self-supporting, Extremely low wind loading, Very low visibility . . .

With just 2 square feet wind load, the fully self-supporting MFJ-2990 -- *no guy wires needed* -- has the lowest wind-loading and lowest visibility of any vertical antenna! The key is a six foot section of tapering diameter *stainless steel* whip that flexes in strong wind instead of stressing the bottom sections. Its 2-inch O.D. and .120 inch

thick walled tubing bottom section makes it incredibly strong -- it'll stay up!

Weighs just 20 pounds -- you can easily put it up by yourself because its corrosion resistant *6063 aircraft aluminum* tubing and stainless steel construction make it light *and* super-strong.

Assembles in an hour

You can easily assemble it in an hour! Ground mounting lets you completely hide its antenna base in shrubbery. Includes ATB-65 high-strength antenna mount. Requires ground system -- at least one radial. More extensive ground system will give much better performance.

Great for Stealth Operation in antenna restricted areas

This very low-profile antenna is perfect for stealth operation in antenna restricted areas. Hide it behind trees, fences, buildings, bushes. Use it as a flagpole. Telescope it down during the day. Put it up at night and take it down in the morning before the neighbors even notice!

Quick and easy installation makes it great for DXpeditions, field day and other portable and temporary operations.

MFJ *Automatic* Tuners

MFJ-998
$699.95

For legal limit 1500 Watt SSB/CW amplifiers. Auto-ranging LCD and Cross-Needle SWR/Wattmeter, antenna switch, amp bypass, matches 12-1600 Ohms, 1.8-30 MHz.

MFJ-993B
$259.95

Dual power range -- 300 Watt range matches 6-1600 Ohms. 150 Watt/6-3200 Ohms. Auto-ranging LCD and Cross-Needle SWR/Wattmeter, antenna switch, 1.8-30 MHz.

MFJ *Manual* Tuners

MFJ-989D
$389.95

1500 Watts SSB/CW, 1.8-30 MHz. Active peak-reading Cross-Needle SWR/Wattmeter, balun, dummy load, antenna switch, aircore roller inductor.

MFJ-949E
$179.95

World's most popular tuner! 300 Watts, 1.8-30 MHz. Peak/Average Cross-Needle SWR/Wattmeter, 8 pos. antenna switch, dummy load, 1kV capacitors.

Window Feedthru

MFJ-4602
$69.95

Bring 3 coaxes, balanced line, random wire, ground thru window. Connectors mounted on *stainless steel* panel. ¾" thick *pressure-treated* weather-proof wood.

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Kit-building

BY JOE EISENBERG,* KØNEB

Kits to Help You Build Kits

Part of the fun of building kits is learning how they work or how to adjust or troubleshoot them. Since laboratory-grade test equipment can be both large and cost-prohibitive, there are kits available to let builders perform many needed tests. Some test equipment, such as a simple digital multimeter, are already affordable, but there are many other items that if purchased assembled would take up way too much space and cost too much for a new builder. The fun part about building your own test equipment is that most are simple to build and immediately useful for future building projects.

A multimeter in kit form that also includes a capacitance meter is available from J-Tron for $39.95. This meter lets you see whether a capacitor is working, and better yet, be able to figure out its value should its markings wear off. It also tests diodes and transistors. The M-2666K is easy to build and gives you an insight into what is inside a full-featured multimeter. J-Tron kits are available at <http://www.j-tron.com>.

A dummy load is a very useful item to have when building kits, and one that measures power output in an easy-to-read format is even better. The XS-SDLK Smart Dummy Load by Midnight Science sells for $17.95, accommodates power output up to 10 watts, and displays the power output by lighting up a series of four LEDs. Each successive LED denotes power outputs of 1, 2, 5, and 10 watts. Therefore, this low-cost kit gives you a way to tune up a low-power transmitter and have the ability to peak its output if needed. Assembly is very easy, but you will need to provide a short length of RG-58 coax and your favorite coax connector for the end. The really nice thing about this kit is that it draws its power from the RF applied to it, so no external power supply is needed.

Another Midnight Science kit is the XSS-SA8 8-Step Attenuator kit. This kit is useful for aligning receivers in strong-signal environments and for evaluating sensitivity. It sells for $49.95. These two kits are available on the web at <http://www.midnightscience.com>.

Another inexpensive dummy load kit is available from Elecraft for $25.95. The DL1 handles up to 20 watts and has output terminals to connect a voltmeter to continuously measure your power output. Yet another dummy load kit for low power is available from the 4-State QRP Group at <http://www.4sqrp.com>. It sells for $7, utilizes surface mount components, and can be soldered using many different methods.

Variable-Voltage Power Supplies

A variable-voltage power supply is another very useful item for kit building, as required power-sup-

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e-mail: <k0neb@cq-amateur-radio.com>

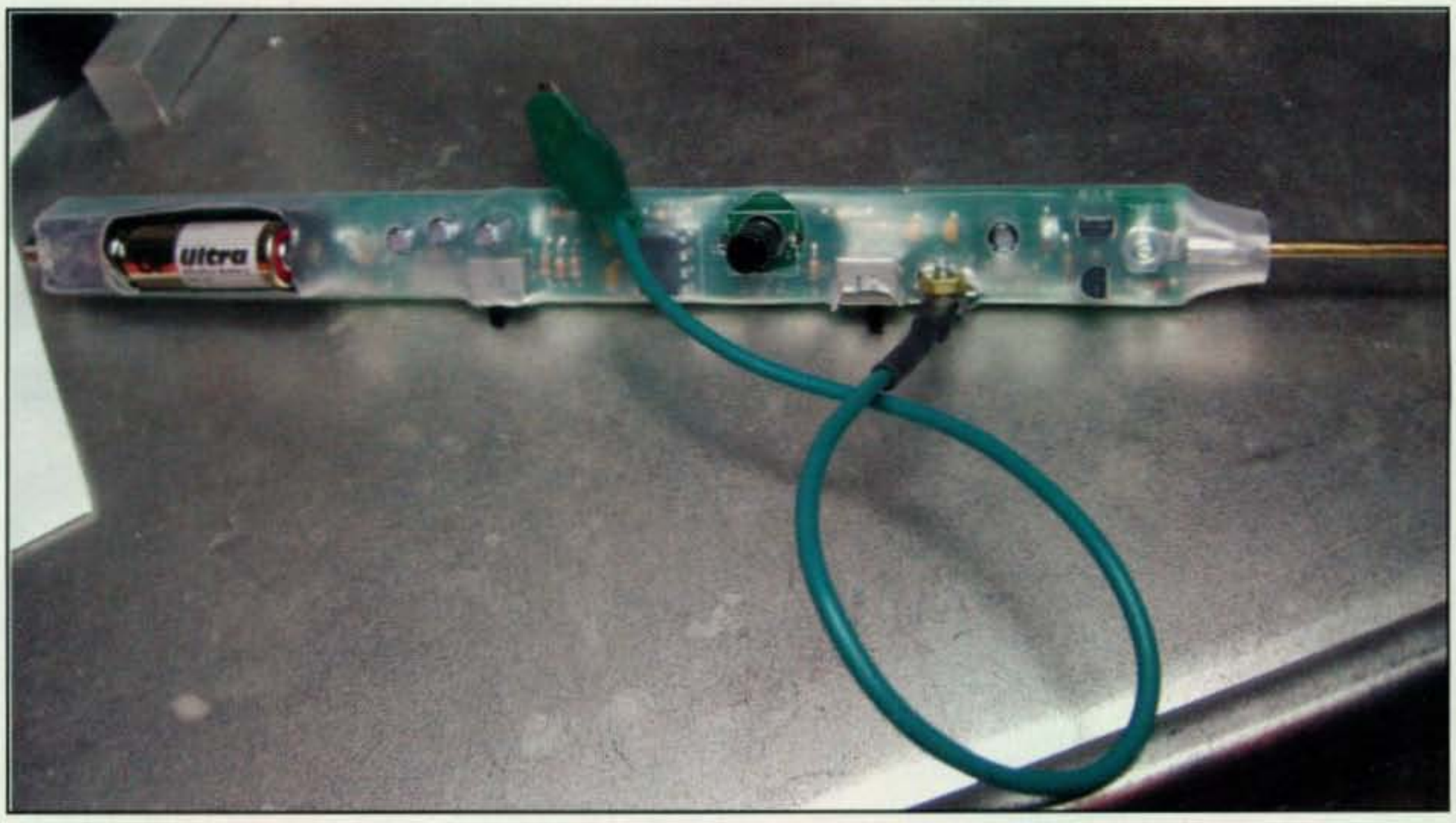

Photo A– A combination signal tracer/injector from Hendricks Kits.

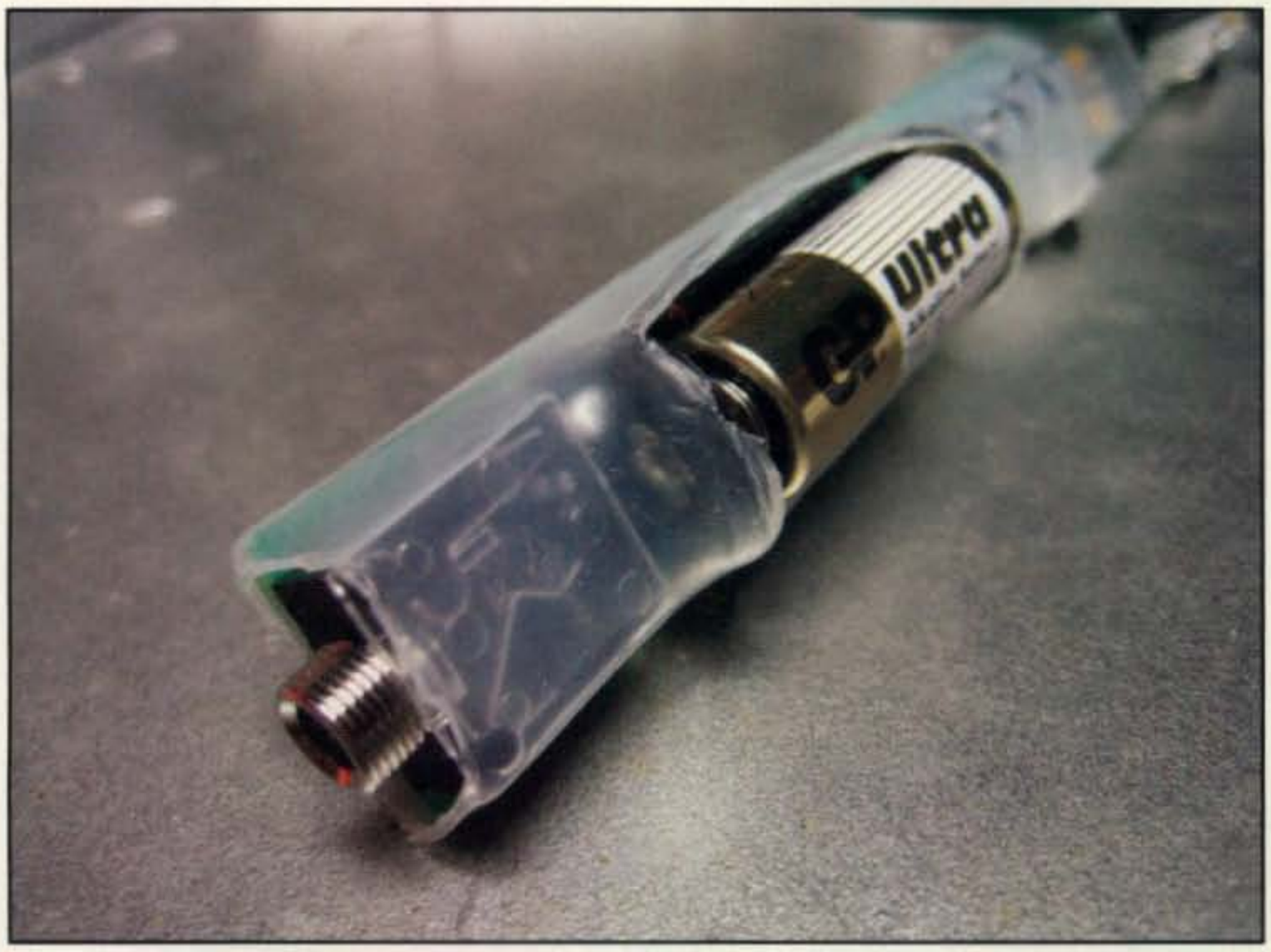

Photo B– Back end of the signal tracer showing the battery and headphone jack.

ply voltages can vary from as low as 1.5 volts to over 12 VDC. The advantages of a variable supply include the ability to supply the exact needed voltage without using batteries.

J-Tron sells two different variable supplies. The first is the Elenco XP-720K. This power supply includes three different simultaneous DC outputs as well as 6.3 or 12 VAC at the same time. Selling for $59.95, it is available online. J-Tron also has a less-expensive single-voltage variable output power supply kit, the XP-15, for $22.95. Both of these power supplies feature protection from overvoltage and from damage from a direct short.

Another option is available from Ramsey Electronics, the K8042 Symmetric 1A power supply kit. This kit is $15.95 and does not include the AC transformer, so be aware. Checking your junk box for old wall-warts just might turn up an AC output transformer suitable for use with this kit. Ramsey's web site is <http://www.ramseykits.com>.

Generating a stable and accurate signal is essential for aligning receiver kits. Elecraft produces the XG2 kit that produces signals on 75, 40, and 20 meters. This kit also has two output levels, 1 µv and 50 µv. The 1 µv level is excellent for aligning your receiver kits with a low signal input. The 5-µv signal is the standard for "S9" signal strength in most receivers, making this signal useful for calibrating S-meters in both kit radios and other radios. The XG2 sells for $79.95 and assembles quickly. Elecraft gear is available online at <http://www.elecraft.com>.

Some kit receivers have a hard time driving a speaker and producing good-quality audio at sufficient volume. A kit to build an inexpensive audio amplifier is produced by the 4-State QRP Group for $20. The Enhanced Manhattan Islander Audio Amp will do the trick when room-filling audio is needed. This kit is made "Manhattan" style, a method I will cover in a lot more detail in a future column. However, carefully following the instructions with this kit will be a great introduction to the world of Manhattan construction.

Tracing Trouble

One of the more difficult tasks when troubleshooting kits is going stage by stage to isolate a problem component. Logically, the best way to do this is to start at the end, and using a receiver for an example, the audio output. Using a signal generator works great unless that particular receiver does not cover the frequencies in your generator kit. Using a *signal injector* allows you to place a signal that has numerous harmonics into a circuit to see if anything is getting through. By using a square-wave injector, you can listen for any output using the receiver's audio output. By working your way back toward the antenna input, you can find the stage where the signal disappears and isolate what is causing the trouble. A *signal tracer* lets you listen for signals along the receive

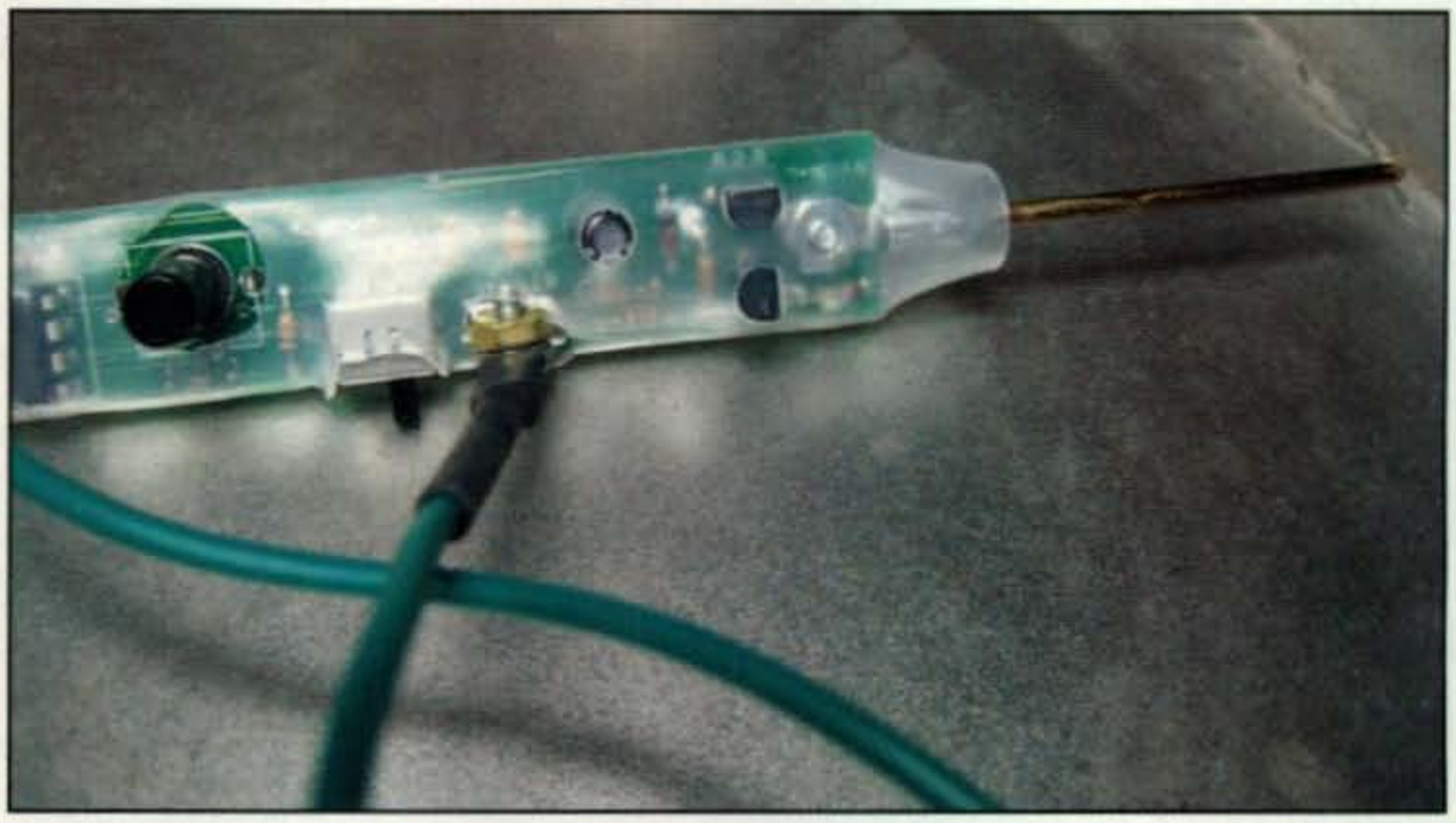

Photo C– Signal tracer/injector probe end showing volume control and inject/trace switch (next to wire).

Photo D– Hendricks RF Probe kit unassembled. Notice the low parts count, making it easy to assemble.

chain from antenna to output using the audio output of the tracer itself. Most tracers have a small speaker or headset jack to enable you to listen to your circuit. Hendricks Kits at <http://www.qrpkits.com> sells a combination signal tracer/injector kit for $30 that can perform both duties (see photos A, B, and C). This kit is easy and fun to build and becomes an important tool to use in building kits. It comes with the battery and all you need to supply is an inexpensive headset with a 1/8-inch stereo plug.

Tracing transmitter problems calls for an RF probe. *Caution!* An RF probe is *not* for use in RF power amplifier sections; *only* use them in oscillators! Using a probe, you can measure actual RF voltages to determine if RF is being generated and amplified. RF probes are extremely simple to make and probably one of the most inexpensive pieces of kit test equipment. Most of these simply plug into your multimeter to display the output. Hendricks Kits has an RF Probe kit for $15 (photo D), but if you purchase it with the Tracer/Injector kit, it is only $40 for both kits. Rex at QRPme has a surface mount RF probe kit for $6 but without an enclosure. You can use things like a pill bottle or other small plastic case for an enclosure. Check out <http://www.qrpme.com> for this kit. Don't let the handful of surface mount parts keep you from making this very easy kit! Until next time . . .

73, de KØNEB

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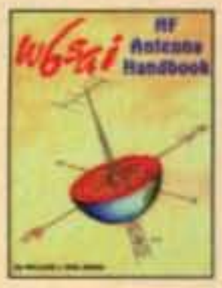

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By Juergen A. Weigl, OE5CWL

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With calculations and practical experience, this book shows which basic concepts have to be considered for sloper antennas for the low bands. These fundamentals are supplemented by construction guidelines for directive antennas using a single element or several elements. You'll find all the information needed for successful home building of the antennas.

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by Paul Lee, N6PL

Learn basic theory and practice of the vertical antenna. Discover easy-to-build construction projects.

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by Bob Haviland, W4MB

A comprehensive guide to the construction, design and performance of Quad Antennas.

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The NEW Shortwave Propagation Handbook

by W3ASK, N4XX & K6GKU

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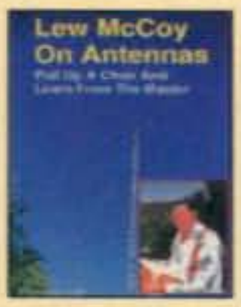

McCoy on Antennas

by Lew McCoy, W1ICP

Unlike many technical publications, Lew presents his invaluable antenna information in a casual, non-intimidating way for anyone!

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The Short Vertical Antenna & Ground Radial

by Jerry Sevick, W2FMI

Small but solid guide walks you through the design and installation of inexpensive, yet effective short HF vertical antennas. If antenna restrictions are a problem? This book could keep you on the air!

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by Dave Ingram, K4TWJ

Do-it-yourself electronics projects from the most basic to the fairly sophisticated. You'll find: station accessories for VHF FMing, working OSCAR satellites, fun on HF, trying CW, building simple antennas, even a complete working HF station you can build for $100. Also includes practical tips and techniques on how to create your own electronic projects.

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magic in the sky

BY JEFF REINHARDT,* AA6JR

April Fool or Not?

As a group of those who share a technical pastime, or passion, our culture of inventiveness both precedes us and abounds. It is also fed, or perhaps feeds upon itself, from that very first "eureka" moment, usually embedded in that rare occurrence when one of our creations, or repairs, actually works – even if only for a nanosecond or two.

The rare genius of good Professor Heisseluft notwithstanding, many of us have been inspired by the vision, inventiveness, or reckless abandon for personal safety of others. Ben Franklin flying a kite in a thunderstorm comes to mind, and perhaps Madame Curie experimenting with radium. Both knew they were putting themselves at risk; perhaps at the time they did not know exactly *how much* risk their actions invited.

My personal experiments in radio have been blessedly absent of true adventure, such as being thrown across the room by a rude and ill-mannered voltage. Much of my early experimentation was with passive circuits such as crystal radios, later daringly upgraded to diode models. OK, you can say "wimp," but after a few experiments that familiarized me with tingles of 110 AC volts from occasionally misplaced fingers, it was an experience I quickly associated with words such as "unpleasant."

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e-mail: <aa6jr@cq-amateur-radio.com>

In the seventh grade our science teacher gave a classic lesson on the electrolysis of water using a DC voltage, two inverted test tubes, each with one of the DC wires at its base, and a dash of vinegar in the water to act as a catalyst. *Voilà!* After a day we had the classic two test tubes filled with the base components of water—one with hydrogen, the other with oxygen. The instructor lit a match while lifting and tipping the hydrogen-filled test tube and the gas burned with a *pop!* He then blew out the match and inserted it into the oxygen test tube, and the pure oxygen caused it to briefly burst back into flame. From the vantage point of a seventh grade science geek, *how cool is that?*

I explained to him that my electronic-technician dad had a big DC power supply in his basement workshop, and I would repeat the experiment at home using bigger containers, maybe even jars, to collect the hydrogen and oxygen. I asked if I should write a paper (for extra credit, of course) with my findings. The science teacher wisely responded, "No need to write a report,. I'll read about it in the newspaper."

Undaunted, I survived my at-home experiments, and in the eighth grade I took on the challenge of inventing perpetual motion, simply because I read it had not yet been done. Forget flywheels and balance mechanisms, that's old-school. On paper, I designed a project with an elevated reservoir, a hydroelectric power plant at the bottom, and a

One of Jeff's early chemistry experiments.

siphon to take the water back up to the reservoir. OK, so in the scale mockup stage, I learned siphons can only work downhill, overcoming just a little lift with the help of atmospheric pressure. Not one to give up a good idea easily, instead my Mark II generator powers an electric pump. Eighth grade students are blissfully ignorant of resistance, friction, efficiency, pumping losses, and the like. Hey, it made sense at the time, when you can be 13 years old and know everything about everything, right?

Fast forwarding through time, tapping into her father's faulty genetics, a third-grade science project inspired my daughter to build the *"Back to the Future"* anti-gravity skateboard. We actually came up with a design that got her a good grade. It was a foam hoverboard genuinely floating in a confined environment of opposing magnets. I think her artwork was a key element that helped to carry the day with her teacher.

Fact or Fiction?

If you can transmit electrical energy across a small space, like in the windings of a transformer, how about doing it across larger spaces such as from the power plant to a pickup at your home? Think of it! Doing away with those unsightly and storm-prone wires that clutter the scenery. No more wind or ice-storm blackouts. After all, we can send information through wireless means, so why not energy? Crazy?

Not according to Nikola Tesla, about whom we've written here before and who was regarded by some as a genius and by others a menace, or more kindly, a dreamer. However, out of dreams certain realities are born. After all, Tesla demonstrated the practicality of AC power, much to the chagrin of Thomas Edison, who was heavily invested in establishing DC as the standard for urban power distribution. It is claimed that in 1899 Tesla lit 200 light bulbs from a distance of 26 miles with no connecting wires. However, there does not appear to be to be reliable documentation of the event. Or is there?

Don't Breathe the Exhaust Air

Somehow, inspiration hit inventor Israel Siegel and his ingenuity was awarded US Patent #5375430 in 1993 for the Gravity Powered Shoe Air Conditioner. This clever design could give you happy feet on a hot summer day. I wonder if it could give you warm feet in the winter, or maybe if you walk backward?

Further spelunking in patent files reveals many items inventors thought we couldn't live without, such as illumi-

nated tires, glasses that flash subliminal messages before our eyes, the rocket belt (which made an appearance in a James Bond movie) or perhaps US patent #6826983, an automated light-bulb changer. And no, it's not the office maintenance custodian.

I give my father credit for inventing the TV remote control in 1956. In a moment of inspiration he said, "Jeff, go over and change the TV to channel 2." Darned if it didn't work! He used the device for several years and it didn't require batteries, but instead was powered by corn flakes, bubblegum, cupcakes, and ice cream. In an early victory for multitasking, he later expanded the remote's capabilities into retrieving an occasional brown bottle from the refrigerator. I was proud of the old guy. Somehow, though, Zenith never got its groundbreaking "Space Command" remotes to perform at the same level of expanded capabilities.

My Ham Radio Invention Wish List

What's on your invention wish list? Besides world peace and a 200-miles-per-gallon, high-performance automobile engine, it would be nice to see small, broadband HF antennas that send and receive well; a mobile AM, FM, HF, VHF, UHF, GPS radio that actually fits in the space now occupied by standard radio receivers in cars; a means of HF propagation that defeats the absence of sunspots; and the placement of a solar-powered repeater on the moon, making EME a bit more attainable for those of us who are "antenna challenged."

Oh. yeah . . . I also want to see a working version of the *Star Trek* transporter (I'll volunteer Editor Rich, W2VU, to try that one first). Interestingly, much of our so-called science fiction either foretold or inspired many of today's realities.

When it comes to successes, we're often taught to think of the successful efforts by the likes of Gutenberg (who laid the groundwork for making this magazine possible), Morse, Bell, Marconi, Edison, De Forest, Armstrong, Bardeen, Shockley & Brattain, and so many others. The faulty impression would be that they only knew success; the truth is that many "failed" efforts and experiments preceded their respective accomplishments. So maybe Tesla was a bit "off beat." It's hard to think of an inventor who didn't have a design or idea that didn't work.

One of the lamentable upshots of today's manufactured and dependable electronics, including ham radios, is the disappearance of the home workshop, complete with "junk boxes" of salvaged or surplus parts, Fahnestock clips, and other items that made "breadboard" designs possible, either for a specific project or a winter's night of puttering around or experimenting.

Thus, while we may chuckle at an item or effort that's fitting for the April edition of *CQ*, many an unconventional idea has made bank for its visionary "parent." So what's up *your* sleeve? Cold fusion? Magnetic propulsion? Power generated by ocean waves? A new communications mode? How about 3D home TV that doesn't require goofy glasses?

Dare to think big and outside all the boxes. After all, the "impossible" accomplishment of sending communications over long distances in real time was once the domain of gods known to some as Mercury or Hermes. Today, it's folks like you and me who have at our command *The Magic In The Sky*.

Sources

http://www.pbs.org/tesla/ll/index.html

http://www.weird-websites.com/justweird/inventions.htm

http://acidcow.com/pics/4094-crazy-inventions-of-the-past-30-pics.html

what's new

BY JOHN WOOD,* WV5J

Getting the RF Out

Radios are great, but if you can't properly get the RF from the output connector to the antenna, you're not going to enjoy very many QSOs. Therefore, let's spend a little time here in the April edition of "What's New" taking a look at some of the new items now on the market that help convey your signal and verify that it's getting to your dish, wire dipole, or aluminum skyhook.

Jetstream Wattmeters

Jetstream recently surprised a lot of amateurs by coming out with a new ham FM rig that is dedicated to the 222–225 MHz band. Now Jetstream has followed that move by coming out with two new wattmeters—one that covers 1.6 to 60 MHz (photo A), and a second that covers the 222-MHz ham band along with the 2-meter band and the ham 440 UHF band, in fact, every frequency from 125 MHz to 525 MHz (photo B).

However, these are not your typical handheld meters. These Jetstream meters are built to be easy to view. They come with large cross-needle meters with indicators that move in front of a very smooth, backlit, three-color scale.

The low-band model JTWXHF for 1.6 to 60 MHz covers three power scales—20, 200, and 2,000 watts—and Jetstream states that power accuracy is within 10 percent at full scale. The Model JTWXHF comes with SO-239 connectors and carries an MSRP of $129.95.

As for the Jetstream Model JTWXVU, which covers VHF and UHF frequencies from 125 to 525 MHz, it also offers a large, cross-needle meter with a smooth, backlit, three-color scale. The JTWXVU covers three power scales—2, 20, and 200 watts—and promises an accuracy of 10 percent at full scale. Equipped with SO-239 connectors, the JTWXVU has an MSRP of $129.95.

*1870 Alder Branch Lane, Germantown, TN 38139
e-mail: <wv5j@cq-amateur-radio.com>

For more information about either wattmeter, visit <www.jetstream-usa.com>.

MFJ Yagi Boom-Mounted Balun

Connecting your transmitter to your antenna can be a little easier now that MFJ is selling a boom-mounted 1:1 current-choke style balun, which comes ready to be installed on your HF or 6-meter Yagi antenna to transition from unbalanced feedline (coax) to the balanced driven element.

According to MFJ, this 1:1 balun prevents unwanted pattern distortion from feedpoint imbalance, radiation from the outer surface of the coax shield, element detuning, RFI to consumer electronics, and noise transfer to the radio's receiver.

MFJ uses a toroid-style transmission-line choke that is rated for maximum legal power on SSB/CW and delivers an impressive 35 dB of through-transmission (S21), common-mode isolation. This model, the MFJ-2911 (photo C), comes with an input SO-239 coax connector and tinned copper

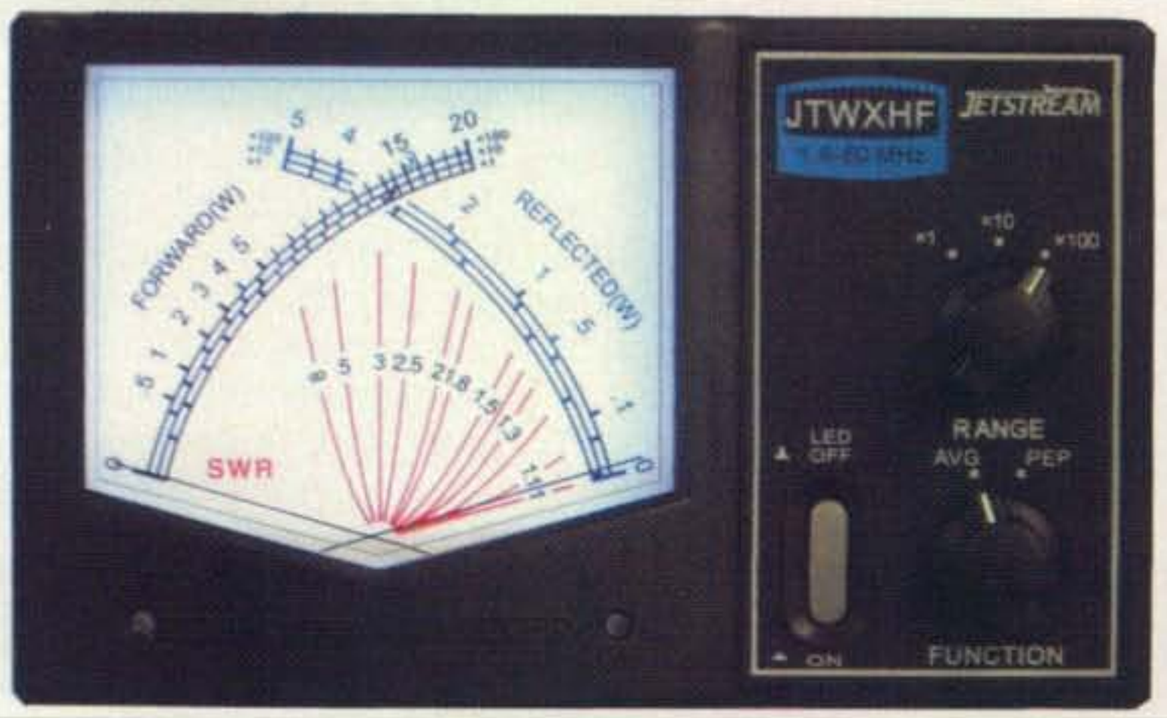

Photo A– Jetstream has just added two new large-scale, easy-to-read wattmeters to its line of current products. This low-band model, the JTWXHF, covers 1.6 to 60 MHz.

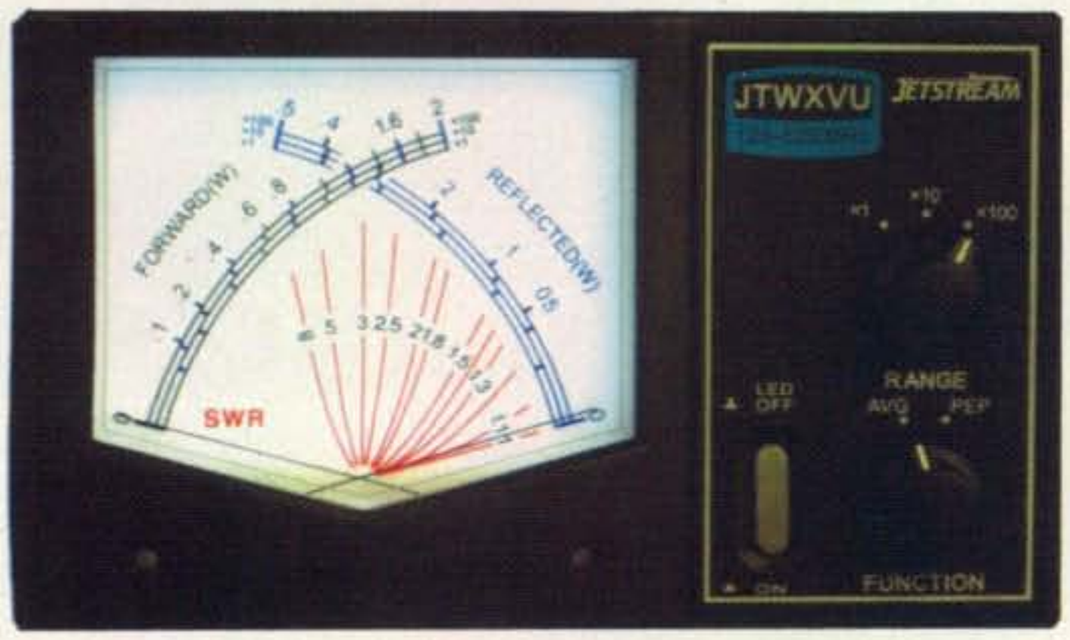

Photo B– The VHF version of the new Jetstream wattmeters, the JTWXVU, covers 125 to 525 MHz.

Photo C– MFJ has brought out some new match-making products which include the boom-mounted, 1:1 current, choke-style balun designed to match unbalanced feed lines (coax) to the balanced driven element. The balun is mounted in a molded case that uses an SO-239 for input and tinned copper wire leads for output.

output leads, all tied to the 1:1 balun that is built inside of a molded case that measures 5 1/2 inches wide, 2 inches high, and 3 inches deep. The MFJ-2911 sells for $39.95.

MFJ is also offering the model MFJ-2912, which mounts on the exterior wall of your shack to keep RF out of your operating position and away from internal house wiring. MFJ says the balun also prevents electrical noise from being generated in your location, migrating up to the antenna feedpoint and raising your receiver's noise floor.

The toroid-style transmission-line choke is rated for maximum legal power on SSB/CW and it reportedly delivers an impressive 30+ dB of through-transmission (S21) common-mode isolation on 80–10 meters. It also creates a convenient disconnect point when you want to physically separate your transmitter from your antenna to gain lightning protection.

The MFJ-2912 comes with all-stainless hardware, rugged components, and SO-239 connector. It measures 4 inches wide, 2 1/8 inches high and 2 3/4 inches deep and sells for $39.95.

Also, for the ham folks who love wire dipoles to broadcast their signals on the HF bands, MFJ is now offering its MatchMaker™ Feed Network. Designated as the MFJ-2975, this matching device sells for $39.95 and is designed to empower hams who would like to raise their HF dipoles high above ground for better DX without losing a perfect 1:1 match. MFJ says this center block unit transforms 75-ohm loads down to 50 ohms and has an effective 1:1 current balun for transition from balanced element to coaxial line. The MFJ-2975 handles 1.5 kW PEP SSB/CW and measures 4 inches wide, 1 1/2 inches high, and 2 3/4 inches deep. More information about the MFJ-2975 is available at <mfjenterprises.com>.

MFJ models 2911, 2912, and 2975 are all protected by MFJ's famous No Matter What™ one-year limited warranty. MFJ promises to repair or replace at its option the MFJ product or products you purchased no matter what for one complete year.

To order, get a free catalog, or for your nearest dealer call 1-800-647-1800; write to MFJ, 300 Industrial Park Road, Starkville, MS 39759; go online to <www.mfjenterprises.com>; or fax to 1-662-323-6551.

Bird Technologies Group Combiner, Coupler

Not every ham is going to have a need for a multi-band, short-haul control station combiner or perhaps a multi-band coupler, but isn't it nice to know that Bird Technologies Group TX RX Systems is out there and making such devices should a need ever arise?

According to information provided by the manufacturer—the same manufacturer that introduced the patented Thruline Principle, which ushered in the defacto standard tool for RF power measurement—Bird's multi-band Control Station Combiner Model 43-05-01 series (photo D) provides frequency-agile operation across multiple bands. Operating in frequency ranges of 40–960 MHz, the multi-channel multi-band combiner interoperability can be combined into a single network for efficiency. The unit is low profile for space-efficient installation while also providing cost savings by combining multiple bands in the same combiner.

This unit ideally is used with Bird's multi-band coupler (photo E).The multi-band coupler, Model 80-05-14, reduces tower transmission lines at sites operating from VHF frequencies to 900 MHz. Bird tells us it guarantees out-of-band isolation, while it also helps to reduce cost and tower-loading time.

For more details about Bird Technologies Group TX RX Systems' Control Station Combiner and multi-band coupler, visit <www.bird-technologies.com>.

"What's New" Book Corner

Even though electronic publishing is in vogue these days, books are still being printed and published in the old-fashioned way, including books of interest to amateur radio operators. A couple of examples are some recent books writ-

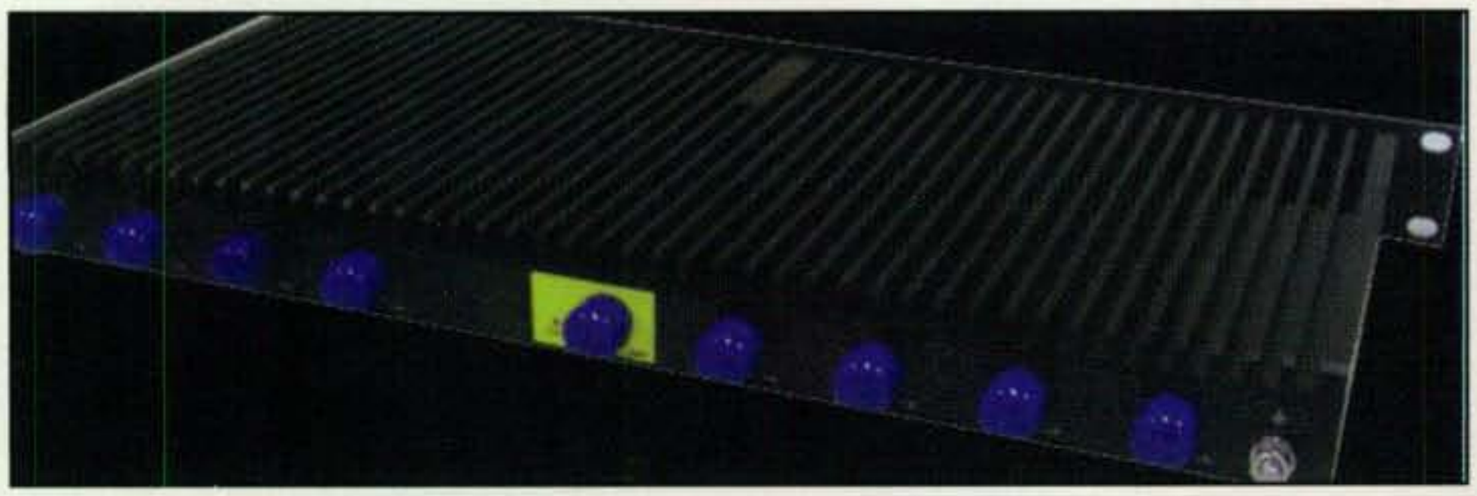

Photo D – From a brand name well known in ham radio circles, Bird Technologies, comes a multi-band Control Station Combiner that operates on frequencies 40 to 960 MHz.

Photo E– Bird's multi-band coupler typically used with the company's new Control Station Combiner.

Photo F– Ten-Tec, The First 40 Years, *by Nancy Williams, NR4RR, is a history piece commissioned by Ten-Tec Corporation that relates the life of Ten-Tec's founder and also the corporation today and its products and staff.*

ten by Nancy Williams, NR4RR, an amateur radio buff who writes about, what else? Amateur radio.

One of Nancy's most relevant books is *Ten-Tec, The First 40 Years* (photo F), a history piece commissioned by Ten-Tec Corporation that details the life of Ten-Tec's founder Al Kahn, and also explores the corporation today and its products and staff. Williams also examines the company's high standards of service and quality, which have helped make it a communications corporate leader.

Moving from non-fiction to fiction, Williams also has now given readers a suspense novel entitled *The Agenda 21 Conspiracy* (photo G), which has been described as an amateur radio political/environmental conspiracy book that is based on an actual document called Agenda 21, produced by the United Nations at a summit meeting in Rio de Janeiro in 1992.

"When I write novels, I love to write about real-world concerns," said Williams. "I take some problems I find scary and tell myself 'what if.' I then extend that what-if to the worst possible conclusion. In a way, I am trying to warn the reader of the problem while making my novel really enjoyable. And needless to say, the ham radio operators in my story are always the good guys."

The Agenda 21 Conspiracy has been recognized by the Southeast Writers Association with a second-place award for best novel.

Williams' books *Ten-Tec, The First 40 Years* and *The Agenda 21 Conspiracy* are available through Nancy's website at <www.nlwilliamswriter.com>, through Amazon.com, or through Springflower Publishing, 528 Meadowlark Trail, Suite 357, Chattanooga, TN, 37412, for $23 and $19, respectively.

The folks over at the ARRL have also been busy in the publishing arena and have just released their latest versions of the 2009 compilation of periodicals *QST, QEX,* and *The National Contest*

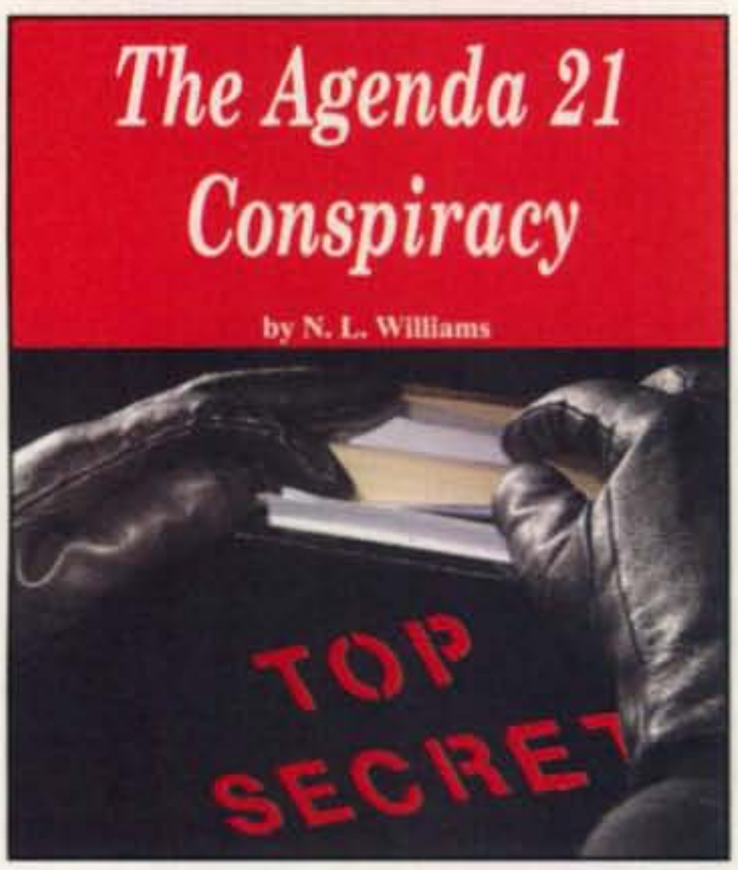

Photo G– A suspense novel entitled The Agenda 21 Conspiracy, *also by NR4RR, has been described as an amateur radio political/environmental conspiracy book.*

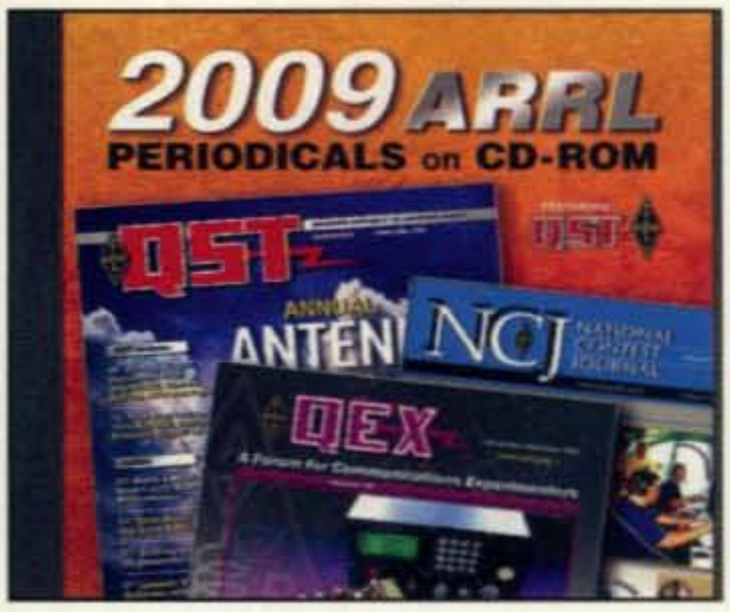

Photo H– The ARRL has just released its latest version of the 2009 compilation of periodicals QST, QEX, *and* The National Contest Journal *on CD-ROM.*

Looking Ahead in CQ

Here are some of the articles we're working on for upcoming issues of *CQ*:

- DXpedition to … New York, by W2VU
- Build a Capacitive Touch Paddle, by WA8SME
- Results, 2009 CQ WW RTTY DX Contest
- 2009 Results/2010 Rules CQ WW Foxhunting Weekend

Do you have a ham radio story to tell? See our writers' guidelines on the CQ website at <http://www.cq-amateur-radio. com/guide.html>.

Oops…

In February's project article "A High Performance Regenerative Receiver," by Charles Kitchin, N1TEV, the values of two components on the schematic were incorrect. Builders should be aware that the correct value for R11 is 2.7 ohms and for C21 it is 0.1 µF. These components were added to prevent self-oscillation by IC2, and in most cases, using the FAR Circuits' PC board and short, direct wiring, these two components can be omitted altogether. In all cases, builders should wire and test the audio stages first and check for stability before wiring the rest of the circuit.

Journal on CD-ROM (photo H) and the *Antenna Designer's Notebook* (photo I) written by Brian Cake, KF2YN.

The CD-ROM contains the full content of every 2009 issue of *QST, QEX,* and *NCJ* and should be able to be installed on most computers that have an Intel Pentium or equivalent processor and use Microsoft Windows® 2000, XP, Vista, or Windows® 7 operating systems. The CD-ROM, available for purchase at <www.arrl.org>, can also be used on a Macintosh computer equipped with a Power PC processor, and the Mac OS X operating system. Minimum computer requirements are 520 MB of RAM, 110 MB of available hard disk space, a browser such Internet Explorer version 7 or 8, Netscape 7 or higher, Opera, Firefox, or Mozilla for the PC, or Safari 1.2.2 for the Mac, along with a platform compatible copy of Adobe Acrobat Reader. The CD-ROM is priced at $24.95.

Brian Cake's *Antenna Designer's Notebook* is subtitled "An Exploration of the Art of Antenna Design," which should make it a must read for any hams who have that urge to create their own antennas from scratch or to try and improve upon the efficiency of commercially designed and manufactured antennas. In the book, Cake covers topics such as the introduction and history of the Yagi antenna, how to build boxkite Yagi antennas and arrays for single-band and multi-band use, Twin-C antennas, field-zeroing vertical antennas, C-Pole antennas, loop antennas, and even compact ground-plane antennas. The *Antenna Designer's Notebook* comes with its own CD-ROM and sells for $34.95.

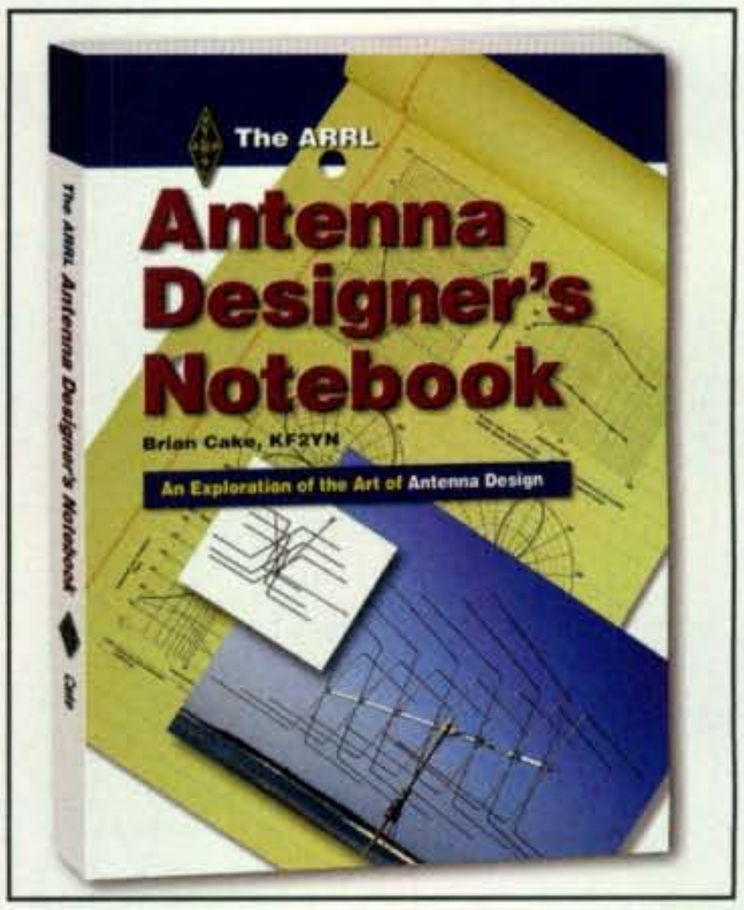

Photo I– Also published by the ARRL is the newest version of Brian Cake, KF2YN's Antenna Designer's Notebook, *subtitled "An Exploration of the Art of Antenna Design."*

Both new ARRL products are available at the organization's website: <www.arrl.org>.

SUCH A HAM

Yes, Mavis, QRP projects can be quite small.
Let's take a peek under your coffee mug.

bhi Ltd. DSP Speaker Update

Back in the February "What's New" column, we took a look at a couple of the new DSP noise-canceling speakers from bhi Ltd. and now we have an update. bhi Ltd. has let us know that GAP Antenna Products are authorized distributors of the new bhi DSPKR and Desk Top Noise Away DSP noise-canceling speakers under the GAP HEAR IT brand. For more information, visit <www.gapantenna.com> or call 1-772-571-9922.

That's it for this month. Please contact me at the address on the first page of this column if you would like to see your products covered in a future edition of "What's New." 73, John, WV5J

Note: *Listings in "What's New" are not product reviews and do not constitute a product endorsement by CQ or the column editor. Information in this column is primarily provided by manufacturers/vendors and has not necessarily been independently verified. The purpose of this column is to inform readers about new products in the marketplace. We encourage you to do additional research on products of interest to you.*

Good Hype, Good 'tennas, Good Gnats

BY DAVE INGRAM,* K4TWJ, SK

This column was written by Dave before he suffered a heart attack on New Year's Eve that resulted in his becoming a Silent Key three weeks later. —W2VU

Sunspot counts may be uncommonly low, but interest in QRP and the ultra-low-power side of QRP, which we call QRPp, continues to be quite high in popularity. That is good, as it is right in line with today's quest of going "ecologically green"—of becoming more energy conscious and minimizing air pollution—or in our case, minimizing ionospheric pollution from overly strong signals. I often cite some real-life on-the-air examples of that fact, and two more examples occurred during the week while I was putting together this column.

First, Lind, WA2WMR, answered one of my CQs on 30 meters with a clean but slightly weak signal. How weak? I've heard some ops running 60 or 70 watts and a random-wire antenna as weak or weaker than WA2WMR was, and I often hear Europeans running 100 watts and (mild) gain antennas with weaker signals. The real surprise surfaced when Lind reported his rig was an Elecraft K1 running 5 watts to a Hustler vertical (photo A). Lind is not a hopelessly addicted QRPer—not yet—but he is headed that way at a good clip.

Another good testimonial for QRP followed a couple of days later when Karl, N2KZ (photo B), answered another one of my 30-meter CQs. Only after the initial exchange of information did he report his rig was a classic Oak Hills Research OHR-100 transceiver running 5 watts to a dipole up 30 feet. That surprise was followed by a list of several active and familiar stations Karl had recently worked with QRP on 30 meters—9A1CCB, 6W1SJ, IK2DJV, XE3ARV, and others. Karl also said the Oak Hills transceiver was his "big rig," and most of his operations are with 1-watt Small Wonder Labs mini transceivers for 40 and 20 meters or his 250-milliwatt Tuna Tin 2 on 7.040 MHz. Yes, you can work EAs, DLs, and Jas with 100 watts and a beam antenna, but the real thrill and exhilaration is doing it with 5 watts and a dipole—or less. That is when every QSO becomes special!

Gnat Transceiver

The minimalist aspect of QRP is inspiring some unique circuit designs in single transistor mini-transceivers, and one of the most clever designs I have seen is showing in photos C, D, and E, plus figs. 1 and 2, and Table I. This little gem was designed by Chris Trask, N7ZWY, nicknamed

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e-mail: <k4twj@cq-amateur-radio.com>

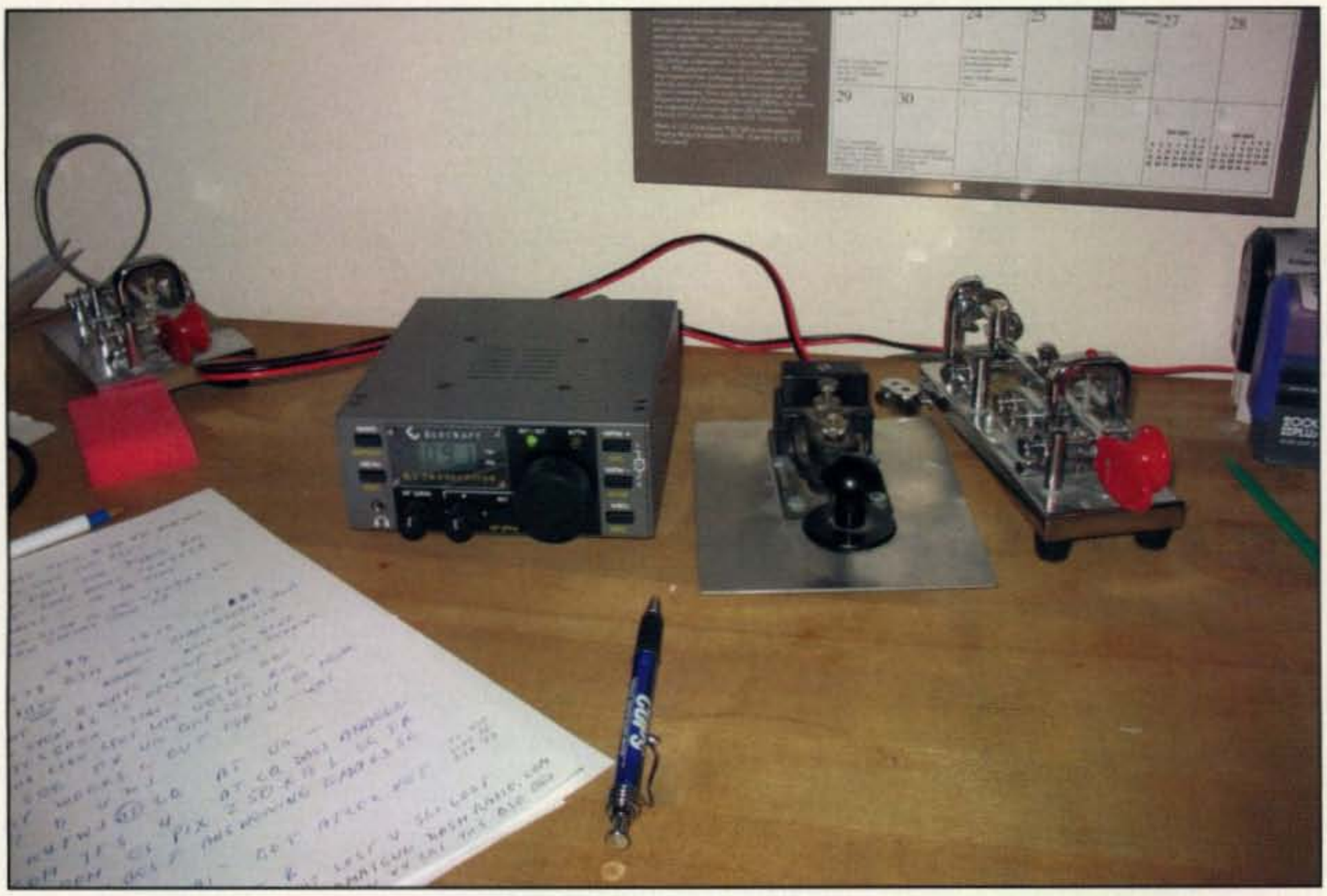


Photo A– This compact and "ecologically green" QRP setup of Lind Aitken, WA2WMR, consists of an Elecraft K1, Navy Flameproof key, Vibroplex paddle, and Deluxe Blue Racer bug. The rig sees action both in the shack and in the field using batteries and solar charger. (Photo courtesy of WA2WMR)

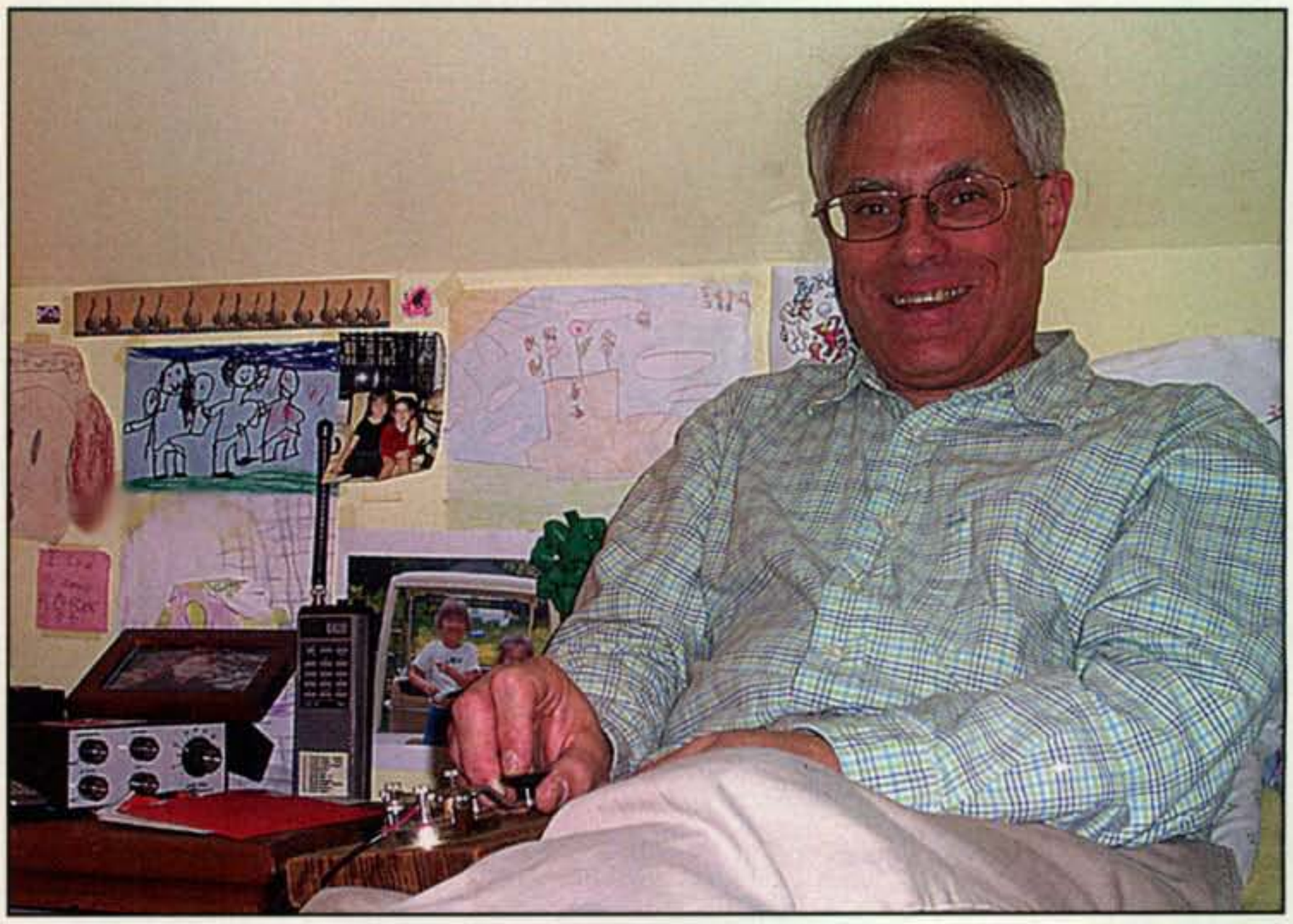


Photo B– Another "ecologically green"-oriented QRPer, Karl Zuk, N2KZ, with his favorite rig—an Oak Hills Research OHR-100A. The mating antenna is a dipole 30 feet above ground. Karl also agrees with my thoughts of 30 meters being the ideal band for QRP. (Photo courtesy of N2KZ)

"The Gnat," and it originally debuted in the Spring 2009 issue of the G-QRP Club's magazine *Sprat* (www.GQRP.com). Unlike other single-transistor transceivers, it does not use a multi-contact T/R switch. The transceiver can be built for 80-, 40-, or 30-meter operation, runs .5 to 2 watts output and works full break-in with all switching accomplished by the key. That's right—key up, it receives; key down, it transmits. Exact power output, incidentally, depends on your choice of components, and yes, experimenting

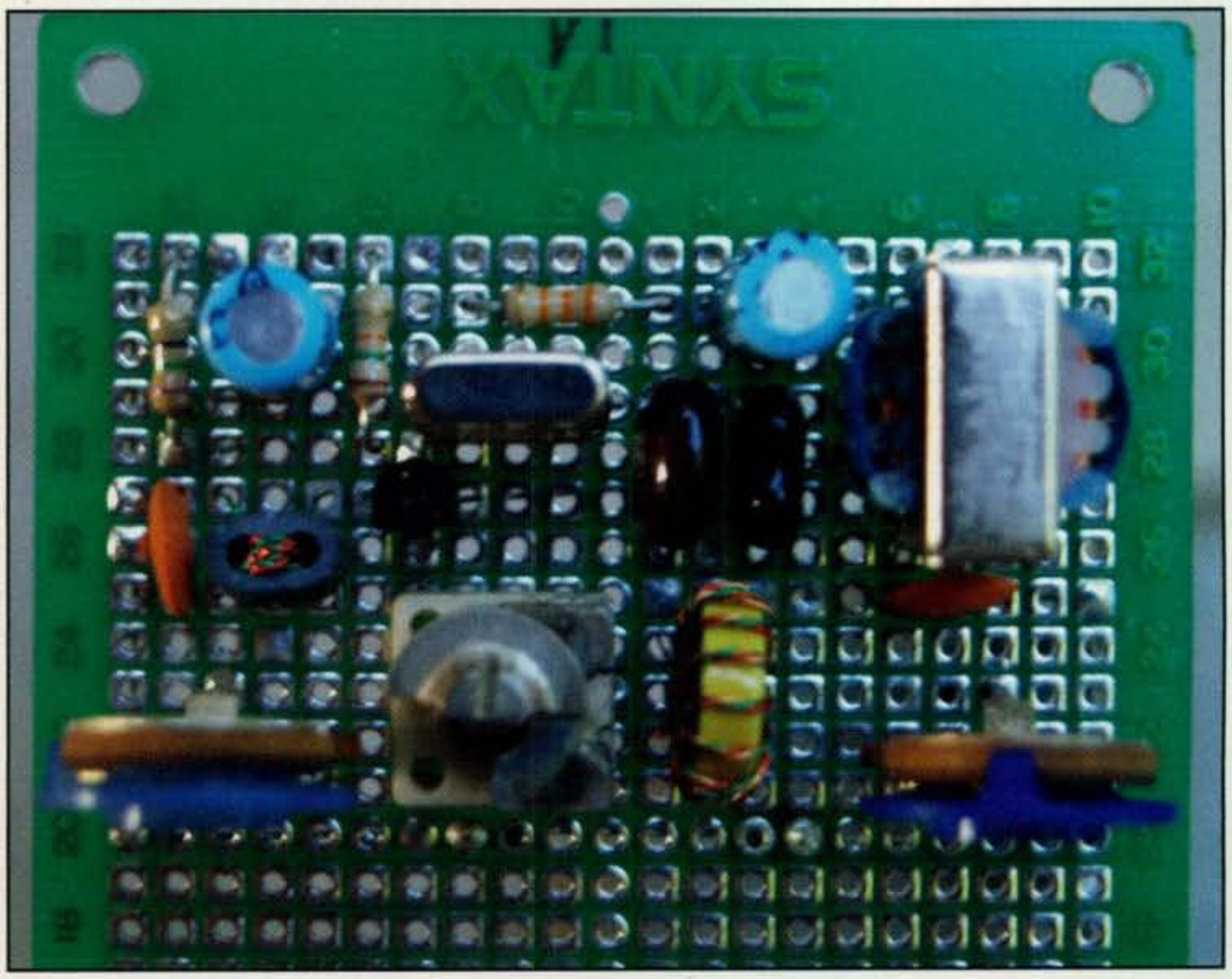


Photo C– Prototype of the Gnat QRP mini-transceiver designed and built by Chris Trask, N7ZWY. Parts are mounted on an approximately 2-inch square area of perfboard. The little rig can be assembled for 80-, 40-, or 30-meter operation and runs .5 to 2 watts output. (Photos of the Gnat courtesy of N7ZWY)

with component values is encouraged (we call it "dinking").

Understanding how the Gnat's circuit works may prove challenging, so bear with me as I give it the old "quick and simple" or "skim the top" description. First looking at it as a receiver (key up), Q1 plus T1 and its associated circuitry of C3, C4, C7, and crystal Y1 function like a regenerative detector. Simultaneously, T2 allows the effects of R5 and R6 to be felt in the emitter circuit so R6 can control feedback gain. The general point of that gain is also set by the ratio of C3 and C4, and the span of regeneration control R6 can be set/varied by R5 (if needed; see parts list).

Now look back at T1, C3, C4, Y1, and Q1. While this part of the circuit is acting like a crystal oscillator, incoming signals are coupling from the antenna and mixing with that oscillator's signal (on left/primary side of T1) and between the base and emitter of Q1. An amplified copy of that signal appears at the collector of Q1, passes through L1 (which, being tuned to RF, is transparent to audio), feels the effect of C2 acting as a de-emphasis filter, and appears at the primary of T3. That (amplified) audio is then passed through T3 and output to a high-impedance earplug, similar to the type used with crystal radios.

Next looking at the Gnat as a transmitter, closing the key shorts the right side of T2, and the resultant change on the left side of T2 causes the emitter of Q1 to conduct to ground. Also note with the regeneration control shorted, overall resistance in the emitter leg decreases substantially and that increases the oscillator's signal from a couple of milliwatts to full output. Remember C2 at T3? It served as an AF de-emphasis filter on receive, but its value (0.1 µF) passes RF to ground on transmit. That grounds the center tap on T1 and provides the required 180-degree phase shift for full-power oscillation. Notice T2 is trifilar wound. That is, you twist three strands of wire together to make one (trifilar) wire to wind the coil. After winding the required number of turns on the toroid, both ends of one strand are separated to the left for T1's secondary winding. An opposite pair of ends of the remaining two strands are next twisted together for the primary winding's center tap, then the remaining two leads are separated and marked as the primary winding's ends. Table I lists coil turns for T1 plus capacitor values for C3 and C4 for 80, 40 and/or 30 meters operation, and some dinking may be required here especially if you use a different type toroid core or transistor.

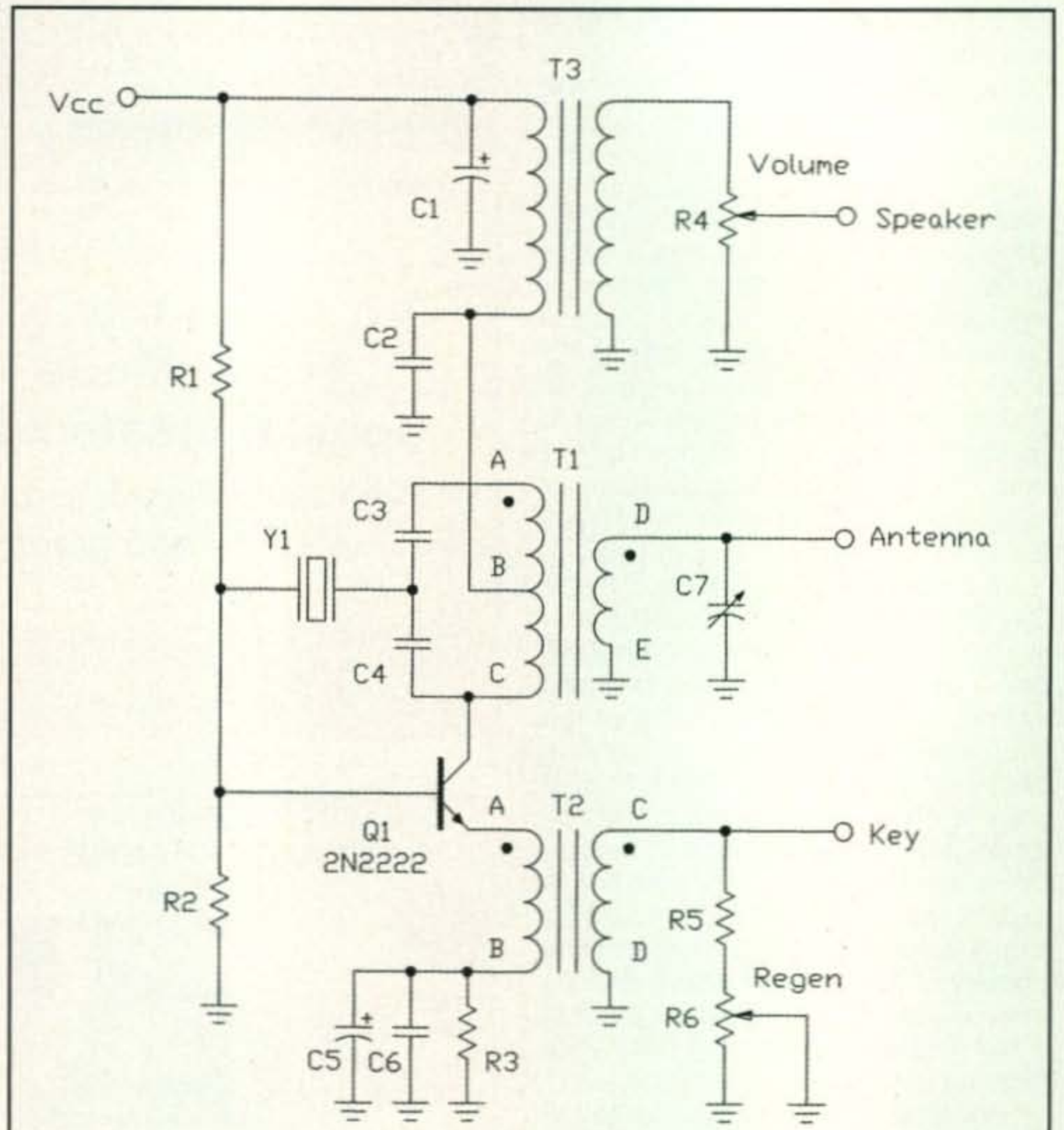


Fig. 1– Circuit diagram of the cleverly designed Gnat QRP mini-transceiver by N7ZWY. (Discussion in text)

Parts List

C1, C5:	47 µF, 16W VDC aluminum electrolytic
C2, C6:	0.1 µF,
C3, C4:	See table below
C7:	25 pF variable
Q1:	2N2222 or 2N4401 (see text)
R1:	33K
R2:	15K
R3:	33 ohms
R4:	5K variable
R5:	Jumper; experiment to derive value of R if needed
R6:	500 ohm variable
T1:	2CT:1 transformer (see text)
T2:	1:1 transformer (see text and table below)
T3:	8 ohm to 1K audio transformer (Xicon 42TL013-RC, available from Mouser, or RadioShack 273-1380)
Y1:	See table below

Frequency	3.5 MHz	7.0 MHz	10.0 MHz
C3	270 pF	120 pF	82 pF
C4	180 pF	82 pF	56 pF
T1	20 turns #30 trifilar wire on T37-6 core	15 turns #30 trifilar wire on T37-6 core	12 turns #30 trifilar wire on T37-6 core
Y1	3.598MHz	7.030 MHz	10.130 MHz

Table I– Parts list and values for frequency-dependent components of the Gnat.

Photo D– Here is how T1 for the Gnat looks after being trifilar wound with 20 turns for 80 meters. The secondary winding ends are to the left and the center-tapped primary windings are to the right.

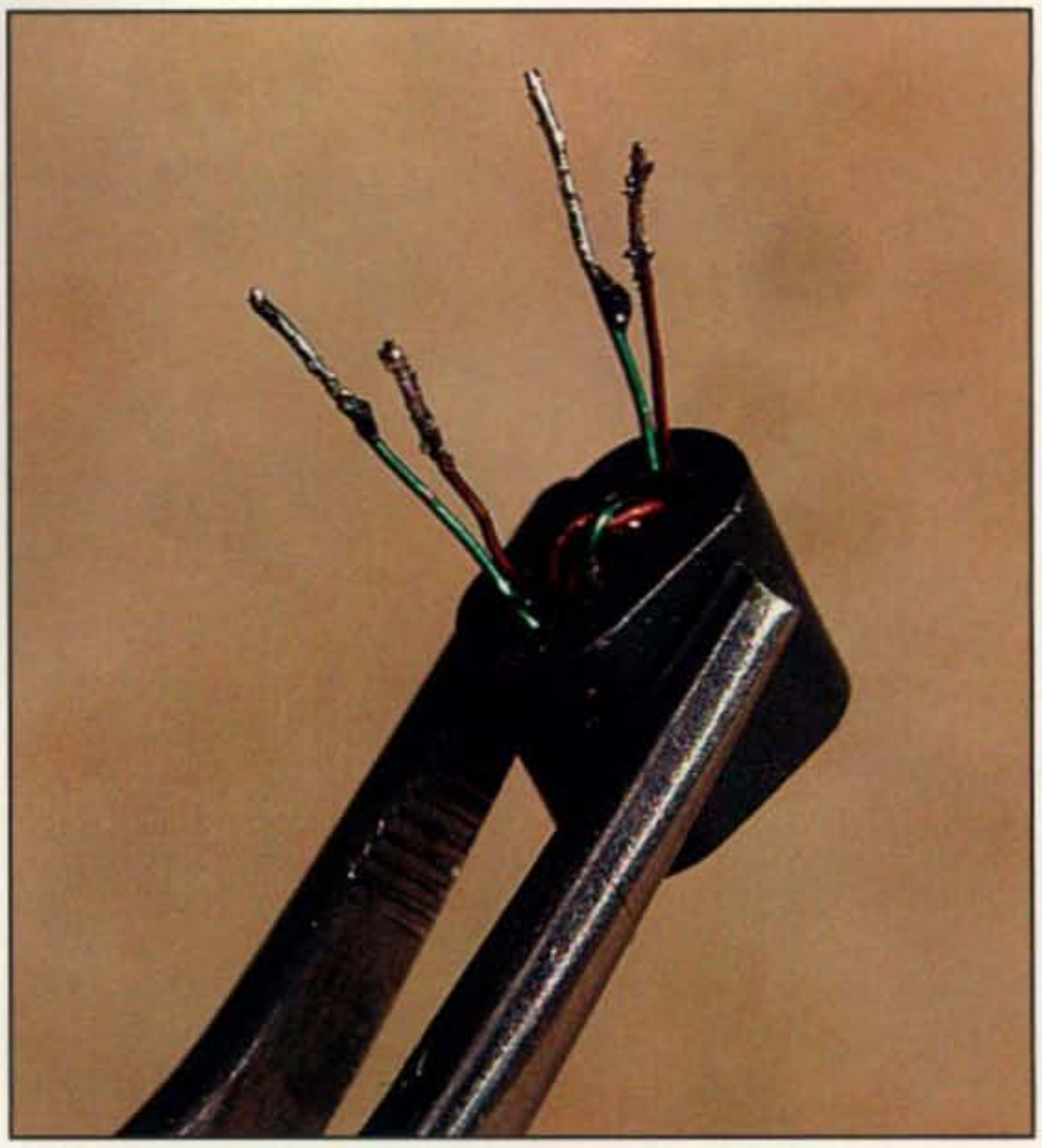


Photo E– Close-up view of T2 with the two wires (bifilar) would through the two holes of the binocular transformer core.

Need some "how to do it" suggestions? Tank circuit T1 and C3 and C4 should resonate close to the crystal's frequency. Connect a load to the antenna terminals, set C7 to mid range, and short the leads to the crystal. Apply supply voltage, close the key, and measure the circuit's frequency (a frequency counter is helpful). If C7 cannot adjust the circuit's frequency to (or near) that of the crystal, add or subtract a turn to/from T1 or change the values of C3 and C4. Small frequency tweaking may be accomplished by parallel connecting a small-value capacitor across C7. The previous oscillator tweaking steps, incidentally, are most significant for top performance and maximum output.

T2 is four turns of #30 wire, bifilar wound on a Fair-Rite 2843002402 binocular core as shown in photo E. T3 is connected with its 8-ohm/primary side on the left and 1K-ohm/secondary side on the right. Other transistors such as a 2N3866 or 2N2219 can be used/ substituted, so a socket for dinking with various transistors is handy. The Gnat is easy to assemble on a small piece of perfboard, but some QRPers may prefer to use the included outline and etch their own PC boards. Variable resistors R4 and R6 are CTS items from <www.digi-key.com>. Variable capacitor C7 is a Sprague GAE from <www.surplussales.com> or from <www.danssmallpartsandkits.net>, although you may prefer off-board equivalents for installing in a case.

Looking at the Gnat's overall circuit and capabilities, we

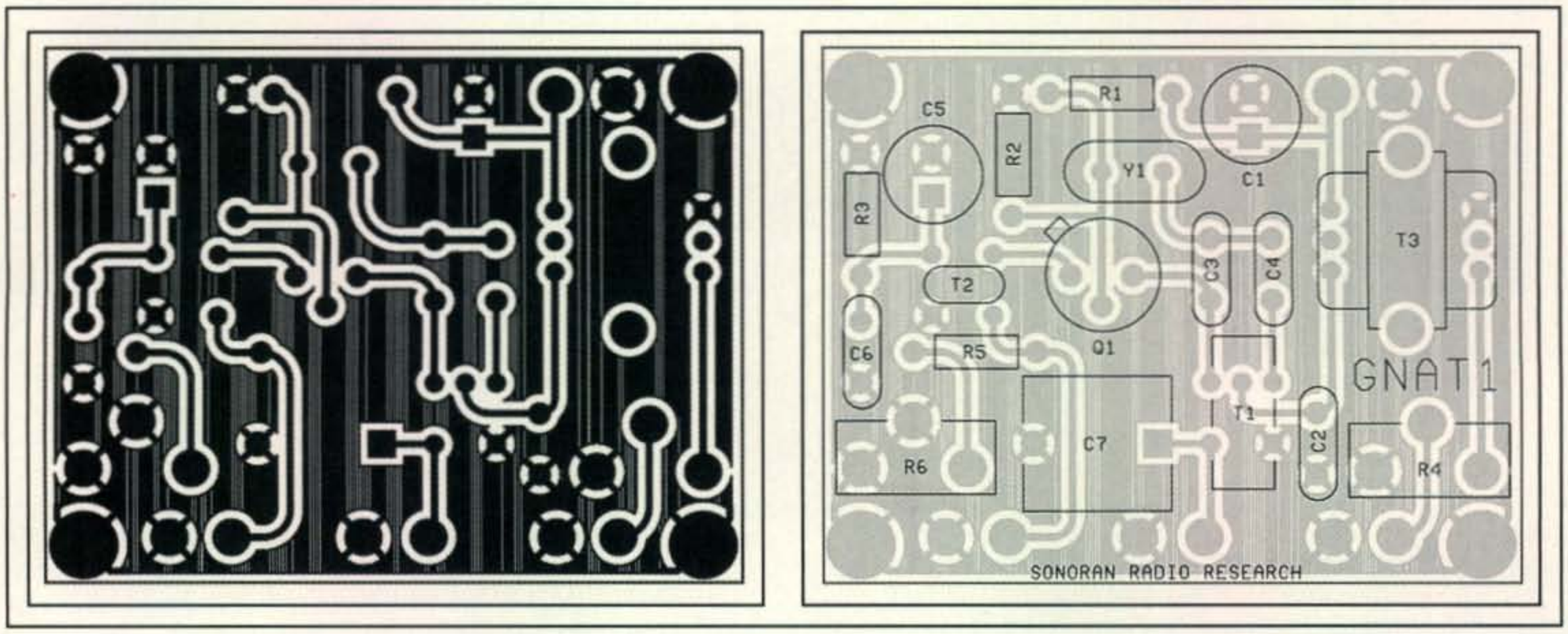


Fig. 2A & B– Etching and parts placement guide for the Gnat transceiver.

Photo F– Mike, WA6OUW, and Ernie, N6HN, show us the classic look of good QRP operating—a quiet mountaintop, a battery-powered rig, and an easy-up antenna. This one is easy to make from Hustler mobile whip parts; it is called "Dino Mite" and described in the text. (Photo courtesy of WA6OUW)

see it as a true reflection of QRP's build-for-fun appeal, and it also fits in an Altoids® tin. I am sure you will agree with me in complimenting Chris, N7ZWY, on his amazing use of only 18 components to make this mini-transceiver. Questions? You can reach Chris via e-mail: <christrask@earthlink.net>. Thanks, Chris!

Dino-Mite Antenna

Mike, WA6OUW, and Ernie, N6HN, say they like to operate QRP from the electrically quiet countryside of sunny California and from their antenna-restricted home QTHs, but found usual wire antennas were more fumbles than fun to set up. Seeking a multi-purpose and easy-to-deploy alternative, they devised the go-anywhere antenna shown in photo F. Briefly explained, this antenna is a ground plane made from Hustler mobile resonators, a 4.5-foot lower mast, and an insulated 5-foot support pipe. The support pipe, in turn, is held in position by a tripod such as those available from MFJ or RadioShack. Two long bolts on the 5-foot support pipe accept rollout radials with eyelets, and the angle of the elevated radials helps acquire a good match/low SWR at the antenna. The big attraction of this antenna is it quickly disassembles into a 5-foot long package for easy storage and transport—and it is a staunch little performer to boot. What's in the name? Mike says they first proved the antenna at a place called Dinosaur Point near Hollister, California, so they combined Dino with the small size and added Mite. Jolly good! If you have questions about the antenna, you can contact Mike at <WA6OUW@aol.com>. If you like

Photo G– A closer look at the Dino-Mite antenna. (Photo courtesy of WA6OUW)

QRP but don't have time to build kits, incidentally, check Mike's website: <www.kitbuildersqrpassemblyservice.com>.

Looking closer at the Dino-Mite antenna (photo G), I note several areas of potential expansion. A Hustler YP-1 adapter plate will support three resonators and triband operation with instant bandswitching. A 3/8-24 threaded coupler and an additional 4 1/2-foot base mast will also increase overall height and radiation efficiency, and for even more signal gain on 20 or 30 meters, a longer top whip will make it a real romper. Specifically, that involves using a rod or shaft coupler from a hobby store to butt two whips into a single 42-inch length and inserting that tall stinger into a 15-meter resonator for 20-meter operation or into a 20-meter whip for 30-meter operation. Some readers are probably asking if that idea can be used for mobiling, and the answer is yes indeed—provided ground to antenna top tip is less than 13.4 feet while in motion. Height is not critical when parked or when the antenna is attached to a deck rail, however, and creative ingenuity is always beneficial.

Conclusion

That overflows column space for this time, so I will bow out gracefully and quickly.

73, Dave, K4TWJ

(Ed. Note: With the untimely passing of K4TWJ in January, editorship of this column will be taken over, as of the June issue, by well-known QRPer Cam Hartford, N6GA.)

vhf plus

BY JOE LYNCH,* N6CL

70-MHz Petition Filed

For decades the United Kingdom has had an almost unique amateur radio allocation on 70 MHz (4 meters). It is because of this allocation that several North American hams were able to work into the U.K. during band openings on both 6 meters and 4 meters. This unique cross-band operation provided some support for the U.K. hams eventually being authorized 6 meters.

Now the tables are turned. For as long as the possibility of vacating the VHF channels by the U.S. television stations existed as just a possibility, VHF weak-signal operators in the U.S. wondered if there might be a 70-MHz allocation in the future of amateur radio. Now that all but a handful of the high-power Channel 4 stations and about two dozen low-power stations have vacated that 6-MHz bandwidth, interest in such an allocation has steadily increased.

Enter Glen Zook, K9STH. Reasoning that to date no one else has filed a petition with the FCC for such an allocation and that someone has to do it, he did it. Glen, who is the head moderator on the QRZ.com discussion forums, posted the petition on QRZ.com. You can view it at: <http://forums.qrz.com/showthread.php?t=234707>. As of this writing there have been more than 80 comments on his petition. A few of them have respectfully brought forward concerns about the FCC and its rules and Glen has equally respectfully and informatively replied to each comment.

In the past, the ARRL has discouraged petitioning the FCC for such an allocation. For example, according to Marshall Williams, K5QE, the Central States VHF Society's board of directors requested that the ARRL petition the FCC for such an allocation. Marshall stated that in response to the BoD's request, they received a letter from then ARRL President Joel Harrison, W5ZN, in which he strongly discouraged any attempts to secure such an allocation at that time.

Nevertheless, while the League has been somewhat lukewarm to the idea of petitioning the FCC for such an allocation, Ed Hare, W1RFI, the ARRL's Laboratory Manager, has shown some interest in the idea—if only for the propagation studies that might develop from such an allocation. He encourages hams who contact him about doing a technical study on the proposed allocation to contact their respective ARRL directors, because it is best to have such requests for studies originate from the directors.

Glen freely admits that his petition has less than a 50-50 chance of succeeding. However, in a sense he has already succeeded—succeeded in getting interest generated in the idea. As the idea unfolds, we will report on it in this column.

*e-mail: <n6cl@sbcglobal.net>

VHF Plus Calendar

April 4	Poor EME conditions.
April 6	Last quarter Moon.
April 9	Moon apogee.
April 11	Moderate EME conditions.
April 14	New Moon.
April 18	Poor EME conditions.
April 21	First quarter Moon. *Lyrids* meteor shower.
April 24	Moon perigee.
April 25	Very good EME conditions.
April 28	Full Moon.

—EME conditions courtesy W5LUU

Echoes of Apollo Part 2

Because success often breeds more success, the leadership of Echoes of Apollo (EOA) has decided a repeat EME event is in order. This year's event will take place over the weekend of April 16–18.

Pat Barthelow, AA6EG, one of the EOA co-leaders, reports the following concerning this year's participation:

The Echoes of Apollo 2010 EME operating event, scheduled for April 16–18, 2010 is on! The event will be conducted primarily on 70 cm (432 MHz) and 23 cm (1296 MHz), but all EME bands and stations are welcome to participate. Science and public outreach are encouraged. Bring visitors to your stations. Show them what ham radio is about, and how moon bounce is relevant to modern science and space advocacy pursuits.

Operating details, schedules, and news will be distributed via EME internet reflectors—e.g. Moon Net (see: <http://www.nlsa.com/nets/moon-net-help.html>)—by direct e-mail to EOA Co-Founder Pat Barthelow, AA6EG, <apolloeme@live.com> and via posts on the website <http://www.echoesofapollo.com>.

Arecibo in Puerto Rico will be on the air during the event, for sure on 70 cm and maybe 23 cm multi-mode. Arecibo can only move its beam ±20 degrees from zenith, so the operators have approximately, at best, 2-hour windows to the moon on the three days of the EOA event.

Photo 1–Feed assembly of the Arecibo dish. (W5IU photo)

2009 CQ WW VHF Contest Results Correction

With a score of 1,564 points, K2QO was the highest scoring USA station in the Hilltopper category. His score was incorrectly listed in the QRP category.

—W1XX, CQ WW VHF Contest Director

Schedules and operating content are still being developed for EOA 2010 Moon Bounce.

Other dishes tentatively slated to participate include the CAMRAS dish, Dwingeloo, Holland. PARI, in North Carolina, plans to have its 4.6-meter dish up on 1296, the MIT (Massachusetts Institute of Technology) Amateur Radio Club is setting up a dish, and one of MIT's Haystack dishes is tentative. However, serious energy and effort are being expended to bring them on board.

The large dish regulars, such as VK3UM in Australia, while not absolutely confirmed, will likely be on the air, as well as K1RQG, assuming severe weather does not do serious damage to his EME systems. The EOA weekend shares EME activity with a 2.3-GHz DUBUS event the same weekend.

New South Africa to Reunion Is. Tropo Records

The following is printed here courtesy of **Dave Pedersen, N7BHC**, and is from **Mike Bosh, ZS2FM:** "On February 9, 2010, around 1900 UTC, Andre Botes, ZS2ACP, of Port Elizabeth and Phil Philippe, FR5DN, on Reunion Island established a new record on 144.401 MHz using the JT65b digital mode. The distance was 3205 km and is a new SARL 2-meter DX digital record. Glenn Kraut, ZS2GK, alerted Andre about the opening; the Hepburn Index also indicated excellent conditions across the Indian Ocean.

Congratulations to both Andre, ZS2ACP, and Phil, FR5DN, on their great achievement.—*73 de ZS2FM*"

The following is from **Phil Philippe, FR5DN:** "Yah, great to work all of you! Great that you were all ready for that opening. What an exciting evening with ZS2GK, ZS2ACP, ZS5Y, ZS5LEE, ZS5DJ in the log for mixed digital and SSB (ZS5Y and ZS5LEE and almost with ZS5DJ)!—*Vy 73 Phil, FR5DN (LG78qs, FR5DN/B 1400W ERP horizontal to ZS—144.401 MHz, USB JT-65B First)*"

This is from **Derek Gravett, ZS5Y:** "Thanks again for JT and SSB QSO Phil. Was nice to finally hear you on the other side.—*73s de Derek, ZS5Y*"

The following is also from Derek: "On February 10, 2010 at 1500 UTC myself and Phil completed the first ever Reunion to South Africa QSO on 70 cm. The distance was 2655 km. We first completed using JT65B then QSOed in SSB as well. Signals 41 and 55 exchanged. Well done, Phil, in retrying 70 cm.

Amateur Satellite Avoids Collision

It was almost "*déjà vu* all over again." A year ago this month I reported on the orbital collision between two commercial satellites that took place on February 10, 2009. The non-operational Russian Kosmos 2251 satellite was involved in a broadside collision with the U.S. Iridium 33 relay satellite, owned by the Russian Space Forces and Iridium Satellite LLC, respectively.

A little more than a year later, on January 22, 2010, the amateur radio satellite Compass 1 and the Ukrainian satellite Sich 1 experienced a near collision. The United States Joint Space Operations Center (JSpOC) had predicted close approach between the two satellites, indicating that they would come within 429 meters of each other.

Southwest Michigan's Sister Lakes Elementary School principal Matt Severin, N8MS, used the near collision as a teaching opportunity for his school's pupils. He reported that at 1432 UTC on January 22, 2010 they copied the beacon from the school, which is located in EN62. They had a maximum elevation of 10.5°.

"My third grade students were excited to listen today to see if Compass-1 survived. The boys and girls let out a cheer when we heard the beacon!"

According to the Southgate Amateur Radio Club news service, it turns out that this near hit was the second one involving an amateur satellite in less than a month. On January 7, 2010 the Russian COSMOS 1743 rocket body came within a 100 meters of SEEDS (CO-66). Sources for this story include the Southgate ARC and the AMSAT bulletin board.

Silent Keys

Herbert "Pete" Hoover, III, W6ZH: Pete Hoover, W6ZH, the grandson of Herbert Hoover, the 31st U.S. President, became a Silent Key on February 4, 2010. A longtime friend of amateur satellite communications, in the 1970s he and EIMAC's Bill Eitel, W6UF (SK), established a matching fund to encourage contributions to the amateur satellite program. Formerly W6APW, Pete acquired his father's callsign during the FCC's old vanity callsign program.

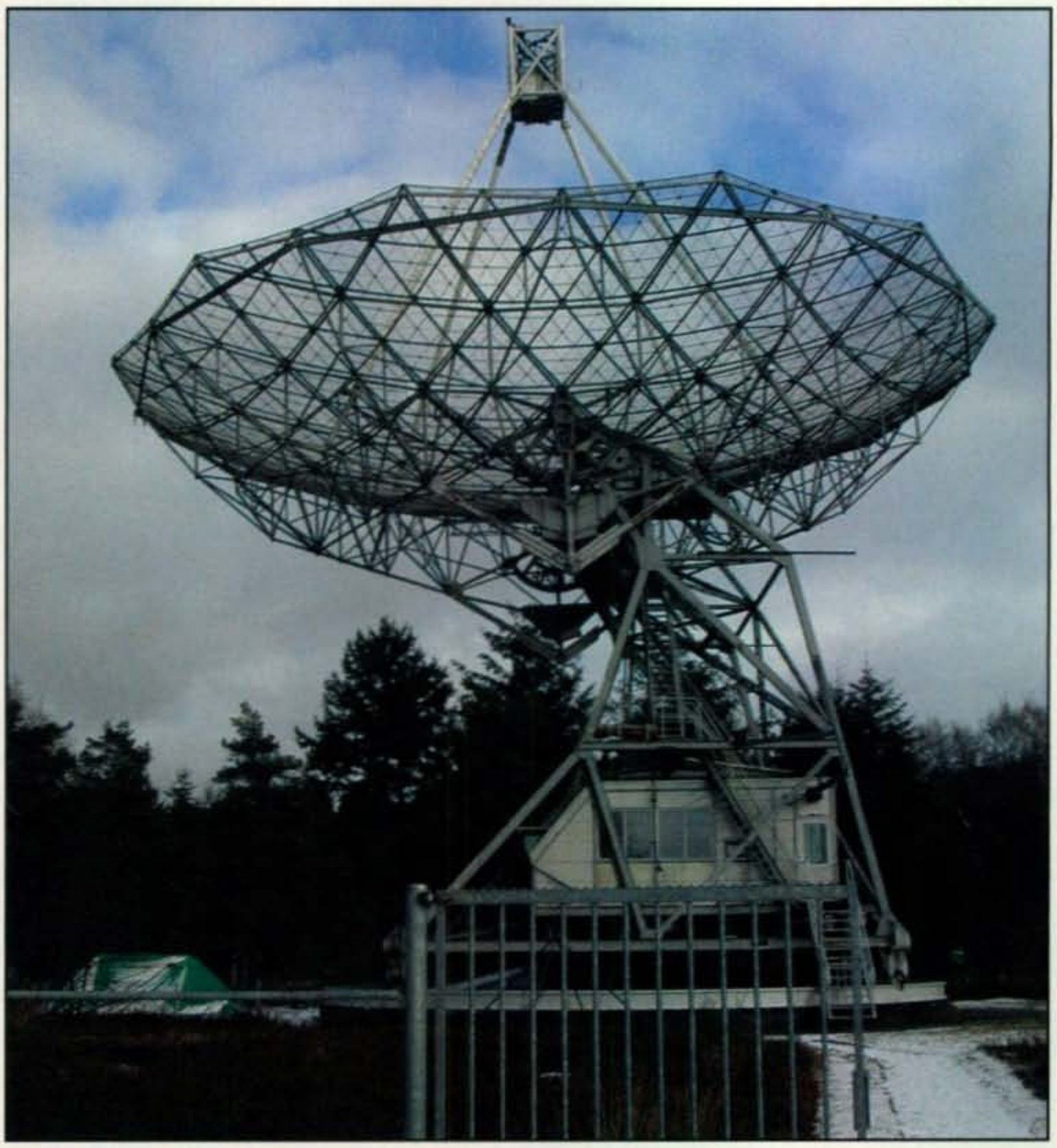


Photo 2– CAMRAS Group's 25-meter dish in Dwingeloo, Holland. (Photo courtesy of CAMRAS)

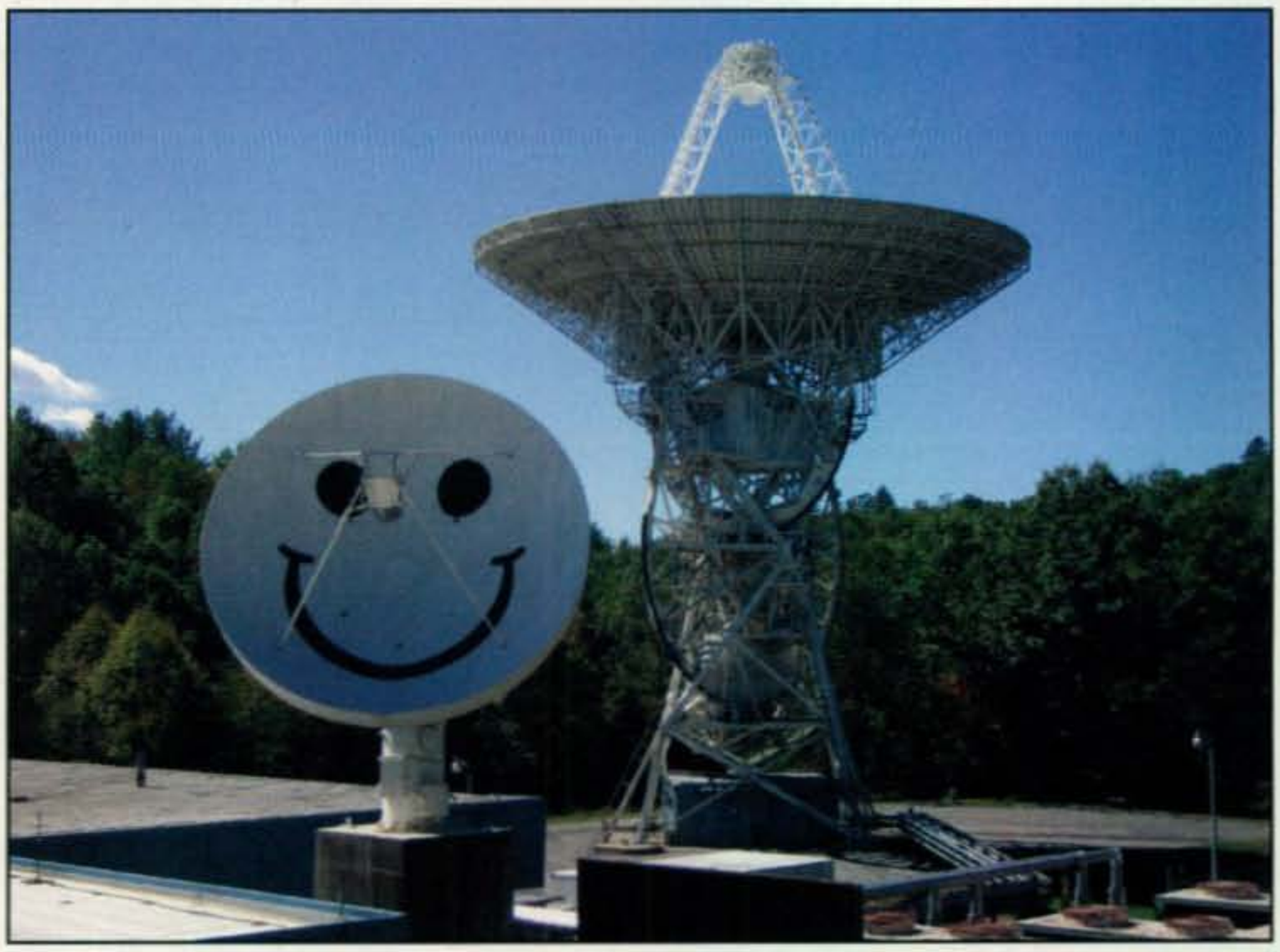


Photo 3– The 4.6-meter Smiley dish at the Pisgah Astronomical Research Institute (PARI) is tentatively scheduled to be used during the EOA 2 event. (Photo courtesy of PARI)

Don Hilliard, WØPW: Don Hilliard, WØPW (ex-WØEYE), passed away in January 2010. Former *QST* "The World Above 50 MHz" columnist Bill Smith, WØWOI, wrote the following: "Don was a fine person, did so very much professionally and in VHF radio. We all knew him as a valuable contributor to the Central States VHF Society and monthly reporter to 'The World Above 50 MHz' column during my tenure. We wish him restful peace! *73 de Bill, WØWOI*"

Dave Ingram, K4TWJ: The following is from Pat Barthelow, AA6EG:

I have known *of* Dave for many years, having read his amateur radio pieces, and I have an early book of his covering the good old days of Radio Teletype and early digital communications. The, recently, I had the pleasure of direct contact with Dave through his telephone calls, and e-mails. I was very, very humbled that Dave (a giant, a real ham's ham, in the ham radio world) would call me asking advice on how to get into EME. I don't consider myself an expert yet, but I have been visible in the EME community due to my unconventional history, entering EME for the first time with a 100-ft. steerable dish a few years ago.

Dave showed the signs of a truly learned man, an expert on many things in ham radio, and I am sure, in life. Often giants such as Dave have learned so much that once they understand how little they really know, and then open themselves up to a real learning experience, they are able to connect and share with us ordinary folk.

The soft-spoken, humble quiet ones such as Dave I spot quickly and listen to them attentively, too. Plus for a Californian, I loved Dave's Southeastern accent. From now on, on the rare occasions that I experience with moon bounce, I will think of Dave smiling at us from Above.

His EME plans, I would like to think, continue on in the eyes and minds of many who have read his writings and learned from him. I don't know how many in the EME community knew of Dave's emerging new passion for EME, but as they find out, they will save a place in their minds and hearts for remembering Dave, a true ham's ham, and will think of him while playing this interesting game.

Current Contests

European Worldwide EME Contest 2010: Sponsored by DUBUS and REF, The EU WW EME contest is intended to encourage worldwide activity on moon bounce. Information for this contest is available at the following website: <http://www.marsport.org.uk/dubus/EMEContest2010.pdf>.

Spring Sprints: These short-duration (usually four hours) VHF+ contests are held on various dates (for each band) during the months of April and May. For current contest rules, please

check the Southeast VHF Society website: <http://www.svhfs.org>.

Conference

Southeast VHF Society: The society's 14th annual conference will be hosted in Morehead, Kentucky, April 22–24, 2010. For information on registering for the conference, please check the society's website: <http://www.svhfs.org/>.

Calls for Papers

Calls for papers are issued in advance of forthcoming conferences either for presenters to be speakers, or for papers to be published in the conferences' *Proceedings*, or both. For more information, questions about format, media, hardcopy, e-mail, etc., please contact the person listed with the announcement. The following organization has announced calls for papers for its forthcoming conference:

Central States VHF Society Conference: Technical papers are solicited for the 44th annual Central States VHF Society Conference to be held in St. Louis, Missouri on July 22–24, 2010. Papers, presentations, and posters on all aspects of weak-signal VHF and above amateur radio are requested. You do not need to attend the conference, nor present your paper, to have it published in the *Proceedings*. Posters will be displayed during the two days of the conference. Non-weak signal topics such as FM, repeaters, packet radio, etc., generally are not considered acceptable. However, there are always exceptions. Please contact the folks below if you have any questions about the suitability of a topic. Strong editorial preference will be given to those papers that are written and formatted specifically for publication, rather than as visual presentation aids. Submissions may be made via the following: electronic formats (preferred); via e-mail; uploaded to a website for subsequent downloading; on media (3.5" floppy, CD, USB stick/thumb drive). Deadline for submissions: May 1, 2010. For more information, please contact CSVHFS President Ron Ocho, KØØZ, at <ko0z@arrl.net>.

Meteor Showers

The *Lyrids* meteor shower will be active during April 16–25. It is predicted to peak around 2200 UTC on 22 April. This is a north-south shower, producing at its peak around 10–15 meteors per hour, with the possibility of upwards of 90 per hour.

Photo 4– The 2010 Southeast VHF Society Conference will be held on the Morehead State University campus in Morehead, Kentucky, in the new Space Science Center. For more conference information, see: http://www.svhfs.org. (KJ4HVL photo)

A minor shower and its predicted peak is *η-Puppids* (peak on April 23 at 2200 UTC). Other April minor showers include the following and their possible radio peaks: April *Piscids*, April 20 at 1500 UTC; and *δ-Piscids*, April 24 at 1500 UTC.

For more information on the above meteor-shower predictions see Tomas Hood, NW7US's "Propagation" column elsewhere in this issue, as well as visit the International Meteor Organization's website: <http://www.imo.net>.

And Finally . . .

Last month I wrote about Apollo 11's trip to the Moon which culminated with the touchdown of the Lunar Module (LM) on July 21, 1969. Those of us who are old enough to remember that landing do so with a vivid memory of the event as though it took place only recently. The event captivated worldwide attention. Even crime dropped as the world watched in awe while Astronaut Neal Armstrong planted his feet on the Moon's surface and declared, "One small step for man. One giant leap for mankind."

It has been more than 35 years since man walked the surface of the Moon. In recognition of this gap in exploration, in 2004 then-President George W. Bush outlined how it could be restarted. Named Constellation, the project's plans included returning to the Moon and going on to Mars.

Unfortunately, there is no money for this allocated in the 2011 budget proposed by the White House. Unless this is changed by Congress, this cancellation of funding will be the end of Constellation.

Whenever something happens there are always unintended consequences. Man's first landing on the Moon sparked interest in space exploration for a number of years. It was NASA's intention with this new Moon-and-beyond exploration to rekindle the fascination with space exploration. Quite a number of young people were swept up in this fascination with space back in the late 1960s and early to mid 1970s. I can say that I was one of those young people.

Through the ARISS program we amateur radio operators have been trying to do our part to kindle the fire in today's young people. Unfortunately, without a clearly defined goal, such as going back to the Moon and beyond, space exploration will soon lose its sizzle.

It remains to be seen what the outcome of the end of Constellation will be for future space exploration. Doomsayers are already saying that NASA will become relegated to a bit player in space exploration as other countries, such as India and Russia, expand their space exploration efforts. No telling what will happen to that spark that was starting to be rekindled in today's United States youth.

I sure would like to see funding restored for Constellation. Sigh!

Until next month...

73, de Joe, N6CL

A Short-Term and DX Awards

BY TED MELINOSKY,* K1BV

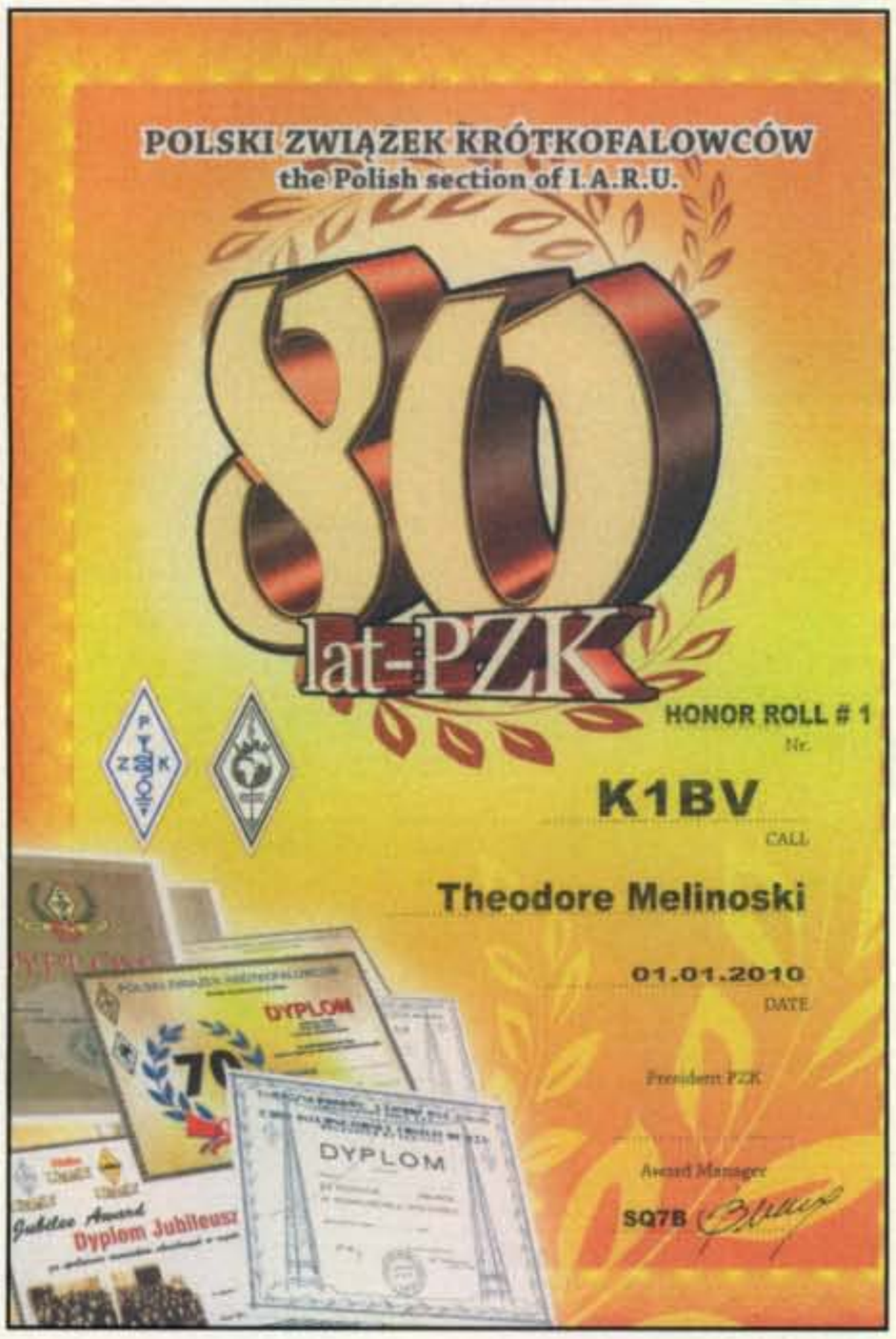
This time we start off with s short-term award from Poland. You will have a good chance to earn this award, since the greatest period of activity for the listed special event stations will occur during April's SP-DX Contest, after you have received this month's *CQ* magazine. If you are collecting prefixes, this will also be a great event to add to your totals since so many interesting "80" and "85" based prefixes will be in play.

Diploma 80 Years PZK, 85 LAT IARU PZK, 85 Years IARU

In 2010 Polish amateurs celebrate the 80th anniversary of the Polish Amateur Radio Union (PZK) and the 85th anniversary of IARU. A group of special event stations will be active during 2010. Earn a special award issued by the PZK for contacting (SWL OK) the listed special stations during the period 1 February to 30 April 2010 (see Table I on the next page of this column). Earn a total of 80 points by contacts with those stations.

No endorsements are available. Each station may be worked only once. The only exception is during the SP-DX Contest when an SP station that was worked before the contest may be contacted again on any band or mode, but only once. Note that contacts made during the SP-DX Contest are worth *double* point values. Foreign stations may apply to: PZK HQ Secretariat, Award Manager SQ7B, P.O. Box 54, 85-613 Bydgoszcz 13, Poland. Fee for foreign stations is 5 Euros. Applications must be submitted no later than 31 December 2010. Internet: <http://wwww.qrz.com/db/SN80PZK>

*12 Wells Woods Rd., Columbia, CT 06237
e-mail: <k1bv@cq-amateur-radio.com>



In 2010 Polish amateurs celebrate the 80th anniversary of the Polish Amateur Radio Union (PZK) and the 85 anniversary of IARU by issung this short-term award.

USA-CA Special Honor Roll

Karl J. Renz, K4YT
USA-CA All Counties #1195
January 2, 2010

USA-CA Honor Roll

500

K4YT.....3495
JA7XBG.....3496
N3ALN.....3497

1000

K4YT.....1792

1500

K4YT.....1506

2000

K4YT.....1392

2500

K4YT.....1310

3000

K4YT.....1195

The total number of counties for credit for the United States of America Counties Award is 3077. The basic award fee for subscribers is $6.00. For nonsubscribers it is $12.00. To qualify for the special subscriber rate, please send a recent CQ mailing label with your application. Initial application may be submitted in the USA-CA Record Book, which may be obtained from CQ Magazine, 25 Newbridge Road, Hicksville, NY 11801 USA for $2.50, or by a PC-printed computer listing which is in alphabetical order by state and county within the state. To be eligible for the USA-CA Award, applicants must comply with the rules of the program as set forth in the revised USA-CA Rules and Program dated June 1, 2000. A complete copy of the rules may be obtained by sending an SASE to Ted Melinosky, K1BV, 12 Wells Woods Road, Columbia, CT 06237 USA. DX stations must include extra postage for airmail reply.

DX Awards

The Egyptian Award. Egypt is a somewhat rare DX contact, and I've only been able to find one amateur radio award that is issued in this country. SU1SK is a very enthusiastic operator who has activated rare Egyptian IOTAs (Islands On The Air stations) and operated from even rarer lighthouses. He has also found the time to sponsor this colorful and exotic award.

Earn 10 points by making contacts with Egyptian stations using the following points system:

1. Any QSO with an Egyptian station on a single band = 1 point.

Earn 10 points by making contacts with Egyptian stations to receive The Egyptian Award.

Stations		Points for Each Contact 1 Feb. to 30 Apr. 2010	SP-Contest, 9–10 Apr. 2010
1. Special	QSL Via		
SP80PZK	SP0PZK	6	12
HF80PZK	SP5PSL	6	12
SO80PZK	SP7PCA	6	12
SQ80PZK	SP9YGD	6	12
SN80PZK	SP5PPA	6	12
3Z80PZK	SP4Z	6	12
3Z85IARU	SP2JMB	6	12
SP85IARU	SP9PNB	6	12
SN85IARU	SP4OZ	6	12
SQ85IARU	SP3MGM	6	12
HF85IARU	SP9YGD	6	12
SO85IARU	SP5PPK	6	12
3Z0RADIO	SP9MRO	6	12
2. Private and club stations with the number 80 in the prefix such as SQ80WAA, SP80KAC, etc.		4	8
3. Any other Polish private and club stations = 1 point.		2	4

Table I– Point values for the short-term Diploma 80 Years PZK,85 LAT IARU PZK, 85 Years IARU.

2. Any QSO with an Egyptian IOTA or JOTA (Jamboree On The Air) station on a single band = 3 points.

Send copies of the QSL cards and fee of $US5 by registered mail to: Greiss Sobhi, P.O. Box 18 Agouza - Giza, 12654 Egypt. Internet: <www.qsl.net/su1sk> or <http://www.qrz.com/callsign/ SU0AWARD>

Germany's X-RAY Award. Ever wonder why the unit of measurement of radiation came to be called the "Röntgen"? It was the German physicist Wilhelm Conrad Röntgen who in 1895 produced and detected electromagnetic radiation in a wavelength today known as X-rays. His discovery earned him the first Nobel Prize in Physics in 1901. The image of a hand with a metal ring on the certificate was taken at a public lecture in 1896. As is common for German awards, the award is issued for contacting members of clubs (DOKs) located in or near the city (Wurzburg) where the historical event occurred.

This award is issued by DARC Division Würzburg Nord DOK B-17 on the occasion of the 100th discovery of X-rays by William Conrad Röntgen in Würzburg. SWL OK. Contacts from 1 January 1995 and later count for the award. At least 100 points must be achieved by contacting stations in the following DOKs: B17, B18, and Z52. Each station may be contacted only once.

Each contact = 3 points (VHF = 5 points)

CW contact = 5 points (VHF = 10 points)

Club stations = 10 points (VHF also 10 points).

Following is a list of the DOKs with the club stations in each:

Sonder-DOK XRAY (1995): DA0WCR, DL0ZN, DL0WZ.

DOK B17: DL0ZN, DK0FLT, DK0WZ, DK0MOZ.

DOK B18: DL0WZ, DL0TP, DL0GWS, DL0FRS, DK0WUE.

DOK Z52: DL0DP.

Send GCR list and fee of 5 Euros, $US7, or 7 IRCs to: Hannelore Stainhäuser DK3XJ, Pfr.-Robbert-Kümmert-Str. 4, D-97249 Eisingen, Germany. Internet: <http://www.wuerzburg.de/darc-b17/xraydiplom.htm>

Germany's X-RAY Award is issued by DARC Division Würzburg Nord DOK B-17 on the occasion of the 100th discovery of X-rays by William Conrad Röntgen.

Norway's Worked All LA Award. The Norsk Radio Relae Liga (NRRL) of Norway sponsors only one award, the WALA. It requires contacts with each of the 19 counties (*fylker*) that comprise the country. Contacts with Arctic stations located on JW, Svalbard and JX, Jan Mayen Islands may be substituted in part or in full for counties W, X, or Y.

"Norges-sertifikatet" (The Norway Certificate) is available to licensed radio amateurs and SWLs worldwide. Contacts with stations operating from Norwegian territory made after 1 January 1950 are valid for the award. All contacts must have been made from the same QTH within a radius of 100 km. Contacts may be made using all legal modes. Cross-band contacts are not valid. Endorsements as appropriate are available for CW, Phone, RTTY, 5 band, and so on.

HF requirements:

a. Applicants in Denmark, Finland, Faroe Islands, Iceland, Sweden, and Norway must have two contacts confirmed on separate bands with each of the 19 Norwegian counties.

b. All others must have one contact confirmed with each of the 19 counties.

The counties of Norway are: A - Oslo, B - Østfold, C - Akershus, D - Hedmark, E - Oppland, F - Buskerud, H - Telemark, I - Aust-Agder, K - Vest-Agder, L - Rogaland, R - Hordaland, S - Sogn og Fjordane, T - Møre og Romsdal, U - Sør-Trøndelag, V - Nord-Trøndelag, W - Nordland, X - Troms, Y - Finnmark, Z - Vestfold.

Norway's Worked All LA Award is issued by The Norsk Radio Relae Liga (NRRL) of Norway for contacts with each of the 19 counties that comprise the country.

The application must include a list of stations worked and be accompanied by either the QSL cards or a GCR list signed by an official of the applicant's IARU member society. The award fee is NOK 50, US$10, or 7 IRCs of recent issue. If QSL cards are included, please add NOK 60, US$10, or 7 IRCs of recent issue if registered mail return of cards is desired. Apply to: (1) HF Award Manager, Bjørn Henrik Vangstein, Godalsvei 6, 0871 Oslo, Norway; or (2) NRRL, P.O. Box 20 Haugenstua, N-0915 Oslo, Norway.

We're always interested in hearing from clubs, special interest groups, or individuals who sponsor an award. Please ontact me at the e-mail address shown on the first page of this column.

73, Ted, K1BV

Richard McKinney, WB4VFN
USA-CA All Counties #1193, November 27, 2009

In 1962 I joined the Air Force, and after training for radio repair, I was sent to Larsen AFB near Moses Lake, Washington. I had a roommate who was a ham and he encouraged me to learn the code and take the Novice exam. So I became WN7DGD and hid an antenna on the barracks roof so I could use my two-tube home-brew transmitter and Knight R100. Sometimes I would haul up an R390A from the shop and have a ball all weekend with that fine receiver. I became hooked on CW and never got much interest in any voice operation.

Near the end of my Air Force four years they sent me to Richmond, Kentucky where I met my lovely wife and have lived happily ever after! But wait . . . there's more! I spent two years at the University of Kentucky finding out I just was not smart enough to be an electrical engineer. My Novice license expired and I worked toward and got a First Class FCC License. While working at a UHF TV station, I retook the Novice exam and became WN4VFN and was back on the air with my Heath HW-16. To get my General I had to go to Huntington, West Virginia and take the test in front of an FCC examiner. I was a General for many years, and then I took and passed the Advanced and Extra exams in one session.

I was aware of county hunting, but it just seemed like a bridge too far. With all the postage and so many counties I just was not interested. I used an ICOM 736 for my main rig to a ladder-fed doublet plus I liked to play with QRP rigs.

Then came retirement and everything changed. I was still doing only CW but getting tired of the routine. A county hunter, John, WU3H, sent me an e-mail looking for someone to run the county next to me for his "whole ball of wax" county. I had never done any mobile before, but I got a 40-meter Hamstick and mounted it on my Nissan pickup. I used a 5-watt QRP rig with a tuner and headed out to run the county. He was in Colorado and we made contact. He sent me my first little card plus a mobile rig to use to get started county hunting. That was the beginning. My wife even encouraged me to start and not worry about the postage. It would hardly be noticed spread out over several years. I also learned about the benefit of MRCs (mobile reply coupons) to list many contacts on one card, so I gathered all my QSL cards and started my county hunting log book. With about 50 confirmed from previous calls and locations I was off and running.

Now seven years later I crossed that bridge and finished them all. There are too many mobiles to mention, but I think about 95% of the counties were made with mobiles. I sometimes sent many MRCs in one envelope to a mobile operator. I sent WU3H his rig back after I got an ICOM 706 for mobile runs and exchanged the Hamstick for a Hustler with three tuned stubs. I had great fun checking the needs list and running Kentucky counties for others. I became e -mail friends with Tom, N4RS, as he ran many counties I needed. We even crossed paths and eyeballed once while out running counties. I have never been to any of the conventions, but county hunters are a fine group of people.

Richard McKinney, WB4VFN, USA-CA All Counties #1193.

It was a great challenge to work them all and well worth another try, because as my count got under 100 the contacts got few and far between. Last winter I built a K2 kit, and in need of a QSO fix, I set out to work them all with my K2 at 10 watts. Out of respect for the ears of mobile operators, I don't go down to 5 watts. I'm well on my way for the second time around and getting good reports with my little K2.

I wanted to mention two hams who really helped me with the last few. With three counties left to finish, Jay, AA9KH, made a long trip for me to get Pulaski, Indiana and Crawford, Illinois. Then for my last one—Union, Indiana—Herb, W9GBH, made that special run for me, and the day before we headed out for a big cruise I got my "whole ball of wax" county.

So if you are reading this and thinking about starting county hunting, go ahead and get after it. It's a great challenge, good people, and you even get to write a magazine article about your adventures!

73 Rich, WB4VFN

dx

BY CARL SMITH,* N4AA

Expeditions and Events for DXers

The storm of the century came early this time as I write this in almost mid-February. The East Coast snowfall broke virtually every record they had, going back 100 years or more. It is rather depressing when we read about our friends buried in snow, many without power, etc. Hopefully they prepared for it and will not suffer long term.

DXing Goes On

DXing continues, even in the midst of the bad weather. The Pacific area has really been "invaded" by DXers. Recent operations have been on the air from Tahiti (TX4T), North Cook (E51WWB), Nauru (C21DL and C21YL), Pitcairn (VP6AL), Minami Torishima (JD1BMM), The Solomons & Temotu (H4 & H40), Ogasawara (JD1), and a few others are still to come. Then we have had operations from Africa, too: Tanzania (5I3A), Malawi (7Q7HB), Uganda (5X7JD and 5X1NH), Senegal (6W), Guinea Bissau (J5), Tunisia (TS8RW), Zimbabwe (Z21DXI), and others yet to come there as well.

During the month of March, John, G3LZQ, was to be active from Rodrigues Island as 3B9WR.

In April there will be a major operation from northern Iraq (YI9PSE). Sometime during April there will be an operation from Annobon (3CØC). According to the 2009 Most Wanted survey, Annobon was ranked at #35 worldwide. Even in Europe it stands at # 57; in North America it is # 36.

The end of April we can hope things go as promised for an operation from Marion Island (ZS8M). The announcement came in early Feb-

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e-mail: <n4aa@cq-amateur-radio.com>

Don Prater, W4TO, was presented the "ETDXA Eagle Award" at the January 18, 2010 meeting of the East Tennessee DX Association "for excellence and outstanding contribution to the advancement of Amateur Radio, especially in DXing, Contesting and Cluster Node." Here ETDXA President Willard Sitton,W4HZD, left, presents the award to Don at the meeting. (Photo courtesy of David, K4PZT)

Ethel Williamson, VE3DTW. No, this is not a Silent Key announcement. From the website <http://wellandtribune.ca/ArticleDisplay.aspx?e=2246214> we find an article about Ethel: The former lighthouse keeper, who turns 103 in March, clapped her hands in delight as the voice of a stranger in Melbourne, Australia, broke the static on the little ham radio that sits by the window in her room at a St. Catharines long-term-care home. She learned Morse code and earned her radio operator's license nearly 60 years ago, taking the call letters she still has today, VE3DTW. Decades before the advent of personal computers, e-mail, and Facebook, ham radios made the world a smaller place. (Thanks to Dennis, ZS1AU, for telling me about Ethel)

Three guys put together an LP at N4XP. Here is the assembled antenna atop Tom's tower. The long "thing" above the LP is a homebrew dipole for 40 meters. Tom says it works great. (Photo courtesy of Tom, N4XP)

CQ DX Awards Program

SSB

2542 ..... IZ0PSA 2543 ..... EA1DR

CW

1099 ..... EA1DR

RTTY

45 ..... EA1DR 46 ..... N7TY

SSB Endorsements

330 ..... K5TVC/338
330 ..... K3LC/336
330 ..... F6HMJ/333
320 ..... W0ROB/321
250 ..... EA1DR/259

CW Endorsements

330 ..... F3TH/338
320 ..... F6HMJ/328
200 ..... EA1DR/241

RTTY Endorsements

200 ..... EA1DR/200

The basic award fee for subscribers to *CQ* is $6. For non-subscribers, it is $12. In order to qualify for the reduced subscriber rate, please enclose your latest *CQ* mailing label with your application. Endorsement stickers are $1.00 each plus SASE. Updates not involving the issuance of a sticker are free. All updates and correspondence must include an SASE. Rules and application forms for the CQ DX Awards may be found on the <www.cq-amateur-radio.com> website, or may be obtained by sending a business-size, self-addressed, stamped envelope to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. Currently we recognize 339 active countries. Please make all checks payable to the award manager.

ruary that Pierre, ZS1HF, had taken a position as a radio/electronics technician on Marion for a period of *one* year. Later information indicated that it would be sometime later on in May before he would be able to actually get on the air. Remember, this is a *work* trip with ham radio as a sideline. I have been told that Pierre is an experienced operator, having spent a year in Baghdad, Iraq.

Upcoming Events for DXers

A lot of events are coming up and many of you will be there or should plan on being there.

The **61st Annual International DX Convention** sponsored by the Southern California DX Club will be held at The Holiday Inn Hotel & Conference Center, Visalia, California, April 16–18, 2010. The International DX Convention is the world's foremost DX convention. If you are a DXer or interested in any aspect of ham radio, you need to be at Visalia. Top DX operators from around the world will be there. Meet the big guns from the U.S., Asia, Europe, Africa, and Oceania. Meet the people on the other side of the mic or key. Shake hands with the person you have had that sked with for the past 10 years. Renew friendships. Don't forget your YL! There will be something special for them as well.

Here's the team that brought us K4M from Midway. Recognize anyone you know? (Photo courtesy of Don, N1DG)

Top DXpeditioners from every continent tell you how they did it. Learn the secrets of big signals on Top Band, how to have fun and adventures chasing IOTA (Islands On The Air), plus a contest forum, antenna forum, DX forum, and seminars for everyone from the seasoned pro to the beginning DXer. Attend the traditional Saturday night banquet where great friends and good food are mixed with lively presentations. The Sunday breakfast buffet has terrific selection and variety. Enjoy more presentations and the parody, "Are You Smarter Than a DXer." This year there is a twist! Visit the manufacturers' midway where you can talk to the people who design and use the latest and best equipment. Don't forget the raffle prizes, which top even the famed Dayton Hamvention®! For early arrivals, The Northern California Con-

The WAZ Program

6 Meters

92 .....JA8ISU (28 zones)

30 Meter CW

94 .....V9VNE

40 Meter CW

276.....W6RKC 277 .....K5RA

20 Meter RTTY

64 .....K6YUI

160 Meters

330 .....K5PC (40 zones) 331 ....K8MFO (40 zones)

All Band WAZ

Diamond Jubilee

016 .....N4MM
017 .....K3FN
018 .....AH7C
019.....WA5UA
020 .....DL6ATM

Mixed

8646.....URØGG
8647 .....IWØAFS
8648.....K7VL
8649 .....LA2LI
8650 .....WA4YYM
8651.....NA5DX
8652 .....WØROB
8653 .....S57UX
8654 .....EA3OR
8655 .....DF2QC
8656 .....WA5NFC
8657 .....KE4RQ
8658.....KA2KON
8659.....OE3HWC

CW

584 .....DL4CW
585.....UX1AA
586 .....W66RKC
587 .....JE2VLG

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and $1.00 to: WAZ Award Manager, Floyd Gerald, N5FG, 17 Green Hollow Rd., Wiggins, MS 39577. The processing fee for all *CQ* awards is $6.00 for subscribers (please include your most recent *CQ* mailing label or a copy) and $12.00 for nonsubscribers. Please make all checks payable to Floyd Gerald. Applicants sending QSL cards to a *CQ* checkpoint or the Award Manager must include return postage. N5FG may also be reached via e-mail: <n5fg@cq-amateur-radio.com>.

test Club (NCCC) will be hosting the Contest Academy on Friday!

Stop by the website for more details: <http://www.dxconvention.org/>. For questions regarding registration or DX stations who need lodging assistance, please e-mail Cathy Gardenias, K6VC at the address located on the website under "registration."

A number of "side" events will take place there, such as a Top Band Dinner and an IOTA Dinner. The Holiday Inn was "sold out" in early February so here's hoping everyone made reservations early or can still make other arrangements.

In May, as you may already know, the Dayton Hamvention® is always amazing. The South West Ohio DX Association (SWODXA) DX Dinner on Friday evening is always a great activity where you can meet and greet DXers from all over the world. Dayton also has those "side events" for Top Band and IOTA folks.

I also have to mention the **7th Annual Maritime DX Forum (MDF)**, to be held in Halifax, Nova Scotia August 6–7. Scott Wood, VE1QD, chairs this well-attended event with a fine group of speakers. Here are the details:

The Halifax Amateur Radio Club (HARC) is pleased to invite all DXers, contesters, and HF enthusiasts to the 2010 MDF. This year the Radio Amateurs of Canada (RAC) also will hold its AGM on Friday, August 6 at 2:30 PM as part of the MDF weekend. Following the AGM, there will be a reception, BBQ dinner, and bluegrass concert beginning at 5:30 PM. The MDF program on Saturday, 7 August will run from 8:30 AM to 4:45 PM. It will be followed by a reception and the MDF banquet.

The speakers (active and outstanding members of our ham radio community) include:

• Martti Laine, OH2BH: "Turning New Stones: Building Passion for Amateur Radio"

The WPX Program

CW

3240 .....VK7SM 3241 .....E74SD

SSB

3064.....IW9HMQ 3065.....DO1HGS

Mixed

2087.....W1/E74OF
2088 .....VA3NQ
2089.....K4KCS
2090 .....K8DV

CW: 350 AG4W. 400 VK7SM. 500 W1/E74OF. 2450 IØNNY. 2750 S51NR. 2850 W8IQ. 3050 KF2O. 5700 K9QVB.
SSB: 750 WA5UA. 1500 AG4W. 3400 KF2O. 4500 I2PJA.
Mixed: 500 K8DV. 700 VA3NQ. 1800 AG4W. 3800 ON4CAS. 4150 KF2O. 4550 I2PJA.
Digital: 450 KF2). 750 AG4W.

160 Meters: WB8ZRL

Asia: VK7SM
Europe: VK7SM

Award of Excellence:
160 Meter Bar: WB8ZRL
Digital Bar: KF2O

Award of Excellence Holders: N4MM, W4CRW, K5UR, K2VV, VE3XN, DL1MDD, DJ7CX, DL3RK, WB4SIJ, DL7AA, ON4QX, 9A2AA, OK3EA, OK1MP, N4NO, ZL3GO, W4BQY, IØJX, WA1JMP, KØJN, W4VQ, KF2O, WB8CNL, W1JR, F9RM, W5UR, CT1FL, WA4QMQ, W8ILC, VE7DP, K9BG, W1CU, G4BUE, N3ED, LU3YL/W4, NN4Q, KA3A, VE7WJ, VE7IG, N2AC, W9NUF, N4NX, SMØDJZ, DK5AD, WD9IIC, W3ARK, LA7JO, VK4SS, I8YRK, SMØAJU, N5TV, W6OUL, WB8ZRL, WA8YTM, SM6DHU, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, DK4SY, UR2QD, AB9O, FM5WD, I2DMK, SM6CST, VE1NG, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, HA8UB, HA8XX, K7LJ, SM3EVR, K2SHZ, UP1BZZ, EA7OH, K2POA, N6JV, W2HG, ONL-4003, W5AWT, N3XX, HB9CSA, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YBØTK, K9QFR, 9A2NA, W4UW, NXØI, WB4RUA, I6DQE, I1EEW, I8RFD, I3CRW, VE3MS, NE4F, KC8PG, F1HWB, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, KC7EM, YU1AB, IK2ILH, DEØDAQ, I1WXY, LU1DOW, N1IR, IK4GME, VE9RJ, NN1N, HB9AUT, KC6X, N6IBF, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ, WØULU, K9XR, JAØSU, I5ZJK, I2EOW, IK2MRZ, KS4S, KA1CLV, WZ1R, CT4UW, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, OE1EMN, W9IL, I7PXV, S53EO, DF7GK, S57J, EA5BM, DL1EY, DJ1YH, KUØA, VE2UW, 9A9R, UAØFZ, DJ3JSW, OE6CLE, HB9BIN, N1KC, SM5DAC, RW9SG, WA3GNW, S51U, W4MS, I2EAY, RAØFU, CT4NH, EA7TV, W9IAL, LY3BA, K1NU, W1TE, UA3AP, EA5AT, OK1DWC, KX1A, IZ5BAM, K4LQ, KØKG, DL6ATM, VE9FX, DL2CHN, W2OO, AI6Z, RU3DX, WB9IHH, CT1EEN, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, KT2C, UA9CGL, AE5B, KØDEQ, DKØPM, SV1EOS, UAØFAI, N4GG, UA4RZ, 7K3QPL, EW1CQ., UA4LY, RZ3DX, UA3AIO, UA4RC, N8BJQ, UA3BS, UA9FGR, UT3UY, WA5VGI, UT9FJ, UT4EK, K9UQN, UR5FEO, LY2MM, N3RC, OH3MKH, RA3CQ, UT3IZ, S55SL.

160 Meter Endorsements: N4MM, W4CRW, K5UR, VE3XN, DL3RK, OK1MP, N4NO, W4BQY, W4VQ, KF2O, W8CNL, W1JR, W5UR, W8ILC, K9BG, W1CU, G4BUE, LU3YL/W4, NN4Q, VE7WJ, VE7IG, W9NUF, N4NX, SMØDJZ, DK5AD, W3ARK, LA7JO, SMØAJU, N5TV, W6OUL, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, UR2QD, AB9O, FM5WD, SM6CST, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, K7LJ, SM3EVR, UP1BZZ, K2POF, IT9TQH, N6JV, ONL-4003, W5AWT, N3XX, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YBØTK, K9QFR, W4UW, NXØI, WB4RUA, I1EEW, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, YU1AB, IK4GME, NN1N, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ, K9XR, JAØSU, I5ZJK, I2EOW, KS4S, KA1CLV, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, S53EO, S57J, DL1EY, DJ1YH, KUØA, VR2UW, UAØFZ, DJ3JSW, OE6CLD, HB9BIN, N1KC, SM5DAC, S51U, RAØFU, CT4NH, EA7TV, LY3BA, K1NU, W1TE, UA3AP, OK1DWC, KX1A, IZ5BAM, DL6ATM, W2OO, RU3DX, WB9IHH, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, UA9CGL, SM6DHU, KØDEQ, DKØPM, SV1EOS, N4GG, UA4RZ, 7K3QPL, EW1CQ, UA4LY, RZ3DX, UA3AIO, UA4RC, N8BJQ, UA3BS, UA9FGR, UT3UY, WA5VGI, UR5FEO, N3RC, UT3IZ.

Complete rules and application forms may be obtained by sending a business-size, self-addressed, stamped envelope (foreign stations send extra postage for airmail) to "CQ WPX Awards," P.O. Box 355, New Carlisle, OH 45344 USA. Note: WPX will now accept prefixes/calls which have been confirmed by eQSL.cc. Other electronic QSL confirmation means are not accepted.

*Please Note: The price of the 160, 30, 17, 12, 6, and Digital bars for the Award of Excellence are $6.50 each.

5 Band WAZ

As of February 1, 2010, 800 stations have attained the 200 zone level and 1669 stations have attained the 150 zone level.

New recipients of 5 Band WAZ with all 200 zones confirmed:
None

The top contenders for 5 Band WAZ (zones needed, 80 or 40 meters):

N4WW, 199 (26)
W4LI, 199 (26)
K7UR, 199 (34)
IK8BQE, 199 (31)
JA2IVK, 199 (34 on 40m)
IK1AOD, 199 (1)
GM3YOR, 199 (31)
VO1FB, 199 (19)
KZ4V, 199 (26)
W6DN, 199 (17)
W3NO, 199 (26)
RU3FM, 199 (1)
N3UN, 199 (18)
W1JZ, 199 (24)
W1FZ, 199 (26)
SM7BIP, 199 (31)
N4NX, 199 (26)
N4MM, 199 (26)
EA7GF, 199 (1)
N6HR/7, 199 (37)
JA5IU, 199 (2)
RU3DX, 199 (6)
N4XR, 199 (27)
HA5AGS, 199 (1)
VE3XN, 199 (26)
YU7GMN, 199 (10)
K7LJ, 199 (37)
RA6AX, 199 (6 on 10m)
RX4HZ, 199 (13)
KØGM, 199 (17)
S58Q, 199 (31)
KQØB, 199 (2 on 10)
K9OW, 199 (34 on 10)
N5AW, 199 (17)
JH7CFX, 199 (2)
IN3ZNR, 199 (1)
EA5BCX, 198 (27, 39)
G3KDB, 198 (1, 12)
JA1DM, 198 (2, 40)
9A5I, 198 (1, 16)
K4CN, 198 (23, 26)
G3KMQ, 198 (1, 27)
N2QT, 198 (23, 24)
OK1DWC, 198 (6, 31)
W4UM, 198 (18, 23)
US7MM,198 (2, 6)
K2TK, 198 (23, 24)
K3JGJ, 198 (24, 26)
W4DC, 198 (24, 26)
F5NBU, 198 (19, 31)
OE2LCM, 198 (1, 31)
WK3N, 198 (23, 24)
W9XY, 198 (22, 26)
KZ2I, 198 (24, 26)
W7VJ, 198 (34, 37)
K9MIE, 198 (18, 21)
W9RN, 198 (26, 19 on 40)
W5CWQ,198 (17, 18)
I5KKW, 198 (31&23 on 20)
IV3MUC, 198 (1&31 on 40)
UA4LY, 198 (6&2 on 10)
JA7XBG, 198 (2 on 80&10)
K4QL, 198 (18, 24)
K9UP (17,21)

The following have qualified for the basic 5 Band WAZ Award:

URØGG (170 zones)
JA1AML (180 zones)
UX1AA (170 zones)
WC5M (153 zones)
K5RA (192 zones)

5 Band WAZ updates:

S51U (200 zones)
F5NBU (200 zones)
K4QL (198 zones)
G3WW (181 zones)
G3VKW (200 zones)
N5PHT (200 zones)

***Please note: Cost of the 5 Band WAZ Plaque is $100 shipped within the U.S.; $120 all foreign (sent airmail).**

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and $1.00 to: WAZ Award Manager, Floyd Gerald, N5FG, 17 Green Hollow Rd., Wiggins, MS 39577. The processing fee for the 5BWAZ award is $10.00 for subscribers (please include your most recent *CQ* mailing label or a copy) and $15.00 for nonsubscribers. An endorsement fee of $2.00 for subscribers and $5.00 for nonsubscribers is charged for each additional 10 zones confirmed. Please make all checks payable to Floyd Gerald. Applicants sending QSL cards to a *CQ* checkpoint or the Award Manager must include return postage. N5FG may also be reached via e-mail: <n5fg@cq-amateur-radio.com>.

CQ DX Honor Roll

The CQ DX Honor Roll recognizes those DXers who have submitted proof of confirmation with 275 or more ACTIVE countries. With few exceptions, the ARRL DXCC Countries List is used as the country standard. The CQ DX Award currently recognizes 339 countries. Honor Roll listing is automatic when an application is received and approved for 275 or more active countries. Deleted countries do not count and all totals are adjusted as deletions occur. To remain on the CQ DX Honor Roll, annual updates are required. All updates must be accompanied by an SASE if confirmation of total is required. The fee for endorsement stickers is $1.00 each plus SASE. Please make checks payable to the awards manager, Billy F. Williams. All updates should be mailed to P.O. Box 9673, Jacksonville, FL 32208.

CW

NØFW 338	K2FL 338	N4MM 337	PY2YP 337	K3JGJ 336	G3KMQ 334	K6CU 329	CT1YH 320	N2LM 297
WB4UBD 338	K4MQG 338	W7OM 337	K9OW 337	HB9DDZ 335	K6LEB 333	W1DF 329	W9IL 319	HA5LQ 287
K3UA 338	W8XD 338	W7CNL 337	K2OWE 336	K2JLA 334	K5RT 332	KA3S 328	EA3ALV 319	N2VW 283
K9MM 338	K2TQC 338	WØJLC 337	K8LJG 336	F3AT 334	JA7XBG 332	K1FK 328	RA1AOB 317	XE1MD 280
W4OEL 338	N7RO 338	K4CN 337	K9IW 336	PA5PQ 334	W4UW 332	IKØADY 328	W6YQ 316	4Z5SG 279
EA2IA 338	F3TH 338	VE3XN 337	W4MPY 336	NC9T 334	K8SIX 331	F6HMJ 328	WA4DOU 316	W2JLK 277
OK1MP 338	DL3DXX 338	K4JLD 337	K5UO 336	G4BWP 334	W7IIT 331	WG5G/QRPp 322	ON4CAS 314	WA2VQV 275
N7FU 338	WK3N 338	N5ZM 337	K7LAY 336	W1JR 334	N7WO 330	IKØTUG 321	WD9DZV 312	
N4JF 338	N5FG 338	N4AH 337	N6AW 336	I4LCK 334	W6OUL 329	W3II 320	KØKG 3099	
K4IQJ 338	K9BWQ 337	N4CH 337	KA7T 336	YU1AB 334	KE3A 329	OZ5UR 320	KT2C 304	

SSB

K4JLD 339	K5OVC 339	K4IQJ 339	VE2GHZ 338	W7BJN 337	ZL1HY 335	SV3AQR 328	W6NW 314	K7ZM 300
EA2IA 339	K4MQG 339	WK3N 339	AA4S 338	AB4IQ 337	K5UO 335	VE7EDZ 328	KA1LMR 312	XE1MEX 300
XE1AE 339	N4MM 339	N5FG 339	PY2YP 338	W4UNP 337	WØYDB 334	XE1MD 327	RA1AOB 312	W4EJG 295
IN3DEI 339	K9MM 339	K5TVC 338	K9OW 338	W4UW 337	K5RT 334	YV4VN 326	N2LM 312	W9ACE 294
NØFW 339	OZ5EV 339	KZ2P 338	VE3MR 338	K1UO 337	WA4WTG 334	KD5ZD 326	G3KMQ 312	W6MAC 292
DU9RG 339	VE2PJ 339	W6BCQ 338	VE3MRS 338	K8SIX 336	ZL1BOQ 334	W1DF 326	KD2GC 311	AD7J 291
K3UA 339	K3JGJ 339	W6EUF 338	XE1L 337	KE3A 336	HB9DDZ 334	PY2DBU 325	RW9SG 310	AE9DX 289
K6YRA 339	N5ZM 339	W7OM 338	OE3WWB 337	K9IW 336	VE4ACY 333	KE4SCY 325	IØYKN 310	W5PVE 288
IK1GPG 339	N7RO 339	K9BWQ 338	N6AW 337	N2VW 336	K9PP 333	W4MPY 325	KU4BP 310	HB9DQD 285
DJ9ZB 339	KE5K 339	W8AXI 338	IK8CNT 337	W2CC 336	YV1KZ 333	K6GFJ 324	XE1MW 309	VE7HAM 285
N7BK 339	IØZV 339	W9SS 338	EA4DO 337	N7WR 336	W9IL 333	TI8II 324	AA1VX 308	N8LIQ 284
4Z4DX 339	OE2EGL 339	VK4LC 338	CT3BM 337	JA7XBG 336	F6HMJ 333	W6OUL 322	4Z5FL/M 306	N3RC 280
WB4UBD 339	W4ABW 339	K7LAY 338	YU1AB 337	K3LC 336	YV1AJ 332	XE1RBV 321	K7SAM 305	HSØ/EA4BKA 276
OZ3SK 339	DL3DXX 339	WS9V 338	K8LJG 337	PA5PQ 335	VE4ROY 332	XE2NLD 321	I3ZSX 304	K9DXR 275
OK1MP 339	I8KCI 339	W6DPD 338	W3AZD 337	XE1VIC 335	YV1JV 331	WØROB 321	JR4NUN 303	
K2TQC 339	VE1YX 339	K4CN 338	KØKG 337	NC9T 335	K7HG 331	VE7SMP 320	W4PGC 302	
K4MZU 339	N4CH 339	VE3XN 338	W2FKF 337	CT1EEB 335	N5YY 331	ON4CAS 319	EA8AYV 302	
N4JF 339	EA3BMT 339	K9HQM 338	W7FP 337	W1JR 335	N1ALR 330	LU3HBO 317	4X6DK 301	
W4WX 339	IKØAZG 339	K2FL 338	YU3AA 337	I4LCK 335	K4DXA 328	N8SHZ 316	WD9DZV 301	

RTTY

WB4UBD 337	N5FG 335	K3UA 332	G4BWP 320	K4CN 303
NI4H 336	N5ZM 333	OK1MP 329	PA5PQ 311	K8SIX 300

• Tim Duffy, K3LR: "How World Class Contesting Advances Amateur Radio"

• Dick Frey, K4XU: "What You Need to Know About Solid State Amplifiers"

• Tim Ellam, VE6SH: "Governance of Amateur Radio – the Role of the IARU"

• A member of a major recent DXpedition (TBA)

The MDF will be held in the Rosaria Centre of Mount St. Vincent University in Halifax, Nova Scotia. Inexpensive accommodations are available at the university. This is a great opportunity to combine a top-notch ham radio event with a tourist visit to Canada's Maritime Provinces.

The costs of the various events are: BBQ and bluegrass social, $25; Maritime DX Forum, $60; and the MDF banquet, $35. Registration materials can be downloaded from the HARC website (www.harc-arc.org), or requested directly from the MDF Chair, K. Scott Wood, VE1QD, who also will gladly answer any questions. He can be contacted at <ve1qd@rac.ca> or at (902) 823-2761.

Will be back next month and hope to have more DX news for you, especially any good news about propagation.

In the meantime, enjoy the chase and Have Fun doing it! 73, Carl, N4AA

QSL Information

8P9AL via VE3DZ
8P9AM via VE3DZ
8P9BK via DL1DA
8P9GE via K2PF
8P9XA via G3SWH
8Q7AK via G7COD
8Q7AT via OE2ATN
8Q7BP via DJ6QT
9G5SW via DC8XL
9G5TT via I2YSB
9G5XA via G3SWH
9G5XX via I2YSB
9H/DL9USA via DL9USA
9H/F1JXQ via F1JXQ
9H3BX via G3TZM
9H3CW via G3JAG
A25NW via K9NW
A31A via PA3LEO
A31CE via DO7AG
A31IW via PA3LEO
A31JC via PA3LEO
A31LEO via PA3LEO
A31MR via PA3LEO
A31SN via PA3LEO
A31WL via PA3LEO
A35AS via DJ9ZB
A35CE via DJ9ZB
BX2AAL via NI5DX
BX3AC via G3SWH
BY1PK via DJ6QT

(The table of QSL Managers is courtesy of John Shelton, K1XN, editor of "The Go List," 106 Dogwood Dr., Paris, TN 38242; phone 731-641-4354; e-mail: <golist@golist.net>; <http://golist.net/>.)

BY JOHN DORR,* K1AR

Getting Excited about the CQ WW WPX Contest

April's Contest Tip

Taking off from Randy, K5ZD's overview of the CQ WPX competition, many contests offer categories that you can win—regardless of station limitations or propagation disadvantages. Whether it's the rookie category or a single-band, low-power entry that emphasizes a particular strength of your station, pre-planning your contest operation can put paper on the wall! There are literally thousands of "winning" certificates and plaques offered in *CQ*'s contests (and by other contest sponsors). Check it out and see what you can do to join the winner's circle!

Calendar of Events

All year	**CQ DX Marathon**
Mar. 20–21	BARTG HF RTTY Contest
Mar. 20–21	Russian DX Contest
Mar. 27–28	**CQ WW WPX SSB Contest**
Apr. 3–4	SP DX Contest
Apr. 3–4	Missouri QSO Party
Apr. 10	European CW Sprint
Apr. 10–11	JIDX CW Contest
Apr. 10–11	Georgia QSO Party
Apr. 17	Holyland DX Contest
Apr. 17–18	Michigan QSO Party
Apr. 17–18	Ontario QSO Party
Apr. 17–18	YU DX Contest
Apr. 24–25	10-10 CW Spring Contest
Apr. 24–25	SP DX RTTY Contest
Apr. 24–25	Helvetia Contest
Apr. 24–25	Florida QSO Party
Apr. 24–25	Nebraska QSO Party
May 1–2	7th Area QSO Party
May 1–2	New England QSO Party
May 1–2	ARI DX Contest
May 1–2	Indiana QSO Party
May 29–30	**CQ WW WPX CW Contest**

CQ sponsors a wide range of enormously popular contests that take place on all modes and bands. Whether your cup of tea is 160 meters CW or 2 meters SSB, there's an operating event for you. One of the more popular competitions is the CQ WW WPX Contest. This month, we're fortunate to have an inside perspective on the "WPX" from the director himself, Randy Thompson, K5ZD. So, whether you're new to the CQ WPX event or a seasoned pro, there's been lot going on. Read on and you'll see what I mean!

The CQ WW WPX Contest

by Director Randy Thompson, K5ZD

A major contest is a cross between an organized sporting event and a big party. There are rules and scores and judging, but there is also the need to keep things interesting for those who just want to have fun. Invite a worldwide audience, sprinkle in some unusual prefixes, mix in the unknown surprises of propagation, and you have a winning formula for competition and fun. Originally founded 50 years ago to promote SSB operation, the CQ WW WPX Contest has evolved into one of the premier events on the contesting calendar by providing a little something for everyone.

For almost any contest, the participants generally break down into three levels: The "competitor" class is focused on world, national, or regional honors. Entrants measure their success against their peers, but also against history as they strive to break score records. The "enthusiasts" are a broad mix of people who enjoy contesting, but may do not have the time or station to dedicate to a full effort. They win their share of certificates, but their goals for operating may be simply to test their station, chase new countries, or build skills. The largest group, and the one that makes the party most interesting, is the "participant" class. These are the people who stumble into the contest and hand out a few contacts or just have a few minutes to operate at various times through the weekend. All are equally welcome to the party!

Let's look at what a visit to the WPX Contest event can offer. First, everyone can work everyone. That keeps things interesting no matter the band conditions or what size station you may have. Every contact is worth points. The point scoring encourages DX contacts and offers double points for working DX on the low bands. There are decisions to be made if you want to maximize your score. The contest also mandates a maximum of 36 hours of operation for single ops. This gives you a chance to rest during the contest, but also adds the pressure of deciding the optimal times to take a break.

What really makes the WPX Contest unique is the use of callsign prefixes as multipliers. Many participants request special prefixes from their local licensing authority. Unusual calls such as 9A800VZ, LY1000CW, ZY100S, and L75FM are likely to be found. It also means that almost anyone can become a rare multiplier without having to travel to some exotic island. Visit a friend or club station with a rare 2×1 call and you will become the focus of pile-ups from prefix hunters. Even a common prefix can become rare if it is the only one active. Prefixes are counted only once regardless of band, so it is not unusual to see single-band entrants with scores rivaling those of all-banders.

Want to earn some wallpaper? The WPX Contest offers 64 different categories with the opportunity to win a certificate. That's 64 for each and

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e-mail: <K1AR@contesting.com>

every DXCC/WAE country, U.S. call area, Canadian province, Japan, Russia, Australia, and Spain call areas! In 2009 there were 1501 certificates mailed out for SSB and 1376 for CW. Thanks to Barry, W5GN, and his helpers for making sure all category winners get a nice printed certificate in the mail. If you didn't score first in your category, don't despair. The WPX website (www.cqwpx. com) offers downloadable certificates in Adobe pdf format for everyone who submits an entry in the contest! Impress your family and friends with proof of your operating prowess. You can't earn a certificate if you don't operate and submit a log.

Don't have a big station or are new to contesting? The WPX Contest has a separate contest within a contest for stations using only a triband beam and single-element antennas. There is another category for operators who have been licensed less than three years. For 2010, both of these categories were expanded to include all single operators with and without packet or DX cluster assistance.

There are a number of tools at the WPX website to help you enjoy the contest. The rules are available in 14 different languages. There is also a rules FAQ page to answer the most common questions. The major rule change for 2010 is in the multi-single category, which has been simplified to only allow one transmitter with 10 band changes per hour.

All of the results for the past 25 years are available in a searchable online database. You can see all of your own entries or look at scores from your continent, country, or call area. There is no better way to plan your operating strategy (or pick a certificate-winning opportunity) than to look back at recent scores. The Records page can even show you the record score in your area for all 64 categories. Pick one and go for it!

Once the on-the-air party is over, please submit your log by e-mail so you can be included in the results. The logs page provides complete instructions. Even small logs are very helpful in the log-checking process. The WPX Contest log-checking team will bend over backward to help you through the log submission process.

When all the logs are in, the log-checking job begins. Every log is processed through computer software developed by Ken, K1EA. For WPX CW 2009, the computer was able to cross-check 82.8% of the over 2-million QSOs in the received logs. Of those, an amazing 94.9% checked good for both call-

2008 CQ WW DX Contest Errata

The following corrections have been made to the 2008 CQ WW DX 2008 Contest results:

SSB

1. The winner of the Japanese Multi-Single trophy is **JA6ZPR** (Oprs: JH6JSR, JR6CKX, JJ1RJR), not JI2ZJS.

2. **ON4UN (Op: K2UO)** operated 160 high power, single operator. He was incorrectly shown as all band. His score was good enough for a second place worldwide and first place Europe. ON4UN (K2UO) wins the European 1.8 MHz trophy. Also, George set a new, all-time European 1.8 MHz record with 168,964 points.

CW

1. **RZ9OZO (Op: RW1AC)** was inadvertently left out of the CW results. He was single operator, all band, high power. The line score was: Final Score 4,892,752; QSOs 4106; Zones 117; Countries 355. He finished second in Asiatic Russia 9th call area and won a certificate.

2. **K9NW** was listed incorrectly as K9NW/8. He operated from the 9th call area. He finished first on 3.5 MHz, winning a certificate. The winner of the 8th call area on 3.5 MHz is **K8MD**.

sign and serial number. Contesting really is a training ground for improving communication skills. Many operators request a log-check report for their entry and use it to learn about their mistakes and improve their performance in the next contest.

Want to learn more about what goes into running a major international contest? You can track important announcements on the WPX Contest blog, join the CQ WPX Fan page on Facebook, or follow cqwpx on Twitter.

The WPX Contest really does have something for everyone. Whether you are chasing a world record, looking for a certificate, or just hunting new countries or prefixes, please accept our invitation to mingle with the crowd. WPX SSB is always the last full weekend of March (this year March 27–28). WPX CW is always the last full weekend of May (this year May 29–30). Come join the party!—*K5ZD*

Final Comments

Well, if you're not motivated to give the CQ WW WPX Contest a try after reading Randy's summary, you may need to accelerate that upcoming doctor's appointment. Rate, DX, cool categories equals *fun!* Give it try and you'll see what I mean.

See you in the next contest!

73, John, K1AR

propagation

BY TOMAS HOOD,* NW7US

Flares, Coronal Mass Ejections, and DX!

A Quick Look at Current Solar Cycle Conditions

(Data rounded to nearest whole number)

Sunspots
Observed Monthly, January 2010: 13
Twelve-month smoothed, July 2009: 4

10.7 cm Flux
Observed Monthly, January 2010: 81
Twelve-month smoothed, July 2009: 71

***Ap* Index**
Observed Monthly, January 2010: 2
Twelve-month smoothed, July 2009: 4

One Year Ago: A Quick Look at Cycle 23 Conditions

(Data rounded to nearest whole number)

Sunspots
Observed Monthly, January 2009: 2
Twelve-month smoothed, July 2008: 3

10.7 cm Flux
Observed Monthly, January 2009: 70
Twelve-month smoothed, July 2008: 69

***Ap* Index**
Observed Monthly, January 2009: 3
Twelve-month smoothed, July 2008: 7

LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for April 2010

	Expected Signal Quality			
Propagation Index.....	(4)	(3)	(2)	(1)
Above Normal: 1-2, 8-9, 11, 14, 19-21, 23-29	A	A	B	C
High Normal: 4, 6-7, 10, 13, 15-18, 22	A	B	C	C-D
Low Normal: 3, 5, 30	B	C-B	C-D	D-E
Below Normal: 12	C	C-D	D-E	E
Disturbed: N/A	C-D	D	E	E

Where expected signal quality is:
A—Excellent opening, exceptionally strong, steady signals greater than S9.
B—Good opening, moderately strong signals varying between S6 and S9, with little fading or noise.
C—Fair opening, signals between moderately strong and weak, varying between S3 and S6, with some fading and noise.
D—Poor opening, with weak signals varying between S1 and S3, with considerable fading and noise.
E—No opening expected.

HOW TO USE THIS FORECAST

1. Find the *propagation index* associated with the particular path opening from the Propagation Charts appearing in *The New Shortwave Propagation Handbook* by George Jacobs, W3ASK; Theodore J. Cohen, N4XX; and Robert B. Rose, K6GKU.

2. With the *propagation index*, use the above table to find the expected signal quality associated with the path opening for any given day of the month. For example, an opening shown in the Propagation Charts with a *propagation index* of 2 will be good (B) on April 1st and 2nd, poor-to-fair (D-C) on the 3rd, fair on the 4th, etc.

3. As an alternative, the Last-Minute Forecast may be used as a general guide to space weather and geomagnetic conditions through the month. When conditions are Above Normal, for example, the geomagnetic field should be quiet and space weather should be mild. On the other hand, days marked as Disturbed will be riddled with geomagnetic storms. Propagation of radio signals in the HF spectrum will be affected by these conditions. In general, when conditions are High Normal to Above Normal, signals will be more reliable on a given path, when the path is ionospherically supported.

Solar Cycle 24 continues to make milestones in the new signs of sunspot activity. Since last month's report in this column, an amazing series of events has occurred, including some of the most intense solar flares so far in the new cycle.

The period from mid-January through mid-February, up to press time, saw a constant parade of active sunspot regions, starting with a new region numbered by NOAA as Active Region (AR) 1041 that rotated into view over the sun's eastern limb. On January 19, this region produced two M-class flares and three C-class flares. The 10.7-cm flux was 84 as this new sunspot region became a player in radio propagation.

By the next day, January 20, AR 1041 produced four additional M-class flares as well as numerous C-class flares. It became clear that the sun was no longer "slumbering" but indeed had kicked into gear. The largest of the M-class flares on the 20th was measured as an M3.4 peaking at 1755 UTC.

On January 22, a new active region emerged and was numbered AR 1042, with a sunspot count of 3. AR 1041 had a count of 7 spots. Both continued to grow, each increasing in sunspot counts over the following days, but then decreasing as January ended.

February became the month of incredible excitement, as the sun did not wane quiet. By February 1, a new active region, AR 1043, emerged. Then, returning active region 1040 from mid-January rotated back into view, and coronal mass ejections (CMEs) could be seen exploding away from this region as it came into view. Another region emerged on February 5, numbered AR 1044. By the next day, solar activity increased to moderate levels, as another new region, AR 1045 developed, unleashing a moderate M2-class flare.

The new active region, 1045, continued to produce flares, each M-class unleashing an associated CME toward Earth. The arrival of those CMEs produced active geomagnetic disturbances about three days later. By February 7, yet another active region emerged, number AR 1046! By this time, great excitement grew as radio operators became aware of the radio blackouts associated with the numerous X-ray flares, but also with the increasing 10.7-cm flux that awoke the upper high-frequency bands! The official Penticton 10.7-cm flux was 90 on February 7.

The following day, February 8, was filled with flaring; region 1045 produced three M-class flares, the largest measuring M4. Additionally, another new spot emerged, AR 1047. The sunspot count on February 8 was an amazing 71! Activity like this has not been seen since the end of solar Cycle 23.

*P.O. Box 9, Stevensville, Montana 59870-0009
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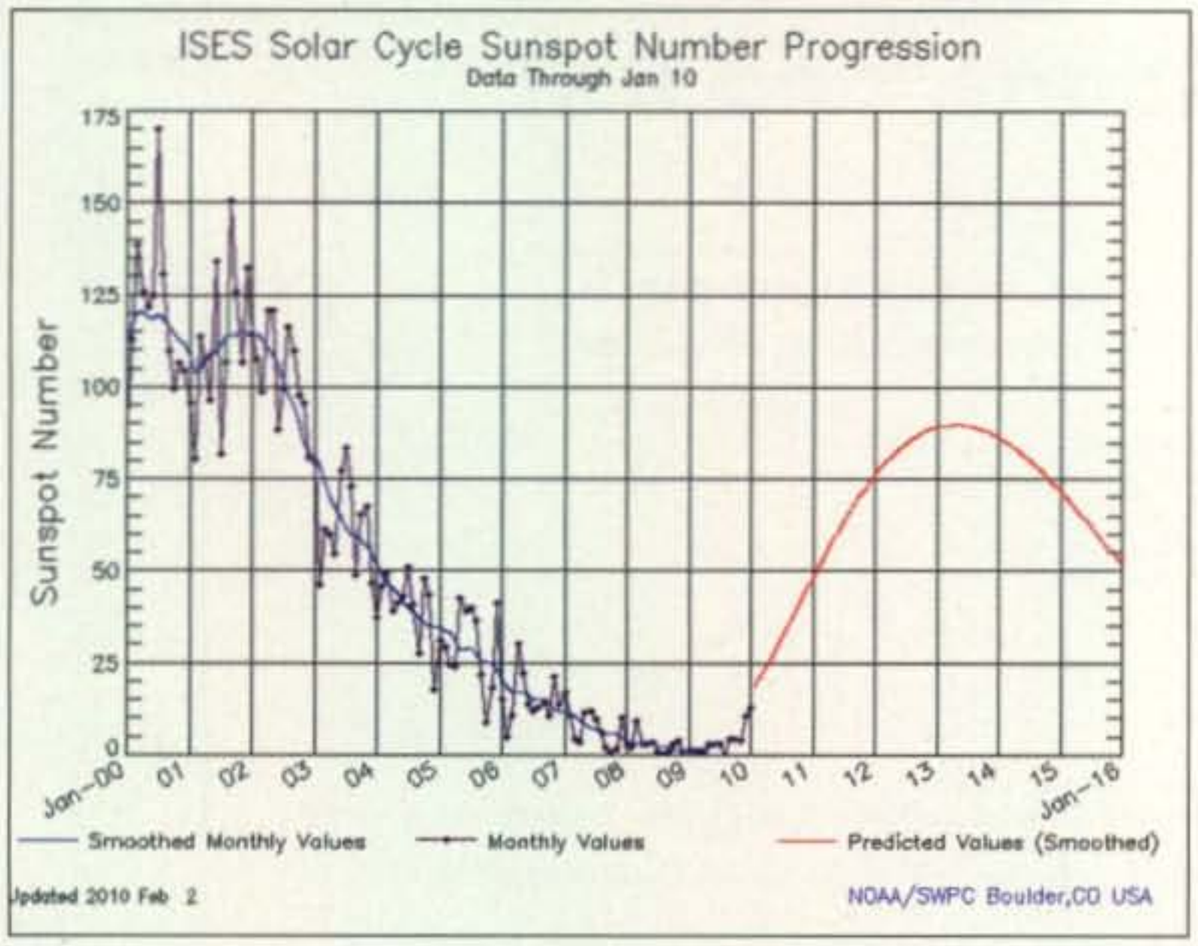

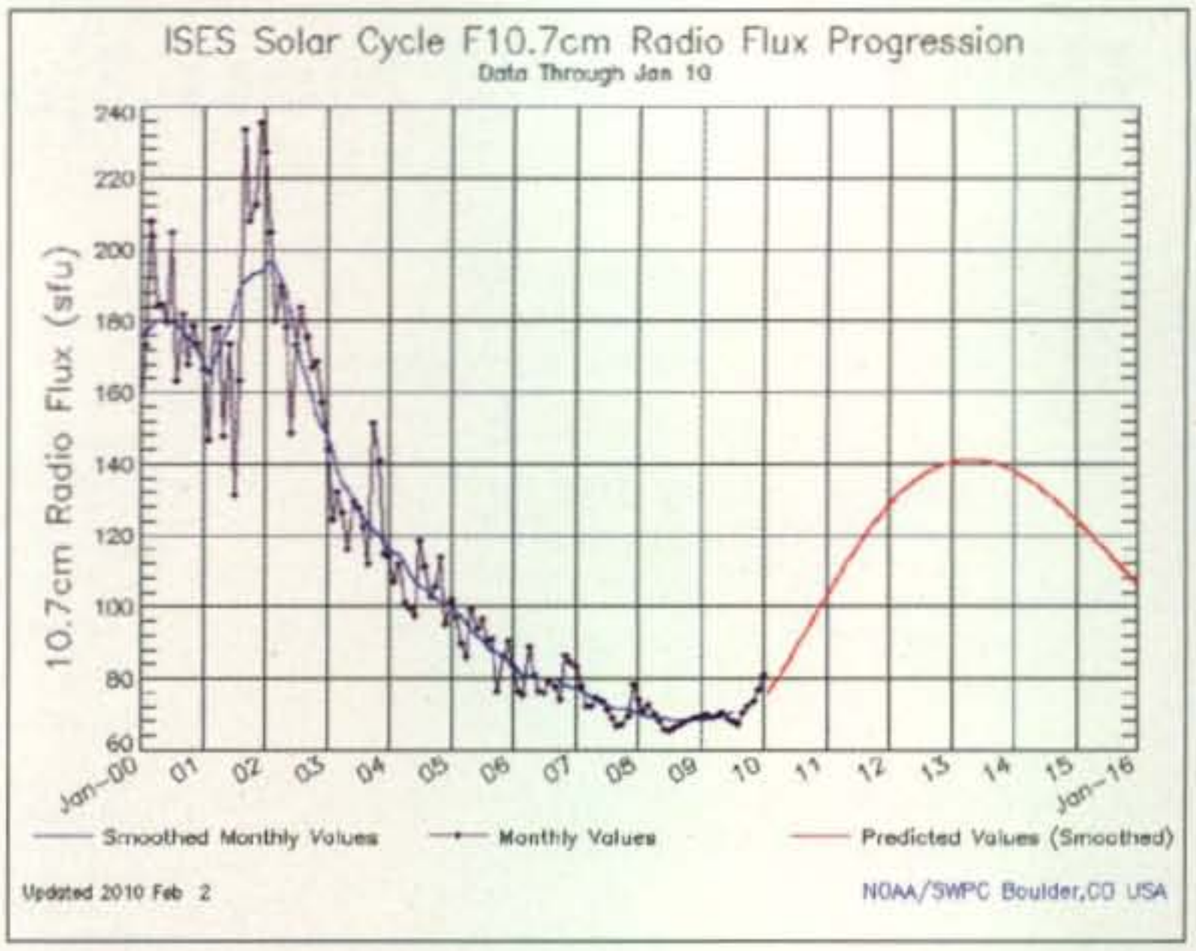

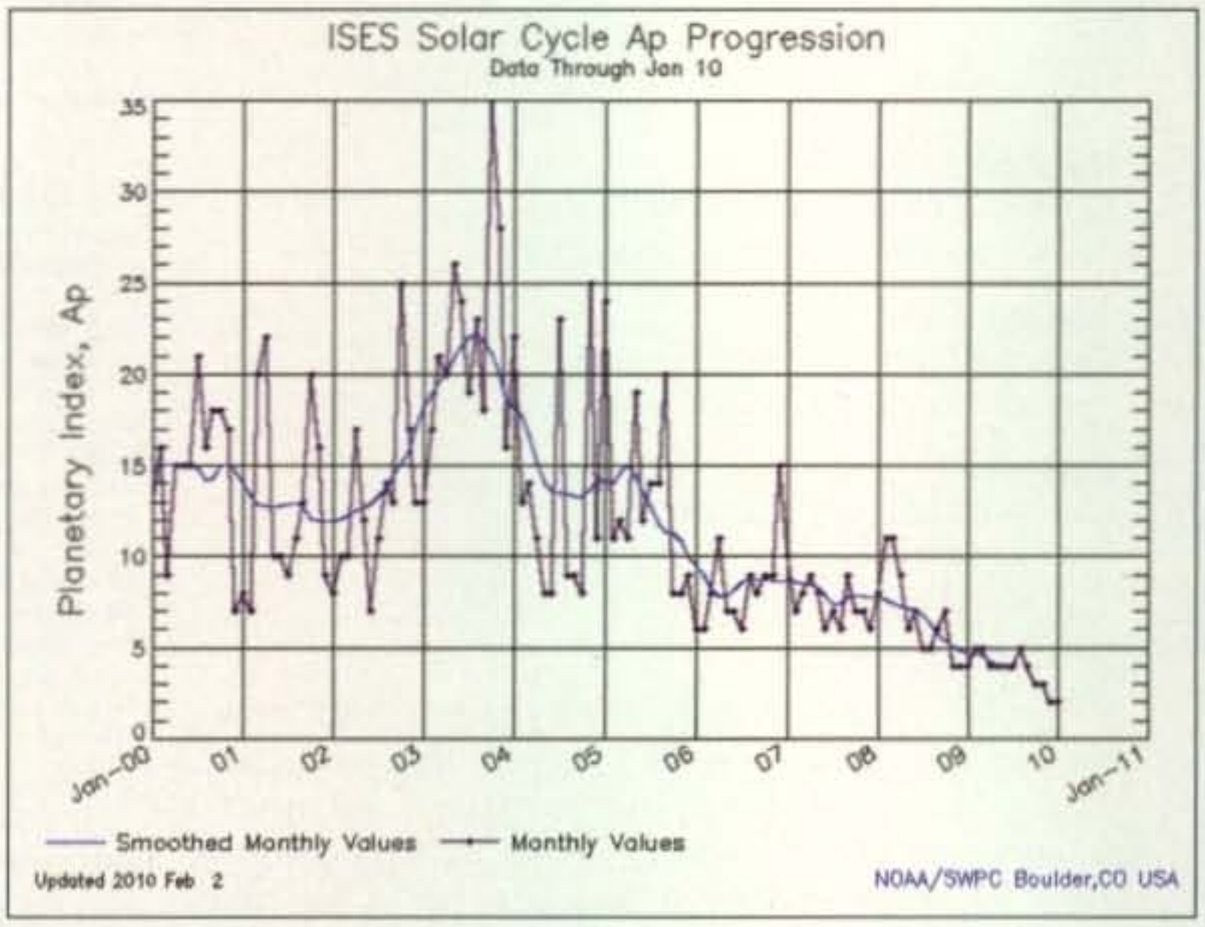

Figs 1A, B, & C– Sunspot Cycle 24 progression charts showing the continuing rise in both the monthly observed sunspot counts since August 2009, as well as the rise in the 10.7-cm flux monthly figures. Notice the geomagnetic conditions, however. The geomagnetic conditions are the quietest observed at least during the last two solar cycles. (Source: Space Weather Prediction Center [SWPC]/ National Oceanic and Atmospheric Administration [NOAA])

Minor flaring continued over the next several days, as the 10.7-cm continued to climb into the mid-90s, the highest yet in the new solar cycle. The higher end of the HF spectrum began to become active with DX signals, with even 12-meter activity worldwide. By February 12, solar activity ranged from low to high, and included the largest M-class flare yet recorded in solar Cycle 24. This flare originated in Active Region 1046, and was the source of a full-halo CME that was directed specifically toward Earth. This later produced minor aurora and geomagnetic disturbances. Active Region 1045 also produced a series of flares, including another M-class X-ray flare. By February 12, the 10.7-cm flux peaked at 96, just shy of 100! This level of activity was last seen in 2006.

At the time this column goes to press, another new active sunspot region has been numbered (AR 1048) even as some of the active regions are rotating away from view. It seems evident that we're no longer at solar minimum, but are now in the steady climb toward solar cycle maximum! When will

Fig. 2– The image of the many active sunspot regions (the bright areas on the disc) on February 11, 2010. Two of the active regions (top middle, top right) produced a series of C- and M-class flares (see text). (Source: Solar and Heliospheric Observatory [SOHO]) ⟶

we see the peak of this new cycle? Next month we'll examine this question in more depth.

April Propagation

April is one of the most interesting months for propagation. The seasonal change plays out on HF with activity moving up from 40 meters and down from 10 meters.

Ten- and 15-meter propagation begins to suffer during April, as we start our yearly journey toward the summer season. This is due to the generally lower maximum usable frequencies (MUFs) in the Northern Hemisphere. Also, as we get closer to the height of summer, each day's MUF occurs later in the day. At the same time, the MUF peaks are generally lower than the peaks of winter, due to summertime solar heating which causes the ionosphere to expand in depth. An expanded ionosphere produces lower ion density, which results in lower MUFs.

Because of this, short-path propagation among countries in the Northern Hemisphere will drop out entirely. On the other hand, because 10-meter propagation peaks in the fall, and April is an autumn month in the Southern Hemisphere, long-path DX is possible. The question during this year's season is whether or not the sun is active enough to energize the ionosphere to a level that will support propagation of higher HF frequencies.

Short-path propagation to South America, South Pacific, and other areas south of the equator will be strong and reliable when open. With the encouraging rise in solar cycle activity, it may be that we can begin to see occasional openings on DX paths as high as 12 meters.

Fair-to-good propagation occurs on both daytime and nighttime paths on the middle high-frequency bands during April. The strongest propagation occurs on paths that span areas of both day and night. Expect the 17- and 20-meter bands to offer nearly 24-hour DX to all parts of the world from locations in the low to middle latitudes (from the equator up to about 40 degrees latitude).

Low-band propagation is still hot on 40 meters, with Europe in the evening and Asia in the mornings. Occasional DX openings will occur on 80 meters around sunrise. However, these bands are quickly being degraded by the seasonal increase in noise.

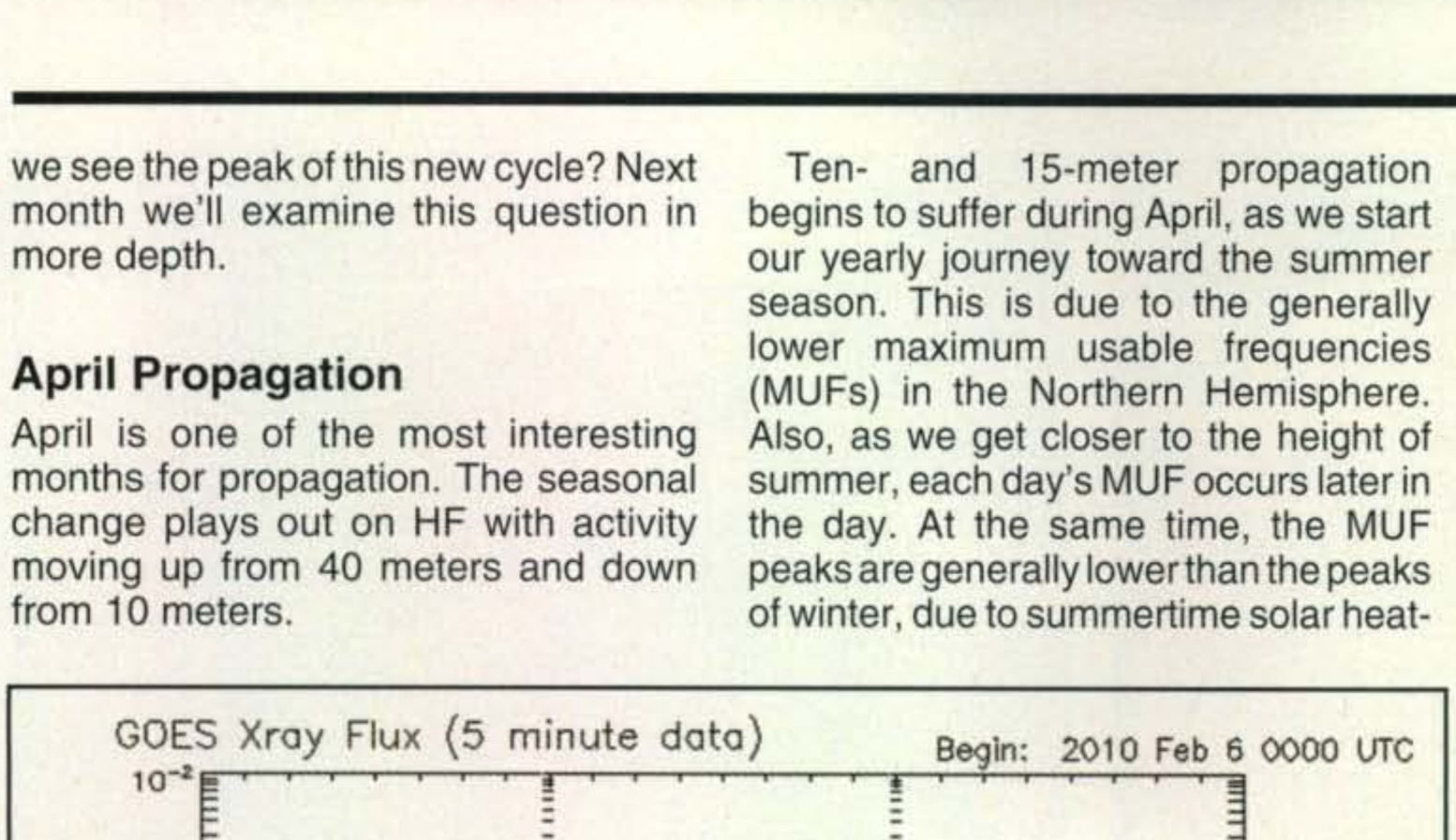

Fig. 3– The X-ray graph showing the steady "stream" of X-ray flares erupting from February 6 through February 9, 2010. (Source: SWPC/NOAA)

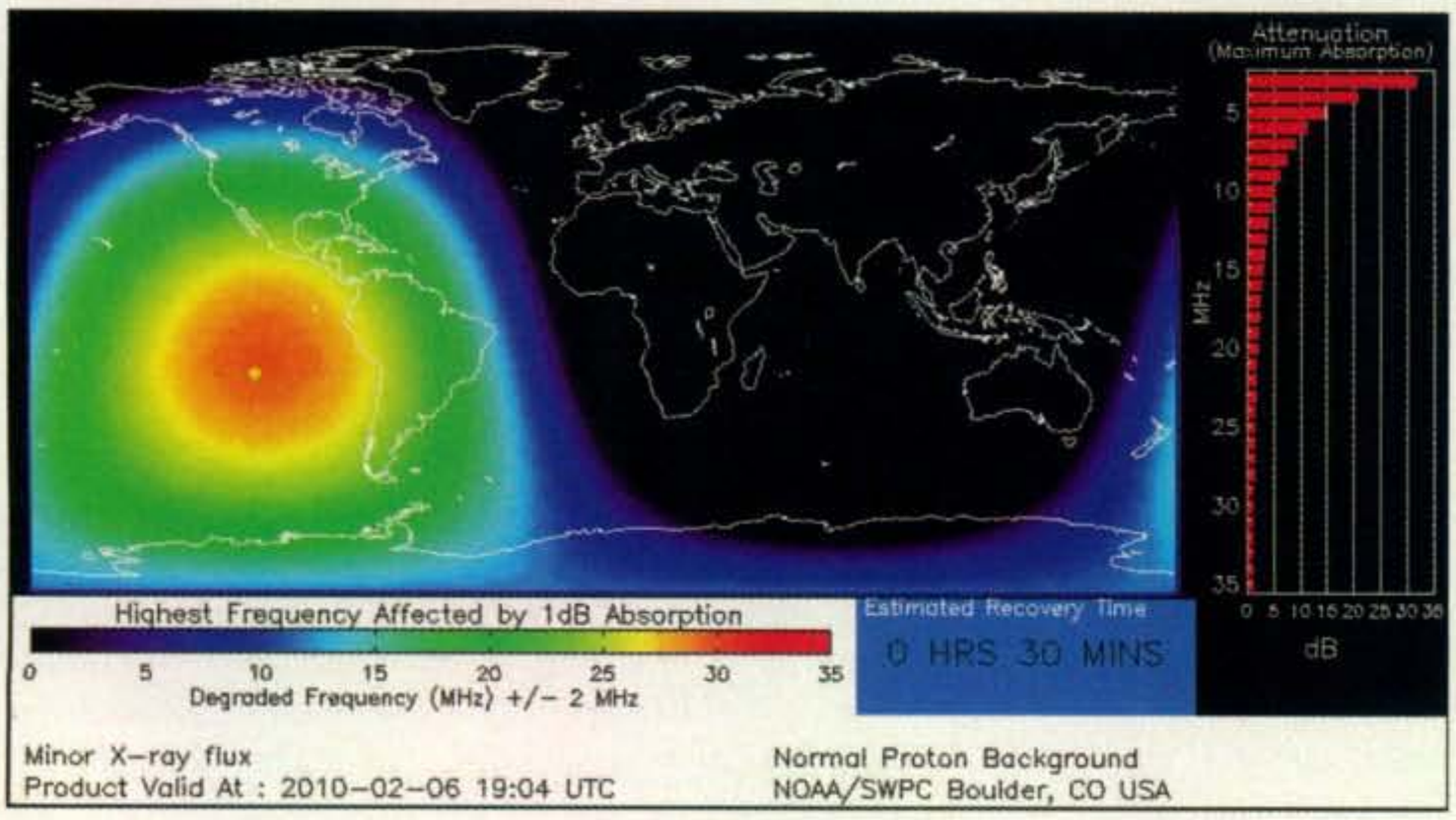

Fig. 4– When X-ray flares occur, the D-region of the ionosphere becomes energized, causing radio blackouts. This is more pronounced on lower frequencies. The stronger the flare, the higher the frequency absorbed in the D-region. This graphic maps the sunlit region where such a blackout is occurring. The right scale indicates the severity of the blackout throughout the HF spectrum. This particular map corresponds to the M-class flare errupting at 1900 UTC on February 6, 2010. (Source: SWPC/NOAA)

VHF Propagation

The April *Lyrids* meteor shower occurs from April 16 through April 25, peaking at 1700 UTC on April 22. The hourly visual meteor rate is expected to range from 18 to 90, with average meteor velocities of about 49 kilometers per second with broad outbursts. This shower's peak lasts for several days, providing a good opportunity for meteor-scatter propagation.

The debris expelled by comet Thatcher as it moves through its orbit causes the *Lyrids*. It is a long-period comet that visits the inner solar system every 415 years or so. Despite this long period, there is activity every year at this time, so it is theorized that the comet must have been visiting the solar system for quite a long time. Over this long period, the debris left with each pass into the inner solar system has been pretty evenly distributed along the path of its orbit.

Fig. 5– The image of the two very large active sunspot regions on February 10, 2010. These active regions pushed the 10.7-cm flux to 96, the highest yet (as of press time) of the new sunspot Cycle 24. (Source: SOHO)

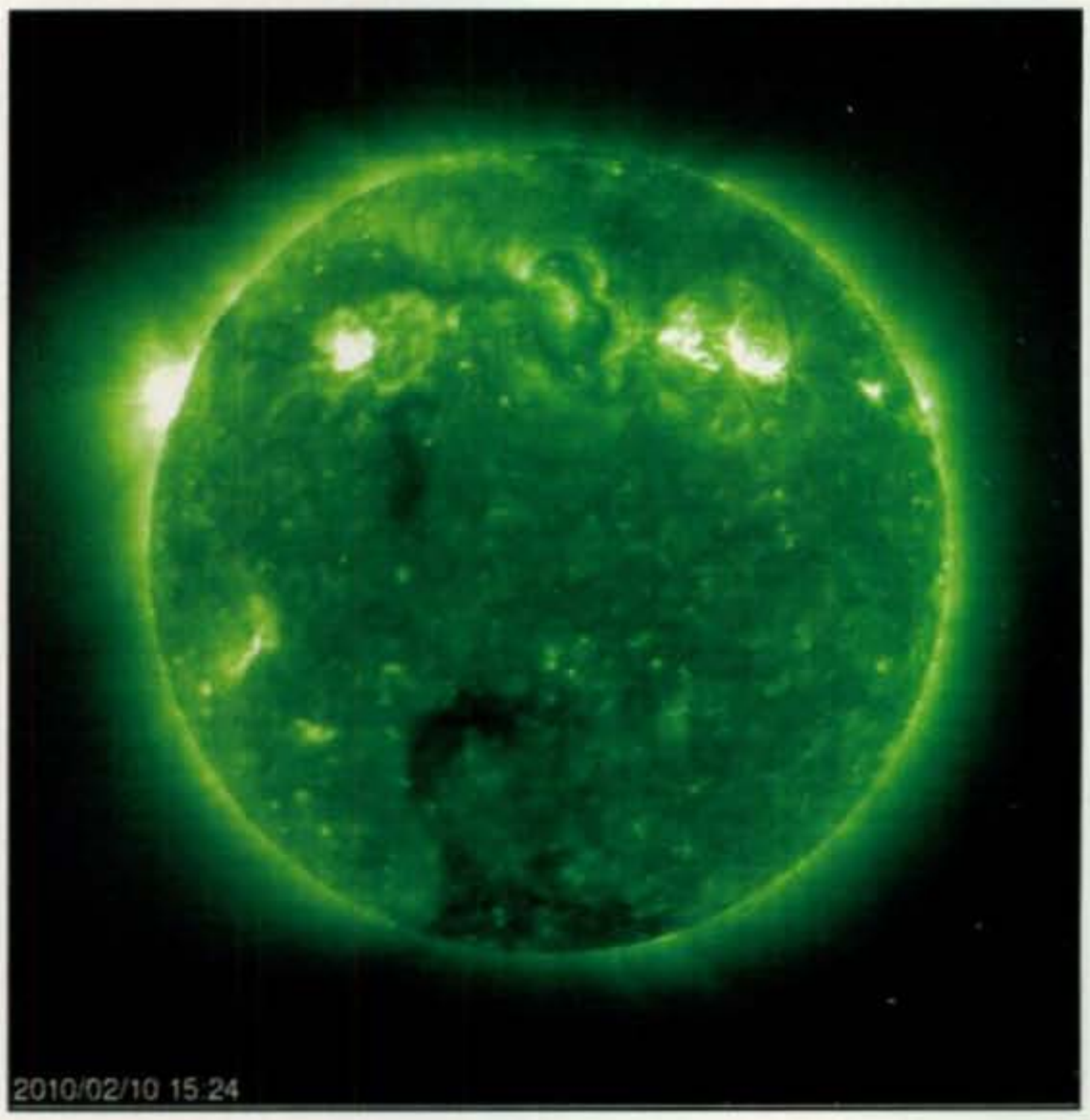

Fig. 6– Another view of the two very large active sunspot regions on February 10, 2010. Notice the other active regions, as well. February turned out to be the most active yet of the new solar Cycle 24. (Source: SOHO)

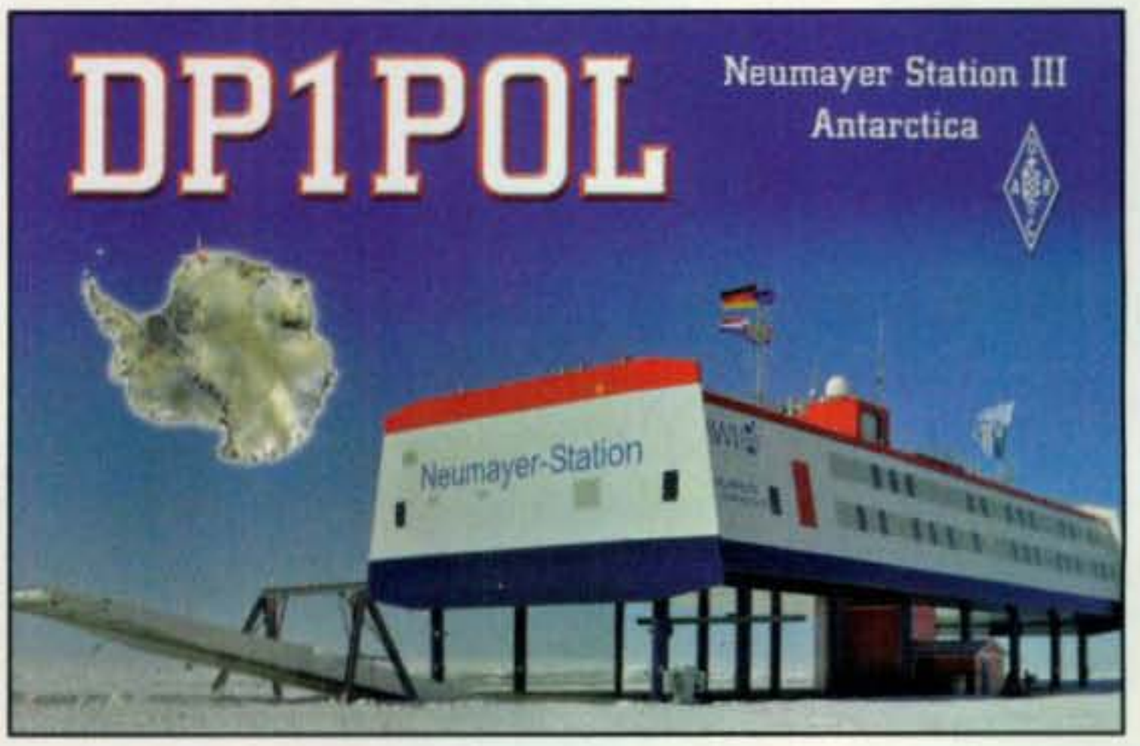

Fig. 7– The QSL card received by Tomas, NW7US, in Montana, from Felix, DP1POL, in Antarctica. The card verifies two different two-way contacts spanning the globe. One of the contacts was made on 20 meters using the digital mode, PSK-31, during October 2009. The second contact between Tomas and Felix was by Morse code on 40 meters during January, 2010. If such DX can be enjoyed during the weaker phase of the current solar cycle, imagine what DX can be had later this year when the sun is even more active. (Source: NW7US, as received from DP1POL)

This material isn't quite evenly distributed, however, as there have been some years with outbursts of higher than usual meteor activity. The most recent of these outbursts occurred in 1982, with others occurring in 1803, 1922, and 1945. These outbursts are unpredictable, and one could even occur this year. The best time to work this shower should be from midnight to early morning.

The unpredictability of the shower in any given year always

makes the *Lyrids* worth watching, since we cannot say when the next unusual return may occur. If this year's event is average or better, this should make possible meteor-scatter-type openings on the VHF bands.

Widespread auroral displays can occur during April, bringing with them unusual ionospheric short-skip openings on the VHF bands. The best times for these to occur are when the planetary K-index climbs above 4. Check the Last-Minute Forecast at the beginning of this column for the days in April that are expected to be Below Normal or Disturbed. Don't forget to check out *CQ VHF* magazine for more details on VHF propagation and conditions. If you use Twitter.com you can follow @hfradiospacewx for hourly updates that include the K-index numbers. You can also check the numbers at <http://prop.hfradio.org>.

Current Solar Cycle Progress

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 81.0 for January 2010, up from 76.8 in December 2009, continuing the certain steady monthly rise. The 12-month smoothed 10.7-cm flux centered on July 2009 is 71.0, also indicating a steady rise. The predicted smoothed 10.7-cm solar flux for April 2010 is about 82, give or take about 7 points.

The Royal Observatory of Belgium reports that the mean monthly observed sunspot number for January 2010 is 13.1, another significant rise, over two points higher than December's 10.6. This continues the sharp rise over the four months prior to December: August, 0.0; September, 4.2; October, 4.6; and November, 4.2. The lowest daily sunspot value during January 2010 was zero, occurring on only three days: January 6, 7, and 19. The highest daily sunspot count for January was 26, on January 23 and 24. The 12-month running smoothed sunspot number centered on July 2009 is 3.6. A smoothed sunspot count of 23 is expected for March 2010, give or take about 8 points.

The observed monthly mean planetary *A*-index (A_p) for December 2009 has been adjusted to two (2), which is still, geomagnetically speaking, the first most quiet month of either cycle (sunspot Cycle 23 or 24)! January 2010 was just as quiet, also two (2). The 12-month smoothed A_p index centered on July 2009 is 4.0. Expect the overall geomagnetic activity to be unsettled to stormy during April. At the time of writing, the forecast holds that April will be a month seeing great variation between quiet periods and days with geomagnetic storminess due to recurring coronal holes, and possible coronal mass ejections (if flaring continues to increase with the expected rise in solar activity). Refer to the Last-Minute Forecast for the outlook on what days this might occur.

I welcome your thoughts, questions, and experiences regarding this fascinating science of propagation. You may e-mail me, write me a letter, or catch me on the HF amateur bands. Please come and participate in my online propagation discussion forum at <http://hfradio.org/forums/>. If you are on Facebook, check out <http://tinyurl.com/fb-spacewx> and <http://tinyurl.com/fb-nw7us>. Speaking of Facebook, check out the CQ Amateur Radio Magazine fan page at <http://tinyurl.com/fb-cqm>.

Now that the new solar cycle is active, I'll be keeping my ears to the radio, hoping to hear you on the air. Happy DX!

73, Tomas, NW7US

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our readers say

WorldRadio Online and More...

Editor, *CQ*:

This is an open letter concerning *WorldRadio* on the internet. You should have waited two years to put *WorldRadio* on the internet only ... How do you expect people like me who live in the hinterland 16 miles from the telephone office to go online? Old-fashioned dial-up costs $12 per month but is very, very slow and subject to dropouts. The next choice is through a satellite TV company at a cost of $100+ per month. Does that make sense on a retirement income?

WorldRadio was printed on the least expensive paper on the market. I do not expect you to go back in print with *WorldRadio*. I have already lost six months of valuable reading. I would like this printed in *CQ* along with your comments.

William H. Wilson, Jr., W5VDM

W2VU responds: Going online was the only economically viable way for us to keep *WorldRadio* in publication. In an effort to accommodate readers with slower internet connections, we offer each issue of *WorldRadio Online* in two versions—one as a complete issue, and the other as four smaller sections that may be downloaded individually. We realize this isn't quite the same as having a print magazine in your hands, but if you haven't tried downloading the segments, I encourage you to try it. If it works, you may download back issues in the same way as well.

Editor, *CQ*:

I was wondering if you could do a publication just for kids instead of putting them with the adults. Otherwise the kids won't be able to see themselves if they get in the book. Then they could share with their friends. If you could do this, it would be great!

Leroy E. Anderson

W2VU responds: It would be wonderful if we could, Leroy, and we wish there were enough young hams out there to support a magazine of their own. Unfortunately, there are not (and even "back in the day" when there were lots of young hams, there still weren't enough). Our "Kids' Korner" column is the best way we have to highlight what young people are doing in ham radio, even if they have to share space in the magazine with the rest of us old folks.

Antenna Modeling

The following letter was directed to CQ's Antennas Editor Kent Britain, WA5VJB:

Dear Kent:

How can I model a Yagi in software that uses the J-driven element (half folded DE)? Is there a simple mathematical compensation that I'm missing? Most software will model a standard dipole driven element Yagi. Many thanks.

Joe Bobak, KC2WLX

WA5VJB replies: The driven element has virtually no effect on the gain or pattern of the Yagi. All the programs I am familiar with simply give you a driven element impedance for a design.

A dipole in free space has about a 72-ohm impedance. If you just drive it with 50-ohm coax, you have a small impedance mismatch. But if you put that dipole in a Yagi with a 37-ohm impedance, it will have a low SWR: 50/37 = 72/50.

The Yagi elements have a loading effect on the driven element, so you cannot have a dipole with 72-ohm feed in a Yagi and still have a low SWR. Even the 37 ohms is pretty low loading and the elements of the Yagi will be very widely spaced.

Now, let's say you want to use a folded dipole as your driven element, with a feed impedance of about 300 ohms. Design the Yagi structure for a 9-ohm feed impedance: 50/9 = 300/50.

The elements, especially the first director, will be very close to the driven element. Let's say you want to use 72-ohm coax. Then design for about a 13-ohm feed impedance: 300/72 = 50/13.

In my case the J element, or maybe even think of it as 3/4 of a folded dipole, has about a 150-ohm impedance in free space. So I arrange the Yagi elements for about an 18-ohm feed impedance: 150/52 = 52/18.

For 72-ohm coax feed, then about a 37-ohm impedance: 150/72 = 72/37.

The numbers are not exact, but a good starting point. And the J element can be driven with 50- or 72-ohm coax depending on the spacing of the other elements. In short, I am designing the structure of the Yagi to be its own impedance matching network for the driven element. I hope this helps.

—73, Kent, WA5VJB

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