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Amateur Radio

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COMMUNICATIONS & TECHNOLOGY

APRIL 2004

CQ

1945 **Our 60th Year** 2004

The QSL Conspiracy
Results: 2003 CQ National Foxhunting Weekend

First Look: Kenwood TS-480 HF Mobile Transceiver

CQ Reviews: MFJ Manual Screwdriver Antennas



On the Cover: Antenna restrictions weren't a problem for Jules Freundlich, W2JGR, of Minneapolis, Minnesota, but many other hams aren't so lucky. Part 2 of our article on antenna restrictions begins on page 36. More on W2JGR on page 108.

U.S. \$4.99 / Canada \$6.99



THE RADIO AMATEUR'S JOURNAL

Out Of This World Performance



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TM-D700A
2 meters & 440 MHz
(Currently On Board)



**MIR
Space Station**
TM-V7A
2 meters & 440 MHz
(Mission Complete)



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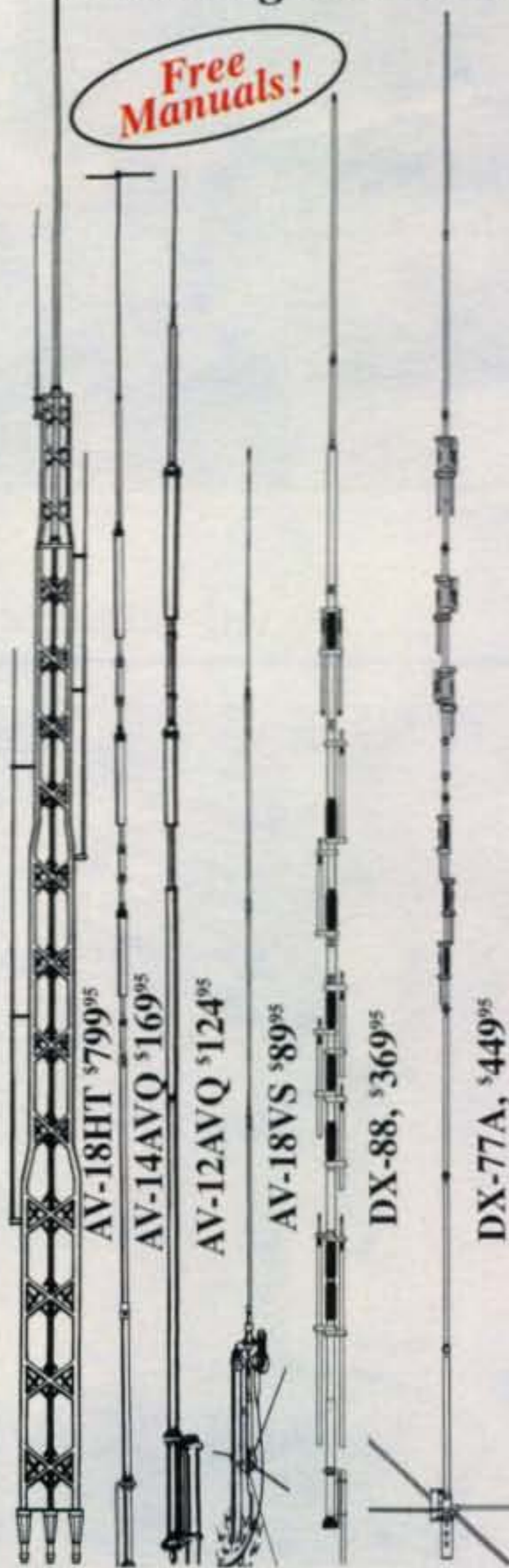
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Standing 53 feet tall, the famous Hy-Gain HyTower is the world's best performing vertical! The AV-18HT features automatic band selection achieved through a unique stub-decoupling system which effectively isolates various sections of the antenna so that an electrical 1/4 wavelength (or odd multiple of a 1/4 wavelength) exists on all bands. Approximately 250 kHz bandwidth at 2:1 VSWR on 80 Meters. The addition of a base loading coil (LC-160Q, \$109.95), provides exceptional 160 Meter performance. **MK-17, \$89.95.** Add-on 17 Meter kit. 24 foot tower is all rugged, hot-dip galvanized steel and all hardware is iridized for corrosion resistance. Special tilt-over hinged base for easy raising & lowering.

AV-14AVQ, \$169.95. (10,15,20,40 Meters). 18 ft., 9 lbs. The Hy-Gain AV-14AVQ uses the same trap design as the famous Hy-Gain Thunderbird beams. Three separate air dielectric Hy-Q traps with oversize coils give superb stability and 1/4 wave resonance on all bands. Roof mount with Hy-Gain AV-14RMQ kit, \$89.95.

AV-12AVQ, \$124.95. (10, 15, 20 Meters). 13 ft., 9 lbs. The AV-12AVQ also uses Thunderbird beam design air dielectric traps for extremely Hy-Q performance. This is the way to go for inexpensive tri-band performance in limited space. Roof mount with AV-14RMQ kit, \$89.95.

AV-18VS, \$89.95. (10,12,15,17,20,30,40,80 Meters). 18 ft., 4 lbs. High quality construction and low cost make the AV-18VS an exceptional value. Easily tuned to any band by adjusting feed point at the base loading coil. Roof mount with Hy-Gain AV-14RMQ kit, \$89.95.

DX-88, \$369.95. (10, 12, 15,17,20,30,40,80 Meters, 160 Meters optional). 25 ft., 18 lbs. All bands are easily tuned with the DX-88's exclusive adjustable capacitors. 80 and 40 Meters can even be tuned from the ground without having to lower the antenna. Super heavy-duty construction. DX-88 OPTIONS: 160 Meter add-on kit, KIT-160-88, \$189.95. Ground Radial System, GRK-88, \$99.95. Roof Radial System, RRK-88, \$99.95.

DX-77A, \$449.95. (10, 12, 15, 17, 20, 30, 40 Meters). 29 ft., 25 lbs. No ground radials required! Off-center-fed Windom has 55% greater bandwidth than competitive verticals. Heavy-duty tiltable base. Each band independently tunable.

| Model # | Price | Bands | Max Power | Height | Weight | Wind Surv. | Rec. Mast |
|----------|----------|----------------|------------|---------|------------|-----------------------|------------|
| AV-18HT | \$799.95 | 10,15,20,40,80 | 1500 W PEP | 53 feet | 114 pounds | 75 MPH | ----- |
| AV-14AVQ | \$169.95 | 10,15,20,40 | 1500 W PEP | 18 feet | 9 pounds | 80 MPH | 1.5-1.625" |
| AV-12AVQ | \$134.95 | 10/15/20 M | 1500 W PEP | 13 feet | 9 pounds | 80 MPH | 1.5-1.625" |
| AV-18VS | \$89.95 | 10 - 80 M | 1500 W PEP | 18 feet | 4 pounds | 80 MPH | 1.5-1.625" |
| DX-88 | \$369.95 | 10 - 40 M | 1500 W PEP | 25 feet | 18 pounds | 75 mph _{avg} | 1.5-1.625" |
| DX-77A | \$449.95 | 10 - 80 M | 1500 W PEP | 29 feet | 25 pounds | 60 mph _{avg} | 1.5-1.625" |

hy-gain[®] PATRIOT

Hy-Gain's new **PATRIOT** HF verticals are the best built, best performing and best priced multiband verticals available today. For exciting DX make full use of your sunspot cycle with the **PATRIOT's** low 17 degree angle signal.

No ground or radials needed
Effective counterpoise replaces radials and ground.

Automatic bandswitching
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Sleek and low-profile
Low 2.5 sq. ft. wind surface area. Small area required for mounting. Mounts easily on decks, roofs and patios.

Full legal limit
Handles 1500 Watts key down continuous for two minutes.

Built-to-last
High wind survival of 80 mph. Broadband matching unit made from all Teflon[®] insulated wire. Aircraft quality aluminum tubing, stainless steel hardware.

hy-gain[®] warranty
Two year limited warranty. All replacement parts in stock.

AV-640, \$359.95. (6,10,12, 15,17,20,30,40 Meters). 25.5 ft., 17.5 lbs. The AV-640 uses quarter wave stubs on 6, 10, 12 and 17 meters and efficient end loading coil and capacity hats on 15, 20, 30 and 40 meters -- no traps. Resonators are placed in parallel not in series. End loading of the lower HF bands allows efficient operation with a manageable antenna height.

AV-620, \$289.95. (6,10,12,15,17,20 Meters). 22.5 ft., 10.5 lbs. The AV-620 covers all bands 6 through 20

Meters with no traps, no coils, no radials yielding an uncompromised signal across all bands.

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All-Terrain Performance

On or off the road, Kenwood's new TM-271A delivers powerful mobile performance with 60W maximum output and other welcome features such as multiple scan functions and memory names. Yet this tough, MIL-STD compliant transceiver goes easy on you, providing high-quality audio, illuminated keys and a large LCD with adjustable green backlighting for simple operation, day or night.



144MHz FM TRANSCEIVER

TM-271A

■ 200 memory channels (100 when used with memory names) ■ Frequency stability better than ± 2.5 ppm (-20~+60°C) ■ Wide/Narrow deviation with switchable receive filters ■ DTMF microphone supplied ■ NOAA Weather Band reception with warning alert tone ■ CTCSS (42 subtone frequencies), DCS (104 codes) ■ 1750Hz tone burst ■ VFO scan, MHz scan, Program scan, Memory scan, Group scan, Call scan, Priority scan, Tone scan, CTCSS scan, DCS scan ■ Memory channel lockout ■ Scan resume (time-operated, carrier-operated, seek scan) ■ Automatic repeater offset ■ Automatic simplex checker ■ Power-on message ■ Key lock & key beep ■ Automatic power off ■ Compliant with MIL-STD 810 C/D/E/F standards for resistance to vibration and shock ■ Memory Control Program (available free for downloading from the Kenwood Website: www.kenwood.net)

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FCC Issues Proposed BPL Rules

The FCC has proposed rules for broadband over power lines, or BPL, that recognize the system's interference potential but rely on BPL system operators to resolve any problems on a case-by-case basis. The full text of the Notice of Proposed Rule Making (NPRM) had not been released at press time, so all of our information at this point comes from an FCC news release and statements by each of the five FCC commissioners.

Significantly, the NPRM does *not* propose increasing power levels for BPL above those currently permitted under Part 15 of the FCC rules, and it "proposed rules requiring BPL devices to employ adaptive interference mitigation techniques to prevent harmful interference to existing users, such as public safety and amateur radio operators," according to the Commission news release. Those "adaptive interference mitigation techniques," says the release, "would enable BPL devices to cease operations altogether, dynamically reduce transmit power, and/or avoid operating on specific frequencies to prevent harmful interference."

CQ Communications, Inc. has co-signed a letter to members of relevant committees in Congress, urging them to press the FCC not to make any decisions before two studies on interference—one by the National Telecommunications and Information Administration (NTIA) and the other commissioned by the ARRL to back up its internal study—are completed.

CQ "VHF-Plus" and CQ VHF magazine Editor Joe Lynch, N6CL, has a detailed analysis of what's known about the NPRM in his "VHF-Plus" column this month, beginning on page 62.

Additional BPL News, Updates

Hams in northeastern Pennsylvania are fighting a thus-far unsuccessful battle against a BPL rollout in Hanover Township, outside Bethlehem. According to "Newsline," two hams spoke about interference potential at a town council meeting, but the utility representative reportedly said there would be "no impact" and the council went ahead with its approval. ARRL Eastern Pennsylvania Section Manager Eric Olena, WB3FPL, is leading a battle to educate public officials in other communities about the negative as well as positive aspects of BPL.

In a follow-up to a story we reported here last month, "Newsline" says a BPL provider in Austria is suing that country's national ham radio association over reports that the government had shut down a pilot project due to massive interference and said there would be no BPL in Austria. The two companies running that pilot project say the reports are not true—that their program is continuing—and that they plan to take the Austrian ham organization and its president to court.

Score One for HOAs

Homeowners Associations have won a major court victory in New Jersey, where a state superior court judge ruled, in a case having nothing to do with radio antennas, that provisions of the master deed override even the state constitution. According to the *Star-Ledger* newspaper, the judge ruled that "(p)ivate organizations, even when they perform municipal functions, do not become quasi-governmental agents," adding that the state constitution "does not apply to private organizations; it applies to government action."

The American Civil Liberties Union, which had brought the suit on behalf of residents of an HOA-controlled development who felt the association's rules deprived them of their free speech and equal voting rights, promised to appeal.

OSCAR-40 in Big Trouble (Again)

AMSAT's trouble-plagued OSCAR-40 satellite is off the air and controllers don't know when or whether they'll be able to bring it back. They suspect a short-circuit in one or more cells of the spacecraft's main battery is pulling the voltage levels down to the point where neither the 2.4-GHz transmitter nor the onboard computer are operating. There is a backup battery system, but it's tied to the main one and attempts to bring it online independently have so far failed. Soon after its launch in late 2000, OSCAR-40 suffered what is believed to be an on-board explosion, disabling much of its transmit and receive capability. Controllers believe the current problems may be a result of whatever happened then as well. Meanwhile, AMSAT-DL (Germany) reports that efforts are being made to get a large non-amateur radiotelescope to aim at the satellite and try to determine whether the receivers' local oscillators are operating.

AMSAT-ECHO Launch Delayed

AMSAT-North America President Robin Haighton, VE3FRH, reports that the launch of the low-orbit ECHO satellite, originally scheduled for late March, has been delayed until at least the end of June. Haighton says this is due to delays in the delivery of the launch's primary payload to the launch site.

FCC Cracking Down on 10-Meter Use by Non-Ham Truckers

The FCC has cited a major delivery service and a radio importer/dealer in its latest crackdown on unlicensed operation on 10 meters by truckers. It started with FCC letters to two United Parcel Service offices in Ohio and Indiana, regarding findings that some UPS drivers had 10-meter rigs in their trucks. UPS responded that it would cooperate fully with the FCC and, according to "Newsline," noted that its collective bargaining agreement permitted only the use of commercial, non-modified CB rigs in UPS vehicles.

The rigs in question apparently are marketed as ham rigs, but can easily be modified to operate on CB as well. Pacetronics, which imports and sells a variety of radios, including Galaxy, General, and Ranger, also received an FCC notice asserting that they are non-certified CB rigs and are thus illegal to sell in the U.S. Pacetronics claims on its website that the radios in question are ham rigs, not CB rigs, and are thus not required to have FCC certification. The FCC citation claims that the ease of modifying these radios to operate on CB makes them "dual use CB and amateur radios," which "may not be certificated under the Commission's rules." The January 7 citation gave Pacetronics's owner 14 days to reply. As of mid-February, all of the radios cited by the FCC are still listed on the Pacetronics website, along with the disclaimer noted above (in barely readable type) about being ham rigs. There is no mention of a license being required in order to transmit with them.

N3JMM Honored by IEEE

The Institute of Electrical and Electronic Engineers (IEEE) has named FCC engineer Michael J. Marcus, N3JMM, a Fellow of the institute for his "leadership in the development of spectrum management policies." According to the *ARRL Letter*, Marcus helped redefine FCC rules in order to permit the now-widespread development of spread-spectrum and "Wi-Fi" wireless computer networking. He is Associate Chief for Technology in the FCC's Office of Engineering and Technology.

(Continued on page 110)

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... the first choice of hams around the world!

HAM-IV

The most popular rotator in the world!

For medium communications arrays up to 15 square feet wind load area. New 5-second brake delay! New Test/Calibrate function. New low temperature grease permits normal operation down to -30 degrees F. New alloy ring gear gives extra strength up to 100,000 PSI for maximum readability. New indicator potentiometer. New ferrite beads reduce RF susceptibility. New Cinch plug plus 8-pin plug at control box. Dual 98 ball bearing race for load bearing strength and electric locking steel wedge brake prevents wind induced antenna movement. North or South center of rotation scale on meter, low voltage control, max mast size of 2 1/16 inches.

HAM-IV
\$559⁹⁵



TAILTWISTER SERIES II

For large medium antenna arrays up to 20 sq. ft. wind load. Available with DCU-1 Pathfinder digital control (T2XD) or standard analog control box (T2X) with new 5-second brake delay and new Test/Calibrate function. Low temperature grease, alloy ring gear, indicator potentiometer, ferrite beads on potentiometer wires, new weather-proof AMP connectors plus 8-pin plug at control box, triple bearing race with 138 ball bearings for large load bearing strength, electric locking steel wedge brake, North or South center of rotation scale on meter, low voltage control, 2 1/16 inch max. mast.

T-2X
\$649⁹⁵

T-2XD
\$1029⁹⁵

with DCU-1



CD-45II

For antenna arrays up to 8.5 sq. feet mounted inside tower or 5 sq. ft. with mast adapter. Low temperature grease good to -30 F degrees. New Test/Calibrate function. Bell rotator design gives total weather protection, dual 58 ball bearing race gives proven support. Die-cast ring gear, stamped steel gear drive, heavy duty, trouble free gear train, North center scale, lighted directional indicator, 8-pin plug/socket on control unit, snap-action control switches, low voltage control, safe operation, takes maximum mast size to 2 1/16 inches. MSLD light duty lower mast support included.

CD-45II
\$389⁹⁵



| | |
|----------------------------------|----------------------------|
| WindLoad capacity (inside tower) | 15 square feet |
| Wind Load (w/mast adapter) | 7.5 square feet |
| Turning Power (in lbs.) | 800 |
| Brake Power (in lbs.) | 5000 |
| Brake Construction | Electric Wedge |
| Bearing Assembly | dual race/96 ball bearings |
| Mounting Hardware | Clamp plate/steel U-bolts |
| Control Cable Conductors | 8 |
| Shipping Weight (lbs.) | 26 |
| Effective Moment (in tower) | 2800 ft/lbs. |

| | |
|-----------------------------------|----------------------------|
| Wind load capacity (inside tower) | 20 square feet |
| Wind Load (w/ mast adapter) | 10 square feet |
| Turning Power (in lbs.) | 1000 |
| Brake Power (in lbs.) | 9000 |
| Brake Construction | Electric Wedge |
| Bearing Assembly | Triple race/138 ball brngs |
| Mounting Hardware | Clamp plate/steel U-bolts |
| Control Cable Conductors | 8 |
| Shipping Weight (lbs.) | 31 |
| Effective Moment (in tower) | 3400 ft/lbs. |

| | |
|-----------------------------------|---------------------------|
| Wind load capacity (inside tower) | 8.5 square feet |
| Wind Load (w/ mast adapter) | 5.0 square feet |
| Turning Power (in lbs.) | 600 |
| Brake Power (in lbs.) | 800 |
| Brake Construction | Disc Brake |
| Bearing Assembly | Dual race/48 ball brngs |
| Mounting Hardware | Clamp plate/steel U-bolts |
| Control Cable Conductors | 8 |
| Shipping Weight (lbs.) | 22 |
| Effective Moment (in tower) | 1200 ft/lbs. |

HAM-V

HAM-V
\$949⁹⁵
with DCU-1

For medium antenna arrays up to 15 square feet wind load area. Similar to the HAM IV, but includes DCU-1 Pathfinder digital control unit with gas plasma display. Provides automatic operation of brake and rotor, compatible with many logging/contest programs, 6 presets for beam headings, 1 degree accuracy, auto 8-second brake delay, 360 degree choice for center location, more!

ROTATOR OPTIONS
MSHD, \$99.95. Heavy duty mast support for T2X, HAM-IV and HAM-V.
MSLD, \$39.95. Light duty mast support for CD-45II and AR-40.
TSP-1, \$34.95. Lower spacer plate for HAM-IV and HAM-V.

Digital Automatic Controller

Automatically controls T2X, HAM-IV, V rotators. 6 presets for favorite headings, 1 degree accuracy, 8-sec. brake delay, choice for center of rotation, crisp plasma display. Computer controlled with many logging/contest programs.



DCU-1
\$649⁹⁵



AR-40
\$289⁹⁵
For compact antenna arrays and large FM/TV up to 3.0 square feet wind load area. Dual 12 ball bearing race. Automatic position sensor never needs resetting. Fully automatic control -- just dial and touch for any desired location. Solid state, low voltage control, safe and silent operation. 2 1/16 inch maximum mast size. MSLD light duty lower mast support included.

| | |
|-----------------------------------|----------------------------|
| Wind load capacity (inside tower) | 3.0 square feet |
| Wind Load (w/ mast adapter) | 1.5 square feet |
| Turning Power (in lbs.) | 350 |
| Brake Power (in lbs.) | 450 |
| Brake Construction | Disc Brake |
| Bearing Assembly | Dual race/12 ball bearings |
| Mounting Hardware | Clamp plate/steel bolts |
| Control Cable Conductors | 5 |
| Shipping Weight (lbs.) | 14 |
| Effective Moment (in tower) | 300 ft/lbs. |

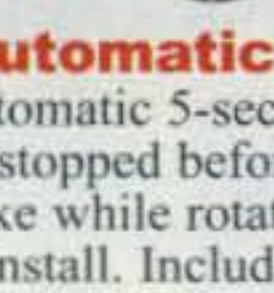
HDR-300A
\$1379⁹⁵

For king-sized antenna arrays up to 25 sq.ft. wind load area. Control cable connector, new hardened stainless steel output shaft, new North or South centered calibration, new ferrite beads on potentiometer wires reduce RF susceptibility, new longer output shaft keyway adds reliability. Heavy-duty self-centering steel clamp and hardware. Display accurate to 1°. Machined steel output.

| | |
|-----------------------------------|---------------------------|
| Wind load capacity (inside tower) | 25 square feet |
| Wind Load (w/ mast adapter) | not applicable |
| Turning Power (in lbs.) | 5000 |
| Brake Power (in lbs.) | 7500 |
| Brake Construction | solenoid operated locking |
| Bearing Assembly | bronze sleeve w/rollers |
| Mounting Hardware | stainless steel bolts |
| Control Cable Conductors | 7 |
| Shipping Weight (lbs.) | 61 |
| Effective Moment (in tower) | 5000 ft/lbs. |

AR-35 Rotator/Controller

AR-35
\$69⁹⁵
For UHF, VHF, 6-Meter, TV/FM antennas. Includes automatic controller, rotator, mounting clamps, mounting hardware. 110 VAC. One Year Warranty.



RBD-5
\$29⁹⁵

NEW! Automatic Rotator Brake Delay
Provides automatic 5-second brake delay -- insures your rotator is fully stopped before brake is engaged. Prevents accidentally engaging brake while rotator is moving. Use with HAM II, III, IV, V, T2Xs. Easy-to-install. Includes pre-assembled PCB, hardware.

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"They Just Want to Make More Money . . ."

The ARRL's recent proposal to "re-structure" amateur radio licensing and expand some HF phone bands at the expense of the existing Novice CW bands has generated quite a bit of discussion on and off the air ... though much of it has less to do with the merits of the proposal than with repeating tired old catch-phrases based more on emotion than fact. Now, chances are at least some of you agree with at least some of these catch-phrases, so I'm putting on my flame-retardant underwear and ask only that you read all the way through before going ballistic, firing off a nastygram (via the National Traffic System, of course) and canceling your subscription because you can't tolerate reading views that disagree with yours. So here we go...

"It's going to turn ham radio into CB."—We've heard this about any proposed change in licensing rules ever since there was CB. Before that, proposed changes were simply going to kill ham radio. The fact is that since Sheriff Riley came riding into town in his white direction-finding van and started rounding up the bad guys, the amateur airwaves are probably better-behaved today than at any time in the last 25 years. Exception: the upper ends of 75 and 20 meters, populated primarily by long-time 20 word-a-minute Extras. Speaking of which, it would appear from the enforcement letters sent out by the FCC that at least as many long-time 20 word-a-minute Extras as "no-code CB techs" are getting busted—and both groups together make up a tiny minority of active hams. Another fact: Over the past 40 years, CB has been the main source of newcomers into ham radio. Far from killing the hobby as many have feared over the years, CB has sustained amateur radio.

"They're dumbing down the license requirements again."—First of all, I challenge any long-time Extra to sit down and take today's Extra Class written exam without studying. Unless you're an active electronic engineer working in RF, chances are there will be stuff there you've never seen before. Difficult stuff. And there's nothing there on tubes anymore. In fact, take the Technician or General test without studying. See how well you do on the power density questions.

As for the code test, I've met very few hams who say the code test made them better hams, better people, or enthusiastic code operators. Times are changing and hams are the only people on the radio dial still using Morse code. As I've said here before, there are many good and valid reasons to learn and use Morse code—reasons that will not change if the code test were to go away. The FCC said years ago that it saw no continued regulatory need for a code requirement, except for the international rules, which have now been changed. This is not dumbing down, it's adapting to current realities.

"The manufacturers just want to make more money (and we just want to sell more magazines)."—This is my favorite. As I said in a forum at the Miami Tropical Hamboree in February when someone brought this up, *This is America. Making money is supposed to be good. Making more money is supposed to be better.* It's how we've come to have the highest standard of living on the planet.

BPL Update

As we approached our deadline for this issue, the FCC put out a Notice of Proposed Rule Making (NPRM) on Broadband over Power Lines (BPL). The text of the Notice was not available at press time; however an FCC news release and statements from individual commissioners made it very clear where the Commission is heading. "VHF-Plus" and *CQ VHF* Editor Joe Lynch, N6CL, devotes his column in this issue to the latest on the BPL front, and his views on the situation. I strongly urge you to read them, to read the NPRM text (which will be out by the time you read this), and to file educated comments. —W2VU

The fact is that a healthy amateur radio industry is essential for a healthy amateur radio hobby (or service). Very few of us have the skills or the tools necessary for building today's state-of-the-art radios. Very few of us can program microprocessors or build circuits populated by surface-mount components. Besides, ham gear is incredibly cheap compared with comparable commercial gear—sometimes by a factor of three to four. Our rigs are bargains, plain and simple.

We depend on the amateur radio manufacturers to keep us on the air; on the publishers to keep us informed. You're reading this magazine because you find some value in it; otherwise you wouldn't have parted with your \$5 at the newsstand or your \$32 for a subscription. If the manufacturers don't sell enough ham rigs, they'll stop making ham rigs. If the publishers don't sell enough ham books and magazines, they'll stop publishing them. And then where will ham radio be?

Our manufacturers take a big financial risk every time they start working on a new model. There are the costs of research, engineering, design, manufacturing and distribution that must be paid before a single penny in revenue comes in the door. In exchange for this risk, they are entitled to a fair return on their investments. And as I said above, our rigs—even the expensive ones—are incredible bargains when compared to the cost of their commercial counterparts.

Remember—the FCC says only that hams can't be compensated for *operating* amateur radio. It says nothing about being fairly compensated for manufacturing or selling equipment, accessories and related items. The FCC rules also say nothing about making money (and often a ton of it) from products developed on the basis of knowledge gained in the Amateur Radio Service. Thousands upon thousands of you have parlayed your hobby into your career. We salute you for it. But if it's OK for you to make a good living based on ham radio, it's just as much OK to make a good living in the amateur radio industry. One does not take a vow of poverty before entering the ham radio industry.

I *want* the manufacturers to sell more radios, so they and their dealers make more money, so they all buy more ads in *CQ*, so our company makes more money, so I make more money, so I can buy more radios (not to mention putting my kids through college). It's the American way.

The ARRL's Proposal

Now, on to the substance of the ARRL's proposal. W5YI covers it in detail in his column this month, so I

(Continued on page 110)

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ICOM

Radio-Active Ship Plying the Great Lakes – U.S. Naval Cadet training ship *Pride of Michigan*, located at its home port on the Clinton River, recently has become the operating center for The Noble Odyssey Foundation Radio Club, a newly formed amateur radio club named after the supporting foundation of the Great Lakes Division of the U.S. Naval Sea Cadet Corps. The cadet members are trained in the use of the VHF and HF radio equipment on board and encouraged to use it when not engaged in other duties while at sea. Most of the members have already passed the FCC tests required for an operator's license and others are preparing for the test. Local ham Dick Arnold is the club trustee and has acquired the club callsign K8NOF, which is assigned to the station for use while operating the ship's club equipment. New antennas in conjunction with the amateur gear will allow communications worldwide.

"The Skirmish," TARA's Digital Prefix Contest – The Troy ARA is sponsoring this event on April 17 from 0000–2400Z on 160–6 meters (no WARC bands). Categories: PSK31, PSK63, MFSK, RTTY, Hell, Throb, Packet, ASCII, SSTV, and MT63. Exchange: Name & Prefix. Score: QSOs × WPX Prefixes × Power Multiplier. For more information, go to <http://www.n2ty.org/seasons/tara_dpx_rules.html>, or contact Chris Durbin, N8PSK, <skirmish-manager@n2ty.org>.

Visalia International DX Convention – This year's event will be held April 23–25 at the Holiday Inn and Conference Center, Visalia, California. For more information go to <<http://www.scdxc.org/visalia/>>, and also see this month's "DX" column.

• **The following Special Event stations are scheduled for late March and April:**

W3FT, from Greater Baltimore Hamboree and Computerfest & ARRL Maryland State Convention, Timonium, MD; Baltimore ARC; 1300Z March 26 to 2000Z March 27 on 14.265 and 7.265 MHz. For certificate QSL to W3FT, c/o GBH&C, P.O. Box 95, Timonium, MD 21094. (More info go to <www.gbhc.org>.)

N9BQV, from aboard WW II Memorial Submarine *USS Cobia AGSS-245*, celebrating Memorial Submarine radio room reactivation weekend; USS Cobia Radio Club and Mancorad Radio Club of Manitowoc, WI; 1400Z April 24 to 2200Z April 25 on 7.243, 14.243, 21.343, 28.343 MHz (±25 kHz). For QSL send QSL and #10 SASE to Fred Neuenfeldt, W6BSF, 4932 So. 10th St., Manitowoc, WI 54220-9121.

VE3HC, from 30th anniversary of the Fred Hammond Chapter 73 of QCWA, Hammond Museum of Radio, Guelph, ON, Canada; 1300–2100Z April 24 & 25 on 3762.5, 3890, 7244, 14262, 21365, 28325 kHz. QSL to Hammond Museum of Radio VE3BJ, 595 Southgate Dr., Guelph, ON, N1G 3W6 Canada. (More info see <www.qcwa.ca>, or e-mail <ve3dwh@rac.ca>.)

• **The following hamfests are slated for April:**

Apr. 3, **Longmont ARC Hamfest**, Exhibition Building, Boulder County Fairgrounds, Longmont, CO. More information go to <<http://www.qsl.net/larc>>. (Talk-in 147.270; exams 10 AM)

Apr. 3, **Lincoln Trail ARC Hamfest**, Prichard Community Center, Elizabethtown, KY. Info: <ai4rg@hotmail.com>; <<http://www.qsl.net/ltrc>>. (Talk-in 146.98; exams)

Apr. 4, **Raleigh ARS Hamfest, NCS State Convention, & Electronics Fleamarket**, Jim Graham Bldg., NCS Fairgrounds, Raleigh, NC. Contact Jeff Wittich, AC4ZO, 919-362-4787, e-mail: <ac4zo@arrl.net>. (Exams contact WA4GIR, 919-387-9152)

Apr. 10, **Drumlins ARC Hamfest**, Newark, NY. Contact Calvin Bruzee, KC2HUP, 315-331-0281; e-mail: <kc2hup@rochester.com>; also <www.drumlinsarc.com>.

Apr. 18, **Madison Area Repeater Assn. Hamfest/Swapmeet**, Mandt Community Center, Stoughton Jr. Fairgrounds, Stoughton, WI. Contact Paul Toussaint, N9VWH, 608-245-8890; e-mail: <w9hsy@execpc.com>; <www.qsl.net/mara/>. (Talk-in 147.15 [123 Hz]; exams)

Apr. 24, **Valley of the Moon ARC ARRL Hamfest**, Sonoma Valley Veteran's Bldg., Sonoma, CA. Contact Darrel, WD6BOR, 707-996-4494; e-mail: <wd6bor@vom.com>. (Talk-in 145.35, –600, PL 88.5; exams, registration starting at 9 AM, exams at 10 AM)

Apr. 25, **Southington, CT ARA Fleamarket**, Southington High School, Southington, CT. Contact Alex Joyce, KB7HCO, 860-214-3013; e-mail: <logic555@aol.com>; <<http://www.chetbacon.com/sara.htm>>. (Talk-in 145.170, 147.345, 444.250, 224.800 –PL 77; exams)

Apr. 25, **Moultrie Amateur Radio Klub Hamfest**, Moultrie/Douglas County Fairgrounds, Arthur, IL. Information call 217-543-2178 (days), 217-873-5287 (evenings). (Talk-in 146.055/146.655 and 449.925/444.925 PL 103.5)

Apr. 30, **Baton Rouge Hamfest 2004**, Baker Civic Auditorium, Baton Rouge/Baker, LA. Contact Ed Laughery, AD5JV, 225-686-1450; e-mail: <ad5jv@arrl.net>; <www.brarc.org>. (Talk-in 146.79–, exams)

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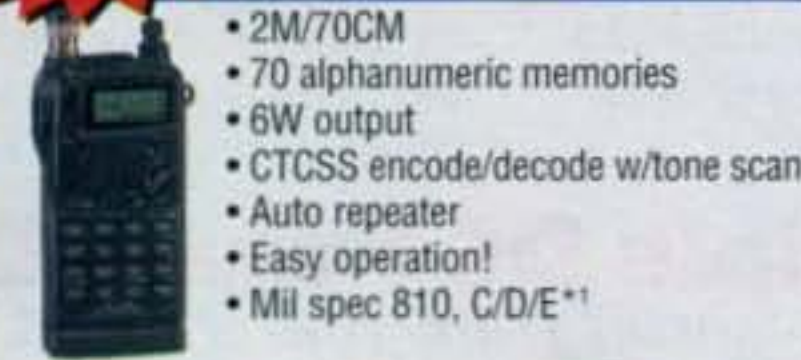
- 6M/2M/70CM @ 5W
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- Dynamic memory scan
- Backlit keypad & display
- CTCSS/DTCS encode/decode w/tone scan
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- Cool dual display
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- CTCSS encode/decode w/tone scan
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- Mil spec 810, C/D/E**
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- 6W output
- CTCSS encode/decode w/tone scan
- Auto repeater
- Easy operation!
- Mil spec 810, C/D/E**

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- 2M/70CM
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- Wide band RX inc. air & weather bands
- Dynamic Memory Scan (DMS)
- Remote Mounting Kit Included
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- 55 watts VHF (2M), 50 watts UHF (70CM)
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IC-V8000 2M Mobile Transceiver

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- ICOM DMS scanning
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- Weather alert
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- Backlit remote control mic

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He'd been inactive for more than four decades . . . until three old-time ham friends decided it was time for W6BNN to get back on the air.

The QSL Conspiracy

An Inactive Ham's Return to the Airwaves

BY LAURENCE N. (LARRY) WOLFE,* W6BNN

One of the biggest trends in ham radio today is long-inactive amateurs returning to the ham bands. Many, like W6BNN, have kept their licenses current even while inactive. Even though a return after 46 years of inactivity is a bit longer than most, Larry's heart-warming story helps spotlight this trend.

—W2VU

You probably noticed before starting to read this article that it was written by someone who has the call letters W6BNN. Well that's true, but for the last 46 years that callsign was never spoken into a microphone nor tapped out on a key. However, a few

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years ago all that changed, and in a very unexpected way. Here's what happened.

My wife and I live in Hollywood, California. No, there are no movie stars living nearby; it's just an average kind of American neighborhood. We live on a hill directly across from the HOLLYWOOD sign, at an elevation that allows us to see the Pacific Ocean just over the Kodak theater (that's the new home of the Oscars), at the intersection of Hollywood and Highland Boulevards. Now you all probably are thinking, "Hey! That's a great DX location," but that would be getting a little ahead of the story.

My daily trips to the mailbox were characteristically commonplace, picking up the usual kinds of mail: credit-card solicitations, bills, offers of colossal savings on everything I didn't want

or need, the usual junk mail. On a day in early January of 2000, though, there was something unusual in the mail. When I brought out the daily handful of mail from our box, there, in the stack of letters and fliers, was a QSL card!

My first reaction was "Who's bootlegging my call?!" I had gotten my callsign in 1947 and had kept active all the intervening years, lest I had to pass the 13 words-per-minute code test again (I didn't know it's only 5 wpm now). My very first rig, back in 1947, was a homebrew 10-meter transmitter using a pair of 807s in parallel in the final and a good ol' 6L6 driving them, and the last time I was active was in 1958 with a Heathkit DX-100.

It wasn't someone bootlegging my call. The card was from an old friend,



The author in 1947 with his first transmitter, "a homebrew 10-meter rack-and-panel job." Part of his ARC-5 receiver is visible on the card table (Photos and QSLs courtesy of the author)

Enjoying outdoor operation. From the left, there's Ron, W6AEK, looking dejected; the author; and Keith in front of the tent. They were operating from Mt. Hollywood, which overlooks the Griffith Observatory and is right below the famous HOLLYWOOD sign. →



Keith, W6BCQ, operating Field Day circa 1948. That's a 1939 Olds behind him. ←

This was taken in Keith's shack in 1947. The YL is Doris David (daughter of Ted, W6UZE, now a Silent Key); the group has lost touch with her. The young man seated over Doris's shoulder is Gene Redlin, WB6BTM. The identities of the



young man standing on the left and leaning into the photo and the person smoking a cigarette off to the right are unknown. However, says the author, that's a Hallicrafters SX-28A across from the microphone!

Ron Greenberg, W6AEK, and it was formatted as if we had actually made a contact on the air. Ron and I had gone to high school together, but I had not seen or spoken to him for nearly 50 years.

I took the card back into my house, sat down, and just stared at it. It was, and is, amazing the memories that piece of cardboard triggered. My wife came into the room and asked me what was wrong. I said nothing was wrong, but I guess there may have been a tear or two someplace on my face. Why else would she have asked me that question?

I have an active law practice, and the day's pressing matters took over. I put Ron's QSL card out of my mind, but the next day in the mail I got two more QSL cards, one from Keith Fowler, W6BCQ, and one from Gene Redlin, W6BTM (WB6BTM at the time). Ron, Keith, Gene, and I all went to Theodore Roosevelt High School in east Los Angeles, we were in the "sound crew" together, and we all studied CW and theory together (does anybody remember *crystal coefficients* anymore, or the expression *rock bound*?). Ron, who was a whiz at CW, passed 13 wpm first; Keith was next, then me (an order that our call letters reflect). We all were licensed in 1947. Gene was the last to get his "ticket," in 1954.

Initially Gene was WN6UHJ, then WA6BHB, then WB4LSE, then WB6BTM, and now, finally, W6BTM. Gene moved around a lot. His seduction into this "happy breed" of radio "hams" began when his dad gave him a Hallicrafters S-40 receiver for his 16th birthday. Gene became an avid SWL (shortwave listener), marveling at the diversity of voices coming into his bed-

room from all over the world. However, one very loud, heavily modulated AM voice mesmerized this new SWL. It turned out that Gene lived only a few miles from Keith, who was running 300 watts, and every time W6BCQ transmitted, Gene's S-40 shut down but good; the entire band was "blocked" so badly that Gene couldn't hear anything else. Gene began to make inquiries as to whose voice it was and where in the world that W6BCQ radio station was located.

One day Gene showed up at the sound-crew digs at Roosevelt High, introduced himself, and asked me if I knew about such matters. I assured him I did, and what's more, I knew who that voice belonged to; and yes, I could introduce him to Keith. Keith was a *senior*, though, and was never around the classroom where we all hung out. Nonetheless, I soon managed to arrange an "eyeball sked." What followed was a clear case of Cupid's Arrow (Marconi's arrow would be more accurate) hitting home, the effects of which would last a lifetime.

Off to War

The Korean War broke us apart, and we four went our separate ways. Keith, W6BCQ, became an instructor at the Signal School at Fort Monmouth, New Jersey; Ron, W6AEK, went to the ASA (Army Security Agency) at Fort Devons, Massachusetts and still will not talk about it, lest he be shot, he says; and Gene, W6BTM, worked the home front at Gilfillan Industries (an electronics firm). I went to OCS (Officer Candidate School) at the Signal School at Fort Monmouth, and wound up at the Sacramento Signal Depot.

Now, nearly 50 years later, my three old friends were dearly conspiring to lure me back on the air at any cost. I learned many months later that they had several QSOs during which this matter was discussed in depth and their battle plan was formed. The QSL cards were just the first salvos in their campaign.

No, No, No!

On the landline, over several days, I made my position clear. I told them, "No! No way!" I explained why: As a practicing attorney, and a working playwright, I simply did not have the time. However, they persisted, and no excuse I could offer would they accept. God bless them.

When I weakened sufficiently, and agreed to *think about it*, I was sent lists of what I should buy. Although I still resisted, they still persisted, sending me catalogs full of beautiful radio equipment, the kinds of gear I never could have afforded years ago. One catalog from Gene had a page with several arrows indicating "buy this one," all the arrows pointing to an impressive base-station radio, one which cost more than what I paid for my car.

It seems, I soon discovered, that hardly anybody builds their own rigs (which I learned are now called radios, and not rigs) anymore. All I needed to do, they told me, was buy a radio for a couple of bucks and throw a hunk of wire over my deck and use it as a random tuned line. I told them no! And it wasn't a couple of bucks!

So it happened, all because of the intervention of these three life-long friends, that I returned to active "ham" status.

Assembling a Station

Getting back on the air, for me, wasn't as simple as I thought it was going to be. To get started, I took the list of equipment Keith, Ron, and Gene told me I absolutely had to have down to my local electronics store, one which handled ham radio equipment. That was the easy part. Once there, I told the salesman (who turned out to be Alan Linder, W2WJ), that I had this list of what I needed, and I showed it to him. That went very well until he asked me if I needed any PL-259s. Well, I simply did not want to admit I didn't know what they were! My mind went blank. I asked, "Do you think I'll need a few?" He replied, "Well, if you're going to use RG-213/U coax in bulk, you will." Well, that did it. I came clean. I told him I hadn't been active for years (I fudged on the actual number), and I didn't know what I really needed to complete my new "radio."

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A more recent photo of the author. W6BNN is a playwright and attorney and once again, after a nearly 50-year absence, an active ham!

He was great, a real help. We talked about our first rigs and the how and why of becoming hams. He went on to guide me through a maze of supplemental equipment I would need, from a good SWR meter to those mysterious PL-259s, which of course I remembered the moment the stress was gone.

Soon thereafter I conquered the SO-239 and applied for a second mortgage.

Next came the antenna, but how was I going to raise it into position all by myself? I had chosen an inverted-Vee because of its simplicity and ease of getting it tuned. However, Keith, Ron, and Gene all lived more than a day's drive away from Hollywood, and I just couldn't ask them to make the trip to Los Angeles. Locally, I didn't know a single ham I could call on to help. I just had been away from amateur radio for too long.

I decided to design a counter-weighted lifting system, a nuts-and-bolts affair, which used only $3/4$ - and 1-inch galvanized steel pipe along with several 1-inch nipples, a couple of flanges, and, most important, two 1-inch unions. (*The ham spirit of inventiveness never fades!—ed.*) All of these things were very inexpensive and easily available. One union was to be used as a pivoting device; the other about 18 inches above it, to lock the mast into its vertical position. The counterweight, at the bottom of the mast, coming off on a 90-degree angle, was weighted down with the kind of weights used on barbells, and as the mast went up, the barbell weights went down until they rested on the roof. In this way I was

able to erect the inverted-Vee almost with one hand, raising the 26-foot mast, with the *balun*, and the 22-gauge wire already soldered to it, into position. It worked! I was now ready to transmit!

It's funny, but I had the exact same feeling as I did when I was 16 and pushed down the Bakelite handle of an old telephone key-lever switch and heard the antenna relay in the rack and panel go WOMP! All the meters on the black crackle facing of my 100-watt AM transmitter bobbed-up on their scales, and I called CQ *for the very first time*. Now, 50-plus years later, I had the exact same feeling. A few days later, early on a Friday morning, our little group of four made contact via a sked, all of us on the air again. It may sound corny, but it was a very emotional event.

Back on the Air

We old friends contact one another once a week on 40 meters. Ron in Redding, northern California, and a retired CBS engineer, now in his early 70s, has gone through two wives and a legion of girlfriends, but only one lasting love—amateur radio.

Keith, who got well-heeled after inventing several medical-electronic gadgets, lives in Sage, California (that's near Hemet, which is near Palm Springs) on a 15-acre "antenna farm." He's the only ham I've ever heard of who has three separate *phased bobtail curtains* (whatever the heck those are), and more beam antennas than the gods ought to allow. Gene now lives in Las Vegas and is as droll and conversationally delightful as any Oxford University Don.

To fill in a few gaps in this story, it was Keith who was the first one of us to get the ham radio bug, and he was bitten pretty badly. One day, at a time when none of us was licensed (all of us about 16 or so years old), Keith, knowing Ron's family had one of those huge Zenith console radios which had a shortwave band, telephoned Ron and asked him to listen to see if he could hear him when he "threw the big switch" (a brass toggle switch from an old lamp) to the "ON THE AIR" mode, powering-up his new, homebrew, 1-watt AM transmitter. What was said during that first one-way transmission has been lost to us and to history, but Ron did hear Keith. Ron, hearing his name coming out of that stately Zenith console as clear as the Jack Benny program, became another victim of Marconi's arrow, which landed right smack in Ron's ham radio heart. It was on that day both he

and Keith resolved to get their tickets, and within a year they did.

Next they worked on me. However, I had a heck of a time with CW at 13 wpm and with crystal coefficients. I persisted, though, and got my ticket a few months later.

What have I found different on the bands after so many years? The one thing that clearly hasn't changed is the friendliness. The plain, simple good-natured friendship that abounds on the amateur radio bands is still there, the first-name friendships which begin immediately after the almost universal "Thanks for coming back to me. Name here is —. Your signal here is—."

That much has not changed, not one iota. Sure, there are the *faux pas* in procedure, like the newly licensed ham who breaks into a three- or four-way QSO—when he can only hear one of the stations—to ask for a signal report, because, as he happily explains, he is trying out his new QRP radio, using the rain gutters on his roof as a makeshift antenna. Or the old-timer who calls CQ DX, but the answering station is not far enough away for him to be *real* DX. The errant, probably somewhat inexperienced, station operator is given a stern lecture regarding what *real* DX is and is not, when all that was really required was to say, "...thanks for the call, but I am trying to work into...." Happily, however, such occurrences are so rare they don't even begin to diminish the family-like bond that exists when you "hit" the transmit key and go on the air.

A World of Friends

Several months ago I was traveling from Boston to Farmington, New Hampshire. I had taken a detour from a business trip to Dover because I wanted to see if the log cabin my father built just before the Second World War was still there. It wasn't. However, as I drove through the village of Farmington, past the hardware store where my father purchased the axe and saws he needed, I passed a magnificent house situated on a rolling green hill. On this beautiful home's roof sat a three-element Yagi.

Here I was 3000 miles from Los Angeles, in a town where I knew not a soul. I knew, though, that I could walk right up to the door, knock, and when the door opened, say, "Hi, I'm W6BNN, and my name's Larry. I saw your beam and thought I'd just say hello." I also knew I'd be invited in to see the rig (radio) and maybe be offered a cup of coffee. That is the charm, the mystique, the allure of amateur radio.



The QSL cards of the three longtime friends who conspired to bring the fourth member of their group, Larry, W6BNN, back into the fold and get him on the air again. These three cards mailed to Larry got the ball rolling.

Driving back to the West Coast, it occurred to me, perhaps for the first time in 50-plus years, that I indeed had friends in every village, township, and city across this land of ours, simply because I am licensed as Amateur Radio Station W6BNN. If anyone out there reading this is thinking of joining us, taking on that 5-wpm code test, tackling a little radio theory (no, you don't have to compute crystal coefficients anymore), remember this: When your "ticket" comes in the mail and is actually in your hands, you belong!

The Romance of Amateur Radio

Recently, in our weekly four-way QSO on 40 meters, the subject turned to "the romance of amateur radio." Was it still there? Was it ever there?

Sure it was! Sure it is! Whether one calls CQ or just tunes up on a particular frequency, the voice coming back to you—perhaps unexpectedly—saying your call letters, from someplace, from anyplace, from wherever in the world, is a thrill, a turn-on, a delight, one which sustains our common addiction to the ether.

Speaking of romance, back when we four old friends were first licensed, what could compare with running AM with a 600-watt rig, in a rack and panel, using 866 mercury vapor rectifiers that glowed and radiated a beautiful, ghostly blue light which flickered all over the shack, while the whole room pulsated with 300 watts of pure audio power, vibrating the walls and floor in sync with your voice? That's romance! That's getting out, even if you're not.

Sure, SSB is great! No argument there. However, there will always be a

rather large space in this recycled ham's heart for the homebrew, AM rig (that's rig, not radio).

Reflections

On my very first day back on the air, as I listened on the bands, two things jumped out at me. The first was, why was everybody was saying "QSL" back and forth to each other? I remember thinking, "Boy you've really got trouble if you don't remember what QSL means." I looked it up, just in case; no change there. However, as I listened, it became clear that "Roger" was out, "I

copy" likewise, and "QSL" was in to mean just about everything regarding acknowledgments of all kinds. For me, though, QSL is a cardboard gift from three wonderful friends and will always be so.

The second? Realizing that nothing has really changed! We are a band of brothers and sisters, still.

What have I learned from all of this? I have discovered that this "hobby" of ours is really quite a lot more—a kind of citizenship in a worldwide fraternity, one which lasts a lifetime. 73 +++, my fellow citizens. ■

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Kenwood unveiled its newest (and then unnamed) HF+6-meter mobile rig nearly a year ago, at Dayton. But the FCC's addition of the new 60-meter band last summer delayed its real introduction until late 2003 (yes, it operates 60 meters out of the box). Contributing Editor WB6NOA interviewed one of the first hams on this side of the Pacific to have his very own TS-480. Here's our "first look"...

First Look:

The Kenwood TS-480 HF+6-Meter Transceiver

BY GORDON WEST,* WB6NOA

The TS-480 series transceiver is the latest addition to Kenwood's line of amateur radio equipment. The TS-480HX model covers the high frequency amateur bands—including the new 60-meter band—plus 6 meters and is just as much at home in your home station tied into your computer as it is a powerful HF mobile. The first feature that sets it apart from other HF/VHF mobiles is that it has 200 watts peak envelope power out on HF! This is twice the usual power you would expect from a relatively compact HF transceiver (100 watts out on 6 meters). Also, if you don't need a couple of hundred watts out mobile, you can order the Kenwood TS-480SAT with the more traditional 100 watts output, but with a built-in, 50-ohm automatic antenna tuner.

The head, with its contoured control panel and large LCD display with backlit keys, comes separate from the body. You get 13 feet of plug-in control line. The head also contains its own 2⁵/₈-inch speaker along with the supplied table-top panel bracket and a mobile panel bracket. The head simply snaps into either bracket for quick changes.

The microphone (a mobile mic comes with the radio) plugs into the 8-pin modular jack on the front of the remote-mounted *transceiver body*. This way you are not tugging at the head on the dash with your mic system. The body also has two jacks for a straight key and a paddle, external speaker jack, data



The Kenwood TS-480 is an HF (including 60 meters) + 6-meter transceiver for mobile or home use. There are two versions—a 200-watt model without an antenna tuner and a 100-watt model with the antenna tuner built in. (WB6NOA photo)

jack, linear-amp remote jack, and an RS-232C for PC connection. On the back of the main transceiver box are a pair of antenna jacks that are front-panel selected, an external tuner jack, and one or two 4-pin DC input jacks (depending on which version you order). It should be noted that these are not the standard 6-pin Molex connectors found today on most HF rigs. The 100-watt version has a single fan, and the 200-watt version has twin fans on the rear. If you purchase the unit with the built-in automatic antenna tuner, there is only one DC input receptacle. During our tests we found that the 200-watt version of this equipment *must*

have DC feeding both DC input jacks, even if you have turned down the power and are running only QRP.

The remote head on the Kenwood TS-480 will be familiar to operate if you are upgrading from the Kenwood TS-570 or adding this to a TS-2000. You can store up to 100 memory channels and name each memory channel with up to eight alphanumeric characters. You can toggle the display to work with VHF and UHF transverters to directly read out up to 999 MHz. All display keys are backlit with the traditional bright-orange Kenwood backlighting system which may be dimmed down to total darkness, depending on your lighting needs.

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The control head of the TS-480 can be mounted just about anywhere on a dash-board for convenient and safe access while driving. (N6FM photo)



A rare meeting of the control head and radio body. Normally they are mounted separately and connected via a 13-foot cable (included with the rig). (WB6NOA photo)

The 480 also features audio frequency digital signal processing (DSP) on both transmit and receive. According to the brochure, the rig uses a 16-bit digital signal processor offering double-precision arithmetic operations which make it equivalent to 32-bit processing. The equipment also sports three levels of digital noise limiting, and we found that it may also be used in conjunction with the built-in noise blanker, which removes pulse noise down in the intermediate-frequency stage.

If you operate on 40 meters, you'll enjoy the beat-cancel DSP circuit that can replicate and cancel out *multiple* beats falling within the AF filter range. The AF filter may also be turned on to move the target signal away from noise using high-cut or low-cut filters, with a width adjustment to allow pass-band interference dodging moves.

Performance vs. Specs

So say the specifications sheet and advertising brochures, but how well did one of the very first air-freighted units perform straight out of the box on the first day it hit our country? We interviewed Ben Hatheway, N6FM, a Bay Area mobile HF operator best known for his mobile DX accomplishments on 40 meters, 75 meters, 80 meters CW, and now 160 meters mobile.

Q&A

Q: Ben, you have almost every radio known to mankind. Why are you one of the first in the country with the new Kenwood TS-480?

A: Because it's new. Because it comes from Kenwood, and I wanted 200 watts mobile, which would be a happy medium between regular 100-watt mobile and 500 watts out from my mobile SGC Power Cube amplifier.

Q: Did the 200 watts get noticed on the air, mobile?

A: Yes, but I got more reports on my increased audio punch at 200 watts versus 100 watts than what you might see on an S-meter. Best of all, I could turn the 200 watts down to 75 and get terrific 500-watt performance from the SGC Power Cube. And guess what? No longer was I plagued with the Power Cube tripping out with the Kenwood, where it had been a regular "tripper" with other radios that probably had a TX spike on medium-power transmit.

Q: How about the receiver on the 480?

A: The Kenwood 480 has dramatically decreased *overload* as compared to what I would experience with other equipment on 40 and 75/80 meters. I also like the ability to tailor my transmit audio to the variety of Heil microphones and headsets that I run both mobile as well as on the base.

Q: You also run this equipment at home?

A: I always run equipment first at the house to better learn all of the controls before I go mobile. Safety first . . . I work for a 911 dispatch center, and I don't want them going out on a call for me if I should be looking down at the dial while going around a curve. Home operation also lets everyone on the many nets I operate compare transmit audio characteristics depending on how I have pre-set menu items on the 480. And may I say, menu operation is dramatically simplified on the 480, because I can get to sub-functions more easily with a single keystroke rather than needing to scroll through menu items. Kenwood was really thinking when it gave every key a double function. Plus, I could program all the memories, including CTCSS, offset, and memory name using the *free* Kenwood RCP-480 software.

Q: What band on your new TS-480 best shows off the equipment's performance?

A: First of all, you get 60 meters right out of the box. I put the channels into memory for instant-channel QSY. When I am coming home from work, I enjoy working gray-line DX down on 75 meters with my big Hi-Q 5-inch antenna; the 200 watts gives me constant reports that my audio is outstanding. (Remember, it's each ham's



The radio body, mounted in the front passenger compartment. Note that the microphone plugs into the radio body, not the control head, so if you want to mount the radio body in the trunk, you'll need to get Kenwood's optional PG-4Z 4-meter panel extension kit, which will bring the access for your mic connector up into the passenger compartment. (N6FM photo)



Kenwood Senior Product Specialist Toshio Torii, JA6QXW, came to last year's Dayton Hamvention™ to introduce the then-unnamed TS-480 and get feedback from hams on how it would meet their communication needs. (W2VU photo)

individual responsibility to keep power down to 50 watts ERP on 60 meters.—ed.)

Q: And when you run the equipment at the house?

A: The DB9 serial port works terrific with a host of software I already have. And if I want to, I could even run the radio at home from another location over the internet with complete software control on almost every band. I also like the idea that Kenwood has a website that allows me to download the 480 software command set.

Q: What carry-over functions from other Kenwood equipment do you like on the 480?

A: I like the multi-channel knob, which lets me QSY in click-steps so I can keep my eyes on the road. I always like the large, crisp Kenwood display, which can be seen at almost any angle, too.

Q: What specific features that the 480 alone has do you like?

A: I like the idea that I can switch in a secondary filter if needed. I really appreciate the advanced noise blanker with plenty of adjustments, plus the digital noise limiter which offers me three steps of noise eradication. I enjoy the quad mixer and the optional two filters, which I have just installed. Filter installation was a breeze. I'll probably do the voice synthesizer soon, and I especially like the fact I can get onto the Kenwood computer page and exchange ideas with the factory. I also like a feature that's helpful in tuning an amplifier or manually tuning a screwdriver antenna . . . you can program the "PF" key on the control panel to perform what's called "TX Tune." When you set up the PF key to do this, then press it, it puts the radio in CW, sets the meter to read SWR, and transmits a 10-watt carrier until you press PF again. Then all the settings return to where they were before. I don't know of any other radio that does that.

Two-Way Communication

The factory listens, too. Toshio Torii, JA6QXW, Senior Product Specialist for the Kenwood TS-480, made a special trip to the Dayton Hamvention™ last year just to meet with intense radio operators such as Ben Hatheway to find out exactly what they needed in a multi-purpose base and mobile HF transceiver. Kenwood's Amateur Radio Sales Manager, Phil Parton, N4DRO, indicates Kenwood Corp. in Japan is keenly interested in how hams use the new TS-480 in all of the different modes it supports—including PSK-31 with rock-solid stability.

It should be noted that the 100-watt version of the 480 incorporates a 50-ohm automatic antenna tuner designed to

smooth out any elevated SWR when operating on a tuned antenna a little high or low of the natural resonant point. The internal tuner, like all 50-ohm tuners, is *not* designed to operate random-length dipoles or random-length long wires. However, the internal tuner will change bands almost instantly and will cover 1.8 MHz through 54 MHz, including the new 60-meter band, which most other automatic tuners don't.

Computer Connections

The ARCP-480 radio control program may be downloaded for free from Kenwood's website, <<http://www.kenwood.net>>. This allows PC-based control of all transceiver functions, including TX/RX equalizer curves that are maintained in memory.

For PSK-31, the Kenwood has separate adjustment of AF input/output levels in ten steps, plus a seven-step AF DSP filter bandwidth. We discovered that the microphone mutes during PTT operation via the data terminal, which is good. There's nothing worse than listening to someone else on another radio system talking in the background during PSK-31 TX!

Finally, the Kenwood network command system will allow using the ARHP-10 radio host program (also a free download from the Kenwood website) for internet-linked operation and/or remote control of the equipment (make sure you operate within the terms of your license and meet all control-operator requirements). This further enables VoIP (Voice over Internet Protocol) applications.

If you dig further into some of the software programs with this equipment, you can also see some of the advantages of Kenwood's "Sky Command" system, which has yet to receive the FCC's blessing. The way I see it, though, the more use we can make of our amateur bands, the less threat we have of losing them due to inactivity.

N6FM likes his TS-480: "With the TS-480's simplified adjustment capability," Ben notes in conclusion, "I don't have to scroll through menus to change a configuration setting while on the road. This radio, along with my Heil Traveler headset and Hi-Q 5-80 mobile antenna, adds to the fun of mobile operation."

List price of the TS-480HX is \$1499; the TS-480SAT is \$1369, but check with your favorite dealer for the generally lower "street price." ■

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4. Both top and bottom lines scroll. Two-line LCD display has 32 large 1/4 inch high-contrast characters.

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The last 140 characters can be instantly replayed. This lets you re-read or check your copy if you're copying along side the MFJ-461.

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Consistently get solid copy from MFJ's high performance PLL (phase-lock loop) modem. Digs out weak signals. Even tracks slightly drifting signals.

Of course, nothing can clean up and copy a sloppy fist, especially weak signals with lots of QRM/QRN.

Computer Interface

The MFJ-461's serial port lets you display CW text full screen on a bright computer monitor -- just use your computer serial port and terminal program.

More Features

When it's too noisy for its micro-

phone pickup, you can connect the MFJ-461 to your receiver with a cable.

Battery saving feature puts MFJ-461 to sleep during periods of inactivity. It wakes up and decodes when it hears CW. Uses 9 Volt battery (not included).

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Fits in your shirt pocket with room to spare - smaller than a pack of cigarettes. Tiny 2 1/4 x 3 1/4 x 1 in. 5 1/2 ounces.

No Instruction Manual needed!

Super easy-to-use! Just turn it on -- it starts copying instantly!

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MFJ-26B, \$4.95. Soft leather protective pouch. Clear plastic overlay for display, push button opening, strong, pocket/belt clip secures MFJ-461.

MFJ-5161, \$14.95. MFJ-461 to computer serial port cable (DB-9).

MFJ-5162, \$5.95. Receiver cable connects MFJ-461 to your radio's external speaker 3.5 mm jack.

Dust off those Dopplers and steel-tape Yagis! It's foxhunting time again and everyone can participate.

Announcing:

The Seventh Annual CQ National Foxhunting Weekend May 8-9, 2004

Plus

Results of the 2003 National Foxhunting Weekend

BY JOE MOELL,* KØOV

When accidental or deliberate interference strikes your favorite repeater, will you be ready to quickly track down the source? If you have experience with your own radio-direction-finding (RDF) equipment, you can be confident and prepared. A great way to get that practice and have lots of fun at the same time is by participating in competitive hidden-transmitter hunts, usually referred to as "foxhunts."

No foxhunting in your home town? Why not plan one during CQ's annual National Foxhunting Weekend (NFW)? It's a great activity for any ham club. If the membership includes lots of students and Scouts, an on-foot foxhunt in a local park would be an ideal way to combine radio technology and good exercise. Remember that a ham license isn't required for anyone who is just receiving and tracking.

All-on-foot foxhunting has become an international sport, with national and world championships. It goes by several names, including foxtailing, radio-orienteeing, and ARDF. Maybe there's a future medal winner in your local club, just waiting to be discovered.

Other clubs prefer to do mobile "T-hunting," a form of ham contesting that goes back to the days of Packards and local tubes. The 75- and 10-meter bands were preferred back then, but 2 meters is the prime T-hunting band nowadays. Equipment ranges from simple Yagis and quads to Dopplers and other special systems.

Your mobile foxhunts don't have to be fancy, at least not at first. Appoint someone to go out and transmit from an undisclosed location. A little-used simplex frequency is best for long hunts, but the input of the local repeater is okay for short fox transmissions as the club gets started. Hunters can listen on the output to tell when the fox is on and then flip to

the input to get bearings. If they have problems getting their gear working, the hider can offer some clues. Give everyone a chance to find the fox, and then debrief and make future plans at the end point or a nearby restaurant.

There are no formal rules for CQ's National Foxhunting Weekend. You are free to hold any kind of RDF contest. Be as creative as you wish with the rules. Need some ideas? Read on for stories of NFW 2003.

Foxes in the Graveyard

For several years now, the Kankakee Area Radio Society of Illinois has made foxhunting an important part of its spring



Somehow Matt, KØTEA, and Tom, WBØYWN, got their truck safely inside this pedestrian underpass on a rainy Nebraska morning. (Photo courtesy of KØTEA)

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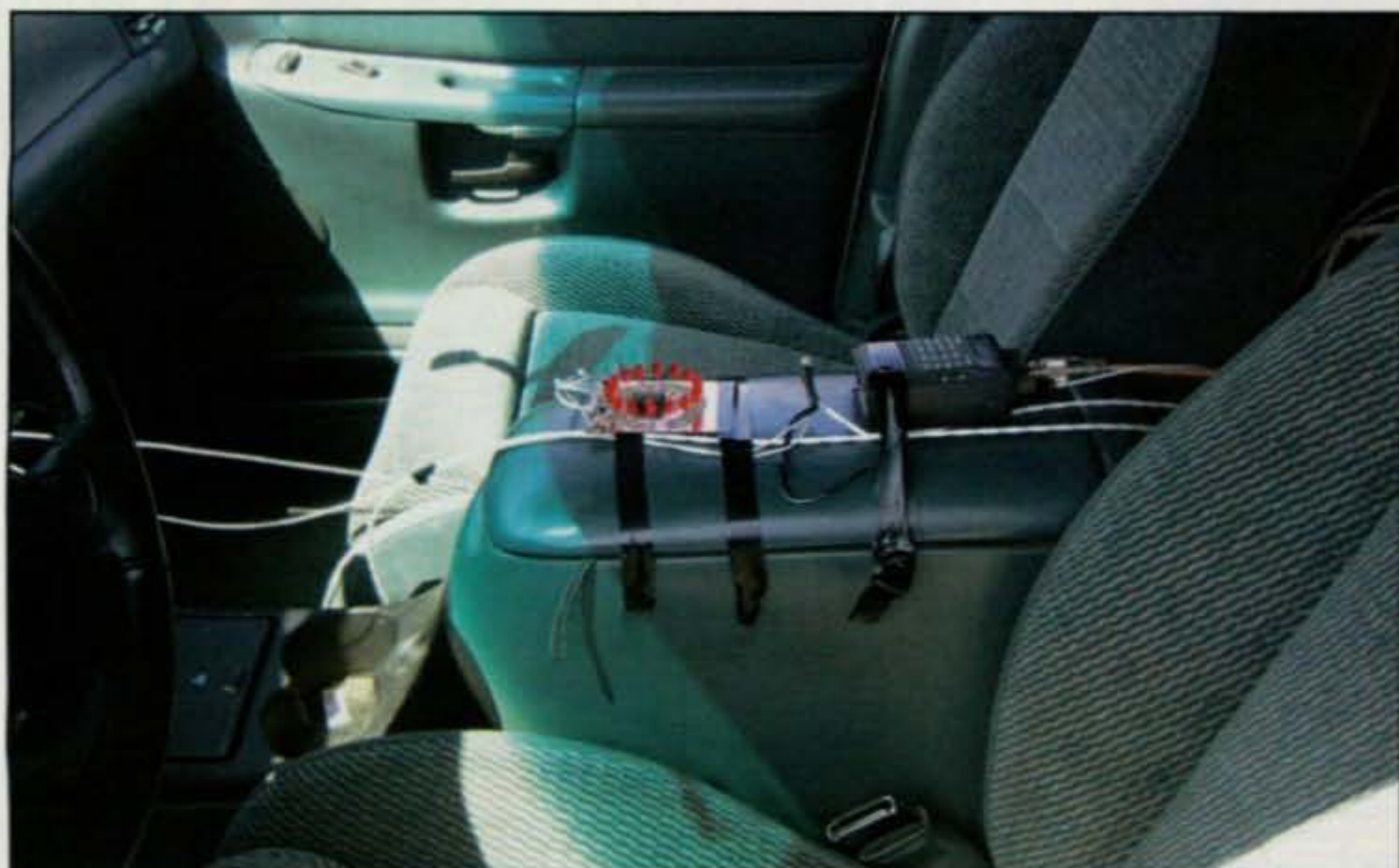
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An excellent example of "grab and go" foxhunting is this minimalist Doppler setup from Lincoln, Nebraska. (Photo courtesy of KØTEA)

club activities. According to KARS Foxhunt Coordinator Clay Melhorn, N9IO, the club not only had a hunt on Saturday of NFW weekend in 2003, they did a warm-up event two weeks earlier. To help everyone get ready and into the spirit, the May KARS meeting program was all about foxhunting, too.

I don't know what to make of this, but graveyards seem to be a recurring theme in KARS foxhunts, as is the Kankakee River. Clay wrote:

Another NFW found us in yet another old cemetery near the river. A couple of years back, we found the fox in a graveyard not far from this fox's lair. The decision of whether or not to cross the river, and where, is part of the attraction for spots like this one.

The fox this time was Jim Schreiner, K9BIG. He is a KARS board member and high school science teacher. He found a beautiful, yet well-hidden spot. Jim was changing power with his IC-706. The antenna was a homebrew wire J-pole, hanging in a tree and floating with the breeze. Talk about signal fluctuations and reflections! Jim plans to incorporate foxhunting into his classroom this school year.

On a visit to Nebraska a dozen years ago, I participated in a mobile foxhunt with the Lincoln Amateur Radio Club. LARC has resumed its hunt series after a few years' hiatus, with new rules that award points to the hunting teams in accordance with their placing in the results. A team's points can be divided among the members as they choose. Fox hiders earn their points by keeping the hounds at bay for as long as possible, with maximum points if they can keep from being found in 90 minutes.

Despite cold, rainy weather, seven teams came out for LARC's hunt on

May 10. You would think that a wet day would call for a hiding spot on high ground, but Matt Hodges, KØTEA, and Tom Fletcher, WBØYWN, had discovered a way to drive a pickup into a pedestrian viaduct under a major street about a mile from downtown. It was a tight squeeze, but the truck emerged dentless afterwards. Its cab obscured a beam antenna perched on a ladder to squirt the 146.52-MHz fox signal out of the viaduct. KØTEA wrote:

Former Californian Chris Barnard, KF6WHK, must have been tipped off. Coming into the T at 27 minutes, he beat all others by more than 24 minutes. Reynolds Davis, KØGND, and Jerry Maxwell,

KCØKGZ, came in second at 52 minutes. Bob Hayden, WBØAPT, and Rick Stanton, KBØWXR, our "Doppler dudes," pulled in right after Reynolds and Jerry. They were huffing and puffing when they reached the transmitter at just over 1 hour. I have to say they had nice form on the 100-yard dash to our hiding location, even navigating the water traps like pros!

All of us talked, laughed, and taunted each other for what seemed like an hour in the rain. Everyone was soaked by the time we were through regaling the hunt. We then stopped at the Highway Diner for a bite to eat and to talk more about the hunt. Everyone agreed they had a great time, learned something new about their setup or hunting in general, and discovered ways to better each other's time on the next hunt.

The LARC and KARS hiders usually talk to the hunters through their fox transmitters, making it relatively easy for hunters to spot them when they get close. Other groups, such as the Xerox Amateur Radio Club of Rochester, New York, prefer unattended "foxboxes" that transmit tones, CW, or recorded voice automatically at selected intervals.

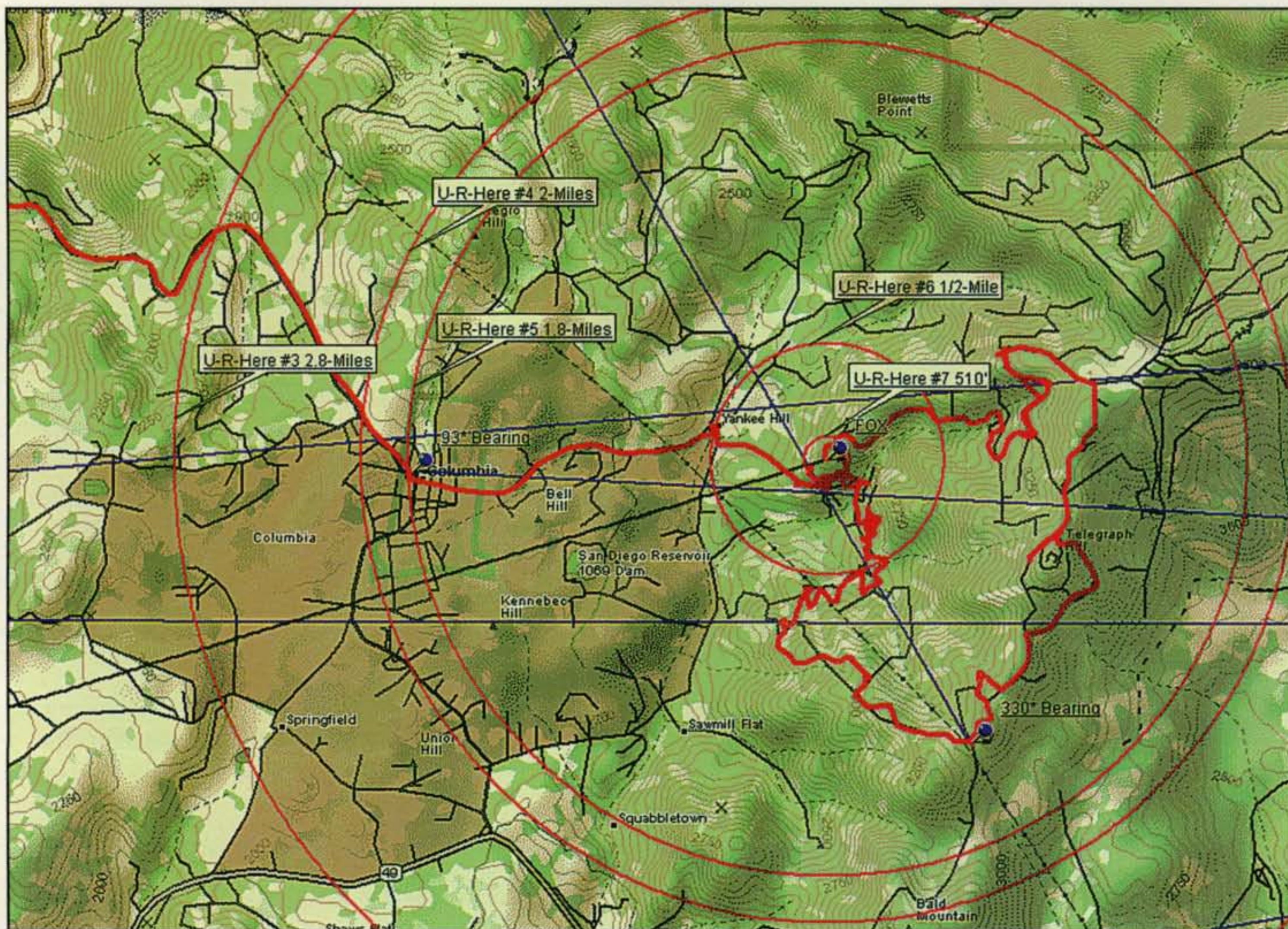
Brian Donovan, K2AS, wrote, "We used a fox by Fred Miller, WO2P. It sends out an audio CW message with a variable pause between transmissions. We can also switch it off using tones for intermittent operation."

A Day in the Mountains

Lincoln ARC, like many clubs, limits the time of each hunt. Others take the attitude that the longer the hunt, the greater the fun. Paul Shinn, KG6AOH, enjoyed an entire day in the mountains while San Francisco Bay T-hunters tried to track



Paul, KG6AOH's fox transmitter failed at the beginning of the hunt, so he quickly cobbled together this high-power setup. (Photo by Jim, KD6DX)



The GPS track of Jim, KD6DX, shows how he had to circle around to close in on KG6AOH's fox transmitter.

down his 100-watt signal. It came from a three-element Yagi lashed to the tower of an FM broadcast station at 2500 feet elevation in the mountains, not far from the historic town of Columbia.

According to Jim Sakane, KD6DX, whose excellent website <www.thunt.org> has chronicled Bay area foxhunting for years, "It was a pretty long hunt. I left Fremont at 9 AM and didn't get home until 8:30 PM. Of course, I would do it again."

Hunters could start anywhere, and the first team to find Paul would win the prize. His recommended start point was Altamont Pass, which was 73 straight-line miles away from him.

"Paul's transmitter failed at the very beginning," Jim continued. "But his excellent radio knowledge saved the day. He quickly kluged together his handi-talkie, a power supply, linear amplifier, and open-box controller to make a working fox."

"Yes I learned an important lesson," Paul confessed. "Always bring a backup fox transmitter!"

Jim went on to tell about his trip up the mountain: "According to MapSource, the shortest distance on the road would have been 86.1 miles. I traveled pretty much along the true bearing line of 72 degrees. However, it would have been better if I had deliberately diverted about 20 degrees off the direct path. The additional mileage would not have adversely affected my time, and a second bearing that crossed the initial bearing would have helped immensely towards knowing how far out Paul was located. Without that information, I wasted time looking around Copperopolis and Angel's Camp."

Some hunters "circled in" and used cross-bearings to pinpoint Paul's location. Perhaps they were fooled by a large communications site in the vicinity. That's not where this radio station is located. According to Paul, "It is literally in someone's backyard."

Half the fun of mobile T-hunting is talking up the hunt beforehand and story telling afterwards. This year's award for best buildup has to go to Jerry

Gastil, K6DYD, of San Diego, California. It started on the first of April when he proclaimed that this year's NFW hunt would have a \$1000 gift certificate for first prize. Once that April Fool tease was over, he sent additional group e-mails to describe his "Mother of All T-Hunts." (Because it was on Mother's Day weekend, get it?)

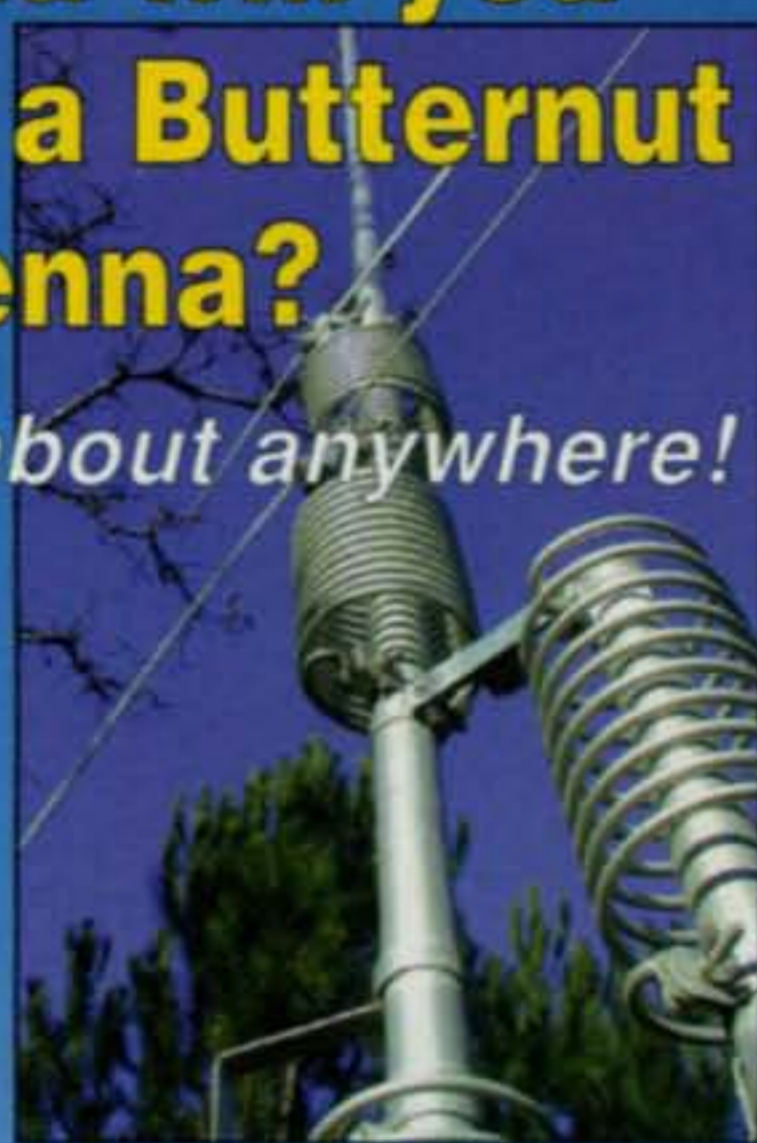
"This hunt will be a mileage hunt with a time penalty," K6DYD wrote in one announcement. "The penalty will be one tenth of a mile every two minutes, added to the elapsed mileage. Number of found T's has priority over mileage. A fourth T has been added to spice things up. They will stay on the air for as long as needed, up to 24 hours."

Jerry was doing his best to regain his former glory as a hider. A year before, according to Tom Sneden, KE6VCR, he had bragged about the difficulty of a hunt he was putting on, only to be tagged by the first finder in just a half hour.

"I used to stump the Los Angeles guys all the time," Jerry confessed in another e-mailed hunt announcement. "They

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Champion and Beginner Foxhunters Head for California, June 16-20, 2004

Santa Barbara Amateur Radio Club will host the fourth annual USA ARDF Championships in June 2004. Radio-orientees from all over the country plus visitors from abroad are expected to attend. The competitive courses are open to anyone of any age, with or without an amateur radio license. Medals will be awarded in five age categories for males and four for females, in accordance with rules of the International Amateur Radio Union.

The events will get under way on Wednesday as competitors arrive at the headquarters site. Next day they will practice their skills and align their direction-finding equipment using short courses on both the 2- and 80-meter bands. Opening ceremonies and a drawing for the starting order take place that evening. Friday brings the full-length 2-meter competition, followed on Saturday by an 80-meter event of similar size in a different venue. Closing ceremonies are Saturday evening, and the competitors take their medals home on Sunday.

The USA Championships will be just in time for final selection of ARDF Team USA 2004 members, who will travel to Brno in the Czech Republic for the 12th ARDF World Championships from September 7-12. The USA's team positions will be filled based on the best individual performances in these and last year's national Championships.

To find out what it's like to participate in the USA ARDF Championships and get an overview of the IARU rules, read "Homing In: Championship Foxhunters Gather in the Buckeye State," in the Winter 2004 issue of *CQ VHF* magazine. Then register by going to www.homingin.com and following a link to the official Championships website. You may also subscribe to a group e-mail list for updates and discussions of plans for the USA and World ARDF Championships.

stopped coming down to my hunts because they were too difficult. I guess I forgot how to do it last time out. So I re-read Joe Moell's book and now I am certain of keeping the hiders at bay for at least six or eight hours. In fact, I'll bet that nobody will find all of the transmitters, now that I remember how to do this. You guys are in real trouble now. You'll be talking about this hunt for years to come. This will truly put me back on the 'Master T-Hunter' pedestal."

Once again, however, the fates were not kind to K6DYD. When he got to one of his well-scouted hiding places, he discovered that the Mesa Grande Indians had erected KEEP OUT signs. He picked out another spot at the last minute and was foiled again when one of his four transmitters failed an hour into the hunt. Nevertheless, his remaining foxes provided a suitable challenge and his antenna prizes were appreciated by the winners.

More Sneaky Fox Tricks

After a club has held foxhunts for a few years, it becomes a bit more difficult to keep it interesting. Hidiers dread few things more than having a car full of hams drive up and say, "I hid here five years ago!" Fortunately, it's not hard to rejuvenate the group. Pick a new hunt area, new boundaries, and a new start point. Permit multiple transmitters. Try a new scoring system. Add on-foot fox-hunting to the usual vehicle hunts. Camouflage the fox.

Down in Daytona, Florida, Pat Eckenrode, AC4QM, and John Greiff, N4UJU,

added a UHF fox to their NFW hunt. As reported by John Munsey, KB3GK:

We knew we were in trouble when Pat and John announced that the hunt would be in Flagler County, where there are lots of new streets that are not on the maps. Second, the starting point was the high bridge on High Bridge Road. When the hunt starts there, hunters have to be quick, because they have less than one minute to decide which side of the river the transmitter is on. Choose the wrong side and it can be a long way back.

The first two transmitters were in a park, just west of Flagler Beach. One was primarily a beacon to get hunters into the area. Number two was a new experience, an HT running 5 watts on 446.0 MHz. It was at the end of a long walkway and several feet into the bushes, buried under trash.

My partner Bill Thomas, KE4HIX, and I found these two in short order. Number three was running 50 watts on the west side of the river. Every street or road seemed to be a dead end or a private area with closed gates. The teams played hopscotch with each other for at least 30 minutes, darting in and out of roads and trails in the area.

Our bearings seemed to show that number three was in the middle of the river. With nothing but bad luck on the west side, we decided to cross the only bridge in the area and drive about 10 miles north. That was a major mistake. All headings looked good for a while, but soon we were parked at the river's edge and looking to the west at a large public park that was not on any map. Retracing, we crossed the bridge and again explored areas on the west bank. That was when we received a cell phone call from Art Byrnes, KA4WDK, asking, "Where are you?" His tone of voice told us that we were skunked and that number three had been found.

A bit later we found the unmarked road that went to the new park. Deciding which side of the river to hunt was a matter of 4 or 5 degrees of bearing, so we all learned again about what water does to RF paths.

KB3GK and his partner didn't win this hunt, but they win their share and they always try something unusual when it's their turn to hide. "I have several 50-milliwatt transmitters that are the size of a postage stamp," John wrote. "Two of them will be 'ping' and 'pong.' They will be several hundred feet apart with exactly the same tones, perfectly timed so that as one goes off the other comes on. We hope to run the hunters back and forth."

Don't Believe Your Eyes

Camouflaging a hidden transmitter to look like something else is not new, yet it's always a good way to add intrigue to a hunt. In Albuquerque, there's a club-owned ammunition-can foxbox that hiders can use. Mike and Debbie Pendley, K5ATM and KD5LOK, decided to substitute their own sound-alike fox transmitter which was much smaller. On the day before the hunt, they were scouting possible locations when they noticed a road barrier lying in the weeds. Somehow (neither will admit to swiping it), it got into their van and found its way to their home. Mike wrote:

I disassembled the sign and mounted the fox into the back. A dipole antenna stretched diagonally from one corner to the other. I covered the back with black paper to keep anyone looking between the layers from seeing any wires. Then I then cut a spacer out of 3/4-inch plywood and distressed the outside edges with the claw part of a hammer, old motor oil, and dirt.

The site was 7.3 miles east of the start point, next to an arroyo that ran under the road. The west side of the street had metal guard rails and a metal sidewalk with a large opening for rain water. Our thought was that hunters would mistake the hot spot near the sign as a reflection from the metal and walk down into the arroyo. The road was in the process of being resurfaced, so our detour sign fit in well.

To add more intrigue, Mike and Debbie placed several decoy (non-operating) foxboxes in the area. One was under the metal sidewalk. Another was in a nearby bush. A long piece of thin coax wound around a branch in the bush directly behind the sign and along the ground. Would they fool the hunters? Mike continued:

Jerry Boyd, WB8WFK, was first to arrive. He called on the coordination frequency to say that he had found the fox but could not find us. After a short conversation I con-

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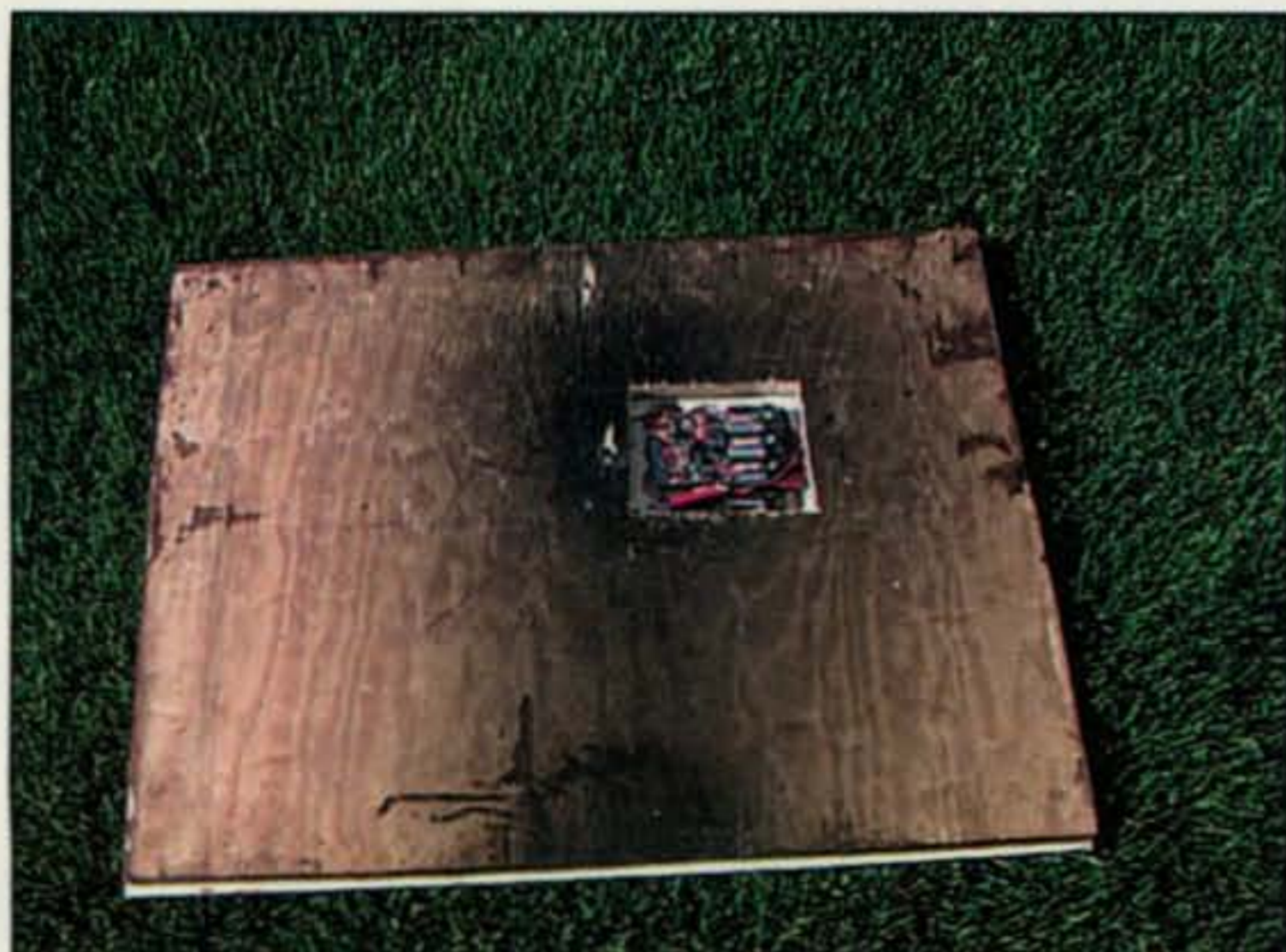
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Mike, K5ATM, and Debbie, KD5LOK, "borrowed" a road construction sign and mounted their hidden transmitter board inside it for the Albuquerque NFW hunt. (Photo by K5ATM)

vinced him that he needed to keep looking. About 10 minutes later Mike Eaton, K5MJE, arrived, followed by Dick Dabney, W5UFZ, Steve Cave, AA5CJ, and Joe Riggs, AB5YC. They all circled the bush behind the sign for ten minutes or so. They kept moving it out of the way so they could see into the bush better. Finally, they got suspicious and started taking the sign apart!

Five more hunters arrived a few minutes after we got everything put back together and the whole process started over. Once they all had finished, we knew that Brian Milesoshky, N5ZGT, would be last, so we decided to have a little fun with him. Every time he seemed to get suspicious of the sign, I keyed my HT on the same frequency as the fox to pull him away from it.

After about a half hour of being a good sport, Brian finally was able to deduce the fox was in the sign and end the hunt. And yes, the sign was reassembled back into its original configuration and returned to its original location!

This New Mexico NFW adventure is a good example of a mobile hunt where you can't just drive up to the fox. You have to get out on foot and "sniff," as T-hunters like to say. They had to sniff on the hunt in Bloomington, Indiana, too. The Hoosier Hills Ham Club hider was Ray Stevens, KB9LGS, who put the club foxbox in a bush.

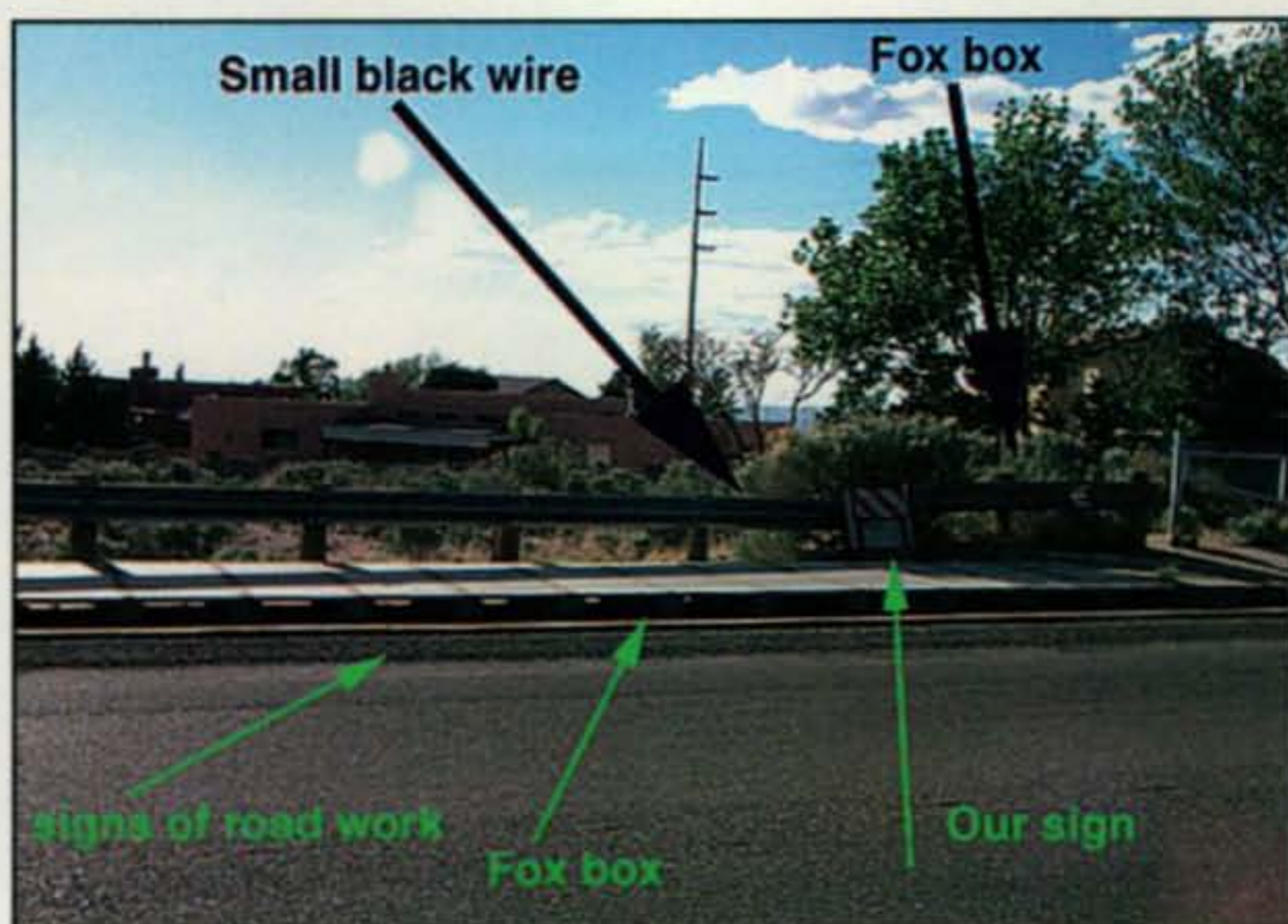
I got the Hoosier report from Terry Hudson, KT9V. He and Larry Hammersley, WA9FFZ, used this hunt to practice for their trip to the USA ARDF Championships in Cincinnati, where Larry won bronze medals on both 2 meters and 80 meters.

On-foot foxhunt training was the purpose of the NFW hunt I put on at Tri-City Park in Placentia, California. It was combined with the almost-annual "Antennas In The Park" event that is sponsored by a coalition of four southern California radio clubs. Our turnout was excellent and the park was bursting at the seams with hidden transmitters, including nine on 2 meters, two on 70 cm, and one on 80 meters.

It might not be healthy to set out on strenuous physical activity right after a big lunch, but that didn't stop these hunters, who had plenty of chow to enjoy from the three barbecue grills. The best time was posted by Jay Thompson, W6JAY, *Newsline's* 2003 Young Ham of the Year, who found all five of the international-rules transmitters in less than 24 minutes. Other individuals and groups took up to 2 hours and 39 minutes.

No Excuses

Now you should have plenty of ideas for how to bring fox-



K5ATM and KD5LOK published this photo of their road-sign fox setup.

hunting to your ham club this spring. However, if everyone tells you that they are too busy to gather on a weekend at the same time, here's another idea: The "Hunt-When-You-Can" hunt. It was a feature of the Minuteman Repeater Association in the mid-'90s. An e-mail would suddenly appear from one of the group, stating that the Boston Fox was on the air transmitting for a few seconds every ten minutes or so. The batteries would last for several days, so everyone could hunt for it when their schedules permitted. Some would take bearings on their daily commute and errands, then hunt in earnest on a free evening.

Just in case the term *foxhunt* scares off the locals, don't call it that. This announcement appeared on the website of the Escondido Amateur Radio Society in California: "On Sunday, May 11, in conjunction with National Foxhunting Weekend, EARS will be conducting a barbecue. Where is



Larry, WA9FFZ, sneaks up on a fox transmitter at the Hoosier Hills Ham Club NFW hunt in Bloomington, Indiana. He went on to win bronze medals in both the 80- and 2-meter hunts of the 2003 USA ARDF Championships in Ohio. (Photo by Terry, KT9V)

the barbecue you ask? That is for us to know and you to find out! The fox will begin transmitting on 146.595 on May 11 around 10 AM in the Escondido Area. When you find the transmitter, you will find the barbecue. Check into the Sunday net for more information."

It's time to start talking up foxhunting around your club and repeater rag-chews and to plan your own local NFW event. It should be appropriate for the skill level of the members, be they experts or complete beginners. Make sure it's well promoted, fun and fair for all. Above all, make it as safe as possible for everyone.

Afterwards, write up the results and send them to me so I can share them with CQ readers. Tell me the date of the hunt, what kind of hunt (mobile or on foot), number and frequency of transmitters, how the hunt was scored to determine the winners, plus the callsigns of the hidiers and the winners. Don't forget to include the name of your club and the city or area it serves. Readers also want to know what was unique about your hunt and what lessons (positive and negative) you learned from it.

The list of items to report is posted at my website <www.homingin.com>, so you can copy it into your word processor and insert the information. Or, if the report in your club's newsletter includes all the information, just send me a copy by electronic or postal mail. Photos (JPGs or prints) are welcome and should be as high resolution as possible.

If your group has more than one NFW event, please send a separate report for each one. Add other facts if they are important, such as the distance of each fox from the start, whether the transmitters were continuous or intermittent, attended or unattended, and other technical features. I also welcome first-person reports from both the hidiers' and the hunters' perspectives.

Let's make this the biggest National Foxhunting Weekend ever. Spread the word and encourage other clubs in your area to try it. I'll be waiting for your report. Happy hunting!

73, Joe, KØOV

"Homing In" Now in CQ VHF

We are pleased to announce that KØOV's popular "Homing In" column, which appeared regularly in 73 until that magazine ceased publication last year, will be continuing in our sister publication, CQ VHF. In addition, we'll be carrying additional foxhunting coverage here in CQ, by Joe and others, particularly in relation to the 80-meter part of foxhunting.

—W2VU

TECH TALK

IC-746PRO - How to tweak your DSP

Ready for new radio thrills and excitement? Gear up with Icom's new IC-746PRO and experience a totally new dimension in amateur radio enjoyment!

This new generation transceiver delivers unsurpassed DSP performance on all bands and modes, it is affordably priced, and it can also be tweaked to fit your particular operating needs or band conditions at the time. This Tech Talk overviews that concept.

Receive DSP Tweaks. First, you can select a built-in filter bandwidth that is fully adjustable from 3.0kHz to 50Hz for superb sounding SSB audio, copying weaker stations and dodging QRM or



IC-746PRO

Supercharged Performance!

working CW in high style, as desired. Second, you can use the Twin PassBand Tuning controls to further tweak a selected filter's center frequency and width. By adjusting the concentric controls together, a received station's bass, mid range or treble tones can be emphasized. By adjusting them separately (one up, one down), a chosen filter's bandwidth can be sharpened to eliminate "side QRM" lower and/or higher in frequency. You can also menu-adjust the upper edges or shoulders of a filter's response curve and tweak the receiver's bass/treble equalization to mate with your hearing preference. Add in multiple AGC loops which, combined with the IC-746PRO's excellent DSP system, prevent strong adjacent frequency interference from reducing receiver sensitivity or causing "pumping" of receive audio, and you have new millennium performance supreme!

As Ray Novak, Icom's National Amateur Sales Manager, discovered during DXpedition operations from A52RN/Bhutan, copying a weak (S3) signal only 200Hz from a strong (S9+) signal is a cinch with the IC-756PROII... which uses the same DSP engine as the IC-746PRO. Now that is impressive!

SSB Transmit Tweaks. Three choices of transmit filter bandwidths, 2.8, 2.4 and 2.2 kHz plus adjustable microphone equalization let you custom-tailor the IC-746PRO's transmit audio to match your particular voice characteristics. By selecting a wide filter and boosting bass, mid range and/or high tones in that chosen bandwidth, your voice can sound extra-rich and full-bodied — even better on the air than "in person." By selecting a narrow filter and emphasizing upper range/treble tones, you can produce a remarkably strong signal with maximum "talk power" for DXing or communicating under adverse band conditions. Additionally, all filter and equalizer settings are easily changed so the IC-746PRO "has a different face to fit every need."

The Digital Difference. Some amateurs may understandably question how the IC-746PRO's performance is superior to other transceivers of similar power and bandwidth. The answer is using IF level DSP plus ultra-steep skirted filters. Combined, they ensure you hear good and sound great yet stop interference and "splatter" like a brick wall. That is the PRO's advantage and it is terrific! Test-tune an IC-746PRO at your favorite dealer and see for yourself!

Why not? You deserve it!

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Scientists now are investigating the use of airborne probes to sense meteorological and atmospheric data. In many ways, the technology is similar to that pioneered in the 1980s by The Lauton Institute for the use of floating probes that could be used to gather data on the world's oceans.

Self-Propelled Swimmers for the Sensing and Transmission of Oceanic Data

BY PROFESSOR EMIL HEISSELUFT*
Lauton Institute, Grossmaul-an der Donau, Austria
e-mail: <heisseluft.emil@mashuga.orf.ar>

As your editor, I strive to remain current on applications involving new and strikingly advanced communications and electronic technologies. But even I was surprised to read of a recent grant to a company for the development of Global Environmental Micro-Electro-Mechanics (MEMS) Sensors (GEMS). The worldwide deployment of these microscopic probes is anticipated not only to improve weather forecasting by assisting scientists in monitoring global atmospheric variables, but also by helping to gather critical data on hurricanes and other types of storms that threaten major population centers. In thinking about the deployment of GEMS, what surprised me was not the audacity of this scientific endeavor, but rather, how similar it is, in concept and execution, to research performed more than 20 years ago at the Lauton Institute by none other than Professor Emil Heisseluft. We caught up with the good doctor in the South Pacific on New Year's Eve and asked if he would pen a few words on his historic experiments in the area of mobile microscopic probes for ocean sensing. Here is his story.

—W2VU

Dear readers, you can imagine my surprise when your editor called me in the South Pacific and told me of the recent award of a \$500,000 feasibility study and prototype develop-

*Professor Heisseluft is once again working in the South Pacific, where he is testing advanced versions of his self-propelled swimmers. Mail may be conveniently sent to the professor c/o CQ magazine, 25 Newbridge Road, Hicksville, NY 11801.

ment grant to a U.S. firm for studies related to so-called "GEMS."¹ While I am not intimately familiar with the nano-scale technologies to be used in that endeavor, it did not take me long to grasp the importance of this work. What this company is attempting to do is nothing less than to release billions and billions of dust-size sensors into the atmosphere for the purpose of gathering worldwide data on temperature, pressure, and other weather-related parameters. Each sensor, which will measure about 100 micrometers in size, will carry a small antenna or optical emitter that will relay the data collected to a satellite for subsequent processing and transmission to Earth. The data collected will be used to produce some of the most accurate weather forecasts ever developed, significantly enhancing our ability to predict storms, track the movement of pollutants in the atmosphere, and support myriad other applications. Interestingly enough, the idea is very similar to one I had more than 20 years ago for the development of probes to monitor oceanic data.

Kleine Schwimmers...

My own work in what now is called MEMS technology began in a field very similar to that involving GEMS. In the early 1980s, while teaching oceanography at the Lauton Institute, I had the idea to drop millions and millions of *kleine schwimmers*, or "little swimmers," from the air over the world's oceans. These devices would roam the waters of the world and relay temperature, salinity, and other oceanographic data to a central processing facility located at the Lauton Institute.

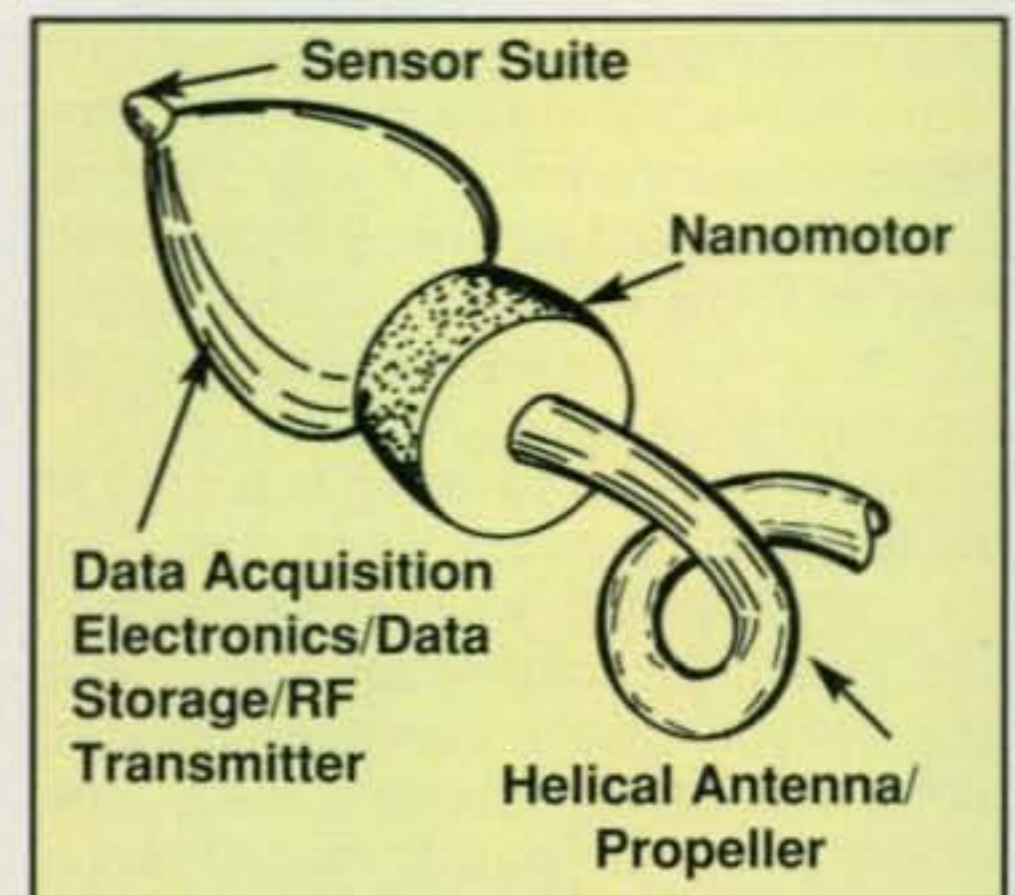


Fig. 1— Each MUMSER was equipped with its own sensor suite, data storage system, RF transmitter, and helical antenna. The antenna doubles as a propulsion mechanism, continually moving the probe through the water.

Specifically, my idea was to develop tiny, buoyant, self-propelled probes that employed extremely small motors for maneuverability and miniaturized electronics for gathering, storing, and transmitting ocean data to satellite-borne receivers. Clearly, the probes' transmission systems had to operate at extremely high frequencies to keep their antennas small, and here, I thought that perhaps by using helical antennas I could achieve some power gain. The use of helical antennas also would facilitate probe mobility, because I envisioned that it should be possible to have the devices move by rotating their helical antennas in a spiral motion. This would create the forces needed to propel the device forward in the water.

I named these highly mobile probes Microscopic Ubiquitous Mobile Sensors and Electronic Reconnaissance Sys-



Fig. 2— Infrared satellite view of a "school" of MUMSERS deployed by the author last year in the South Pacific. They are configured to emit infrared light for ease of photography by the satellite.

tems (MUMSERS) and immediately set about developing prototypes. This work formed the basis for what is considered the first scientific paper ever published in the archival literature on what now is known as *nanotechnology*. Upon publication of my groundbreaking paper in 1985², the idea of building microscopic probes quickly captured the imagination of scientists and engineers worldwide, and many prestigious government and university organizations began their own development programs.

Fig. 1 shows an example of the MUMSERS fabricated at the Lauton Institute early in 1984. The biggest problem we had in developing these devices, of course, was miniaturizing the electronic, mechanical, and communications subsystems to the point where an entire system occupied a very small volume and required only a miniscule amount of power. Mechanical technology and electronic technology were not sufficiently mature at the time, however, for us to fabricate devices any smaller than the size of a goldfish, and battery technology left us wanting as well. As a result, the MUMSERS we built and tested had a useful lifetime in the water of only 14 days. Regardless, we proved the feasibility of employing miniaturized, buoyant, ocean-borne probes for data gathering and transmission, and within a year,

TECH TALK

IC-703 - The Ultimate QRP!

I received the IC-703 just after it was introduced in 2003. I currently own an IC-706 and when I saw the form factor of the IC-703 I was delighted to see it was very similar to my IC-706. The radio ergonomics are critical to effective operation in the field or at home. If it's like the IC-706, I've got it made.

Using the separation cable, I mounted the front panel on my belt where I could have full access to the IC-703 controls. I installed a 12 volt 7 AH battery for power and a brand new mini screwdriver antenna from Super Antennas. The battery should provide a good 8 hours of talk-listen time, depending on how it is used.

Once the radio was connected to a 12 volt power source it was evident this rig was not a hobbled IC-706 but instead an all new QRP rig. It's already equipped for CW, SSB standard and rigged for digital modes. Once the antenna was connected, the receiver sounded hot and with the large tuning knob allowed me to tune the signals with great precision. This new all mode radio gives you big radio performance in a small package, standard. No tiny hard to see display here. The display is large, easy to read and shows all the information necessary for efficient operation. Buttons and knobs are large and well spaced. No small fingers required, thank goodness. The self-contained HF man pack gives me real freedom to be pedestrian mobile or set up some place and operate portable.



IC-703

I jumped in with both feet and joined the County Hunter's contest working both 20 and 40 meter. The antenna I used for this was a 40 meter dipole thrown into a tree. The antenna tuner allowed me to tune 20 and 40 meters by pressing the tune button. It tunes very quickly as you hear the '703's relays set the C and L values. The optional CW filter worked very well and the installation was simple with the easy-to-follow manual.

All in all, this new little QRP rig gives me that big radio feel in a totally portable package. The new integrated Icom backpack makes the '703 feel great and work well.

When is the last time you took a hike and talked to DX? Now you can. What are you waiting for? The IC-703 is here, ready for action. Grab the key or microphone, battery and antenna and go have fun!

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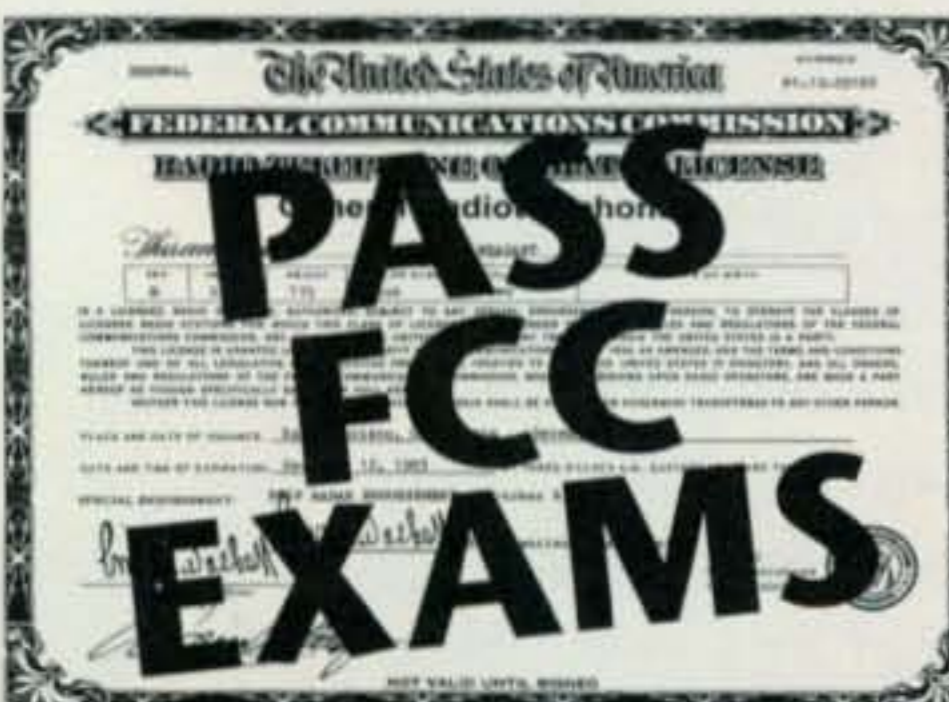
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opened the Lauton Institute's world-class Center for Picotechnology Innovation (CPI) to focus and accelerate our earlier work.

It would take almost ten years for nanotechnology to evolve to the point where it would be possible to develop a true microscopic-size ocean surveillance sensor. Today, much of this technology is being developed by prestigious research organizations in the U.S. and abroad, including the U.S. Naval Research Laboratory (NRL) in Washington, D.C.

Enter the U.S. Naval Research Laboratory...

The importance of MUMSERS was grasped instantly by NRL personnel in the mid-1980s following the publication of the Lauton Institute's groundbreaking research paper, and they immediately turned their attention to the development of these devices. The idea that it might be possible to continuously collect oceanic data worldwide was considered to be of both strategic and tactical importance, and the technology needed to accomplish this goal was on the horizon. That is, scientists at NRL already had begun to investigate all sorts and manner of nanotechnologies that could be used to implement micro-miniature oceanographic probes and other related devices, and the development of MUMSERS was a natural application for their research.

Among the technologies under investigation at that time, for example, were nanomachines, which by operating at the atomic level, eliminated the problems experienced as a result of gravity and surface roughness. Applications of nanomachine technologies would be absolutely essential to the development of the small motors needed to drive the probes across the surface of the ocean.

Other nanotechnologies under investigation both at NRL and in laboratories such as those of North Carolina State University include carbon nanotubes (CNTs). As described by researchers at NC State's Center for Nanotechnology Innovation,³ a CNT is a cylinder that resembles "...rolled-up chicken wire, because its carbon atoms are arranged in a hexagonal configuration."

Researchers at the university, together with graduate students at the Lauton Institute, are using CNTs to develop nano-rheostats that can be used, for example, to control the speed of nanomachines. They also are making great progress in the development of molecular memory cells that would extend the

life of batteries used to power these cells by two orders of magnitude (that is, by a factor of 100). All in all, the technologies needed to make truly microscopic MUMSERS are rapidly approaching maturity, and I believe we will see the first truly autonomous, long-lived MUMSERS deployed before the end of the decade.

Recent Accomplishments By the Lauton Institute...

Fig. 2 is a recently acquired image taken by a French satellite passing over the South Pacific. It shows a "school" of MUMSERS deployed by me in the South Pacific late last year. These probes were purposely configured to emit infrared light so that they would show up as light-colored objects against a relatively dark (in the infrared) ocean surface. While their performance now has been classified, there is no question that the results achieved point to the remarkable potential that lies in the use of nanotechnologies.

Summary...

We have seen how an idea conceived at the Lauton Institute some 20 years ago—that of creating and deploying millions and millions of Microscopic Ubiquitous Mobile Sensors and Electronic Reconnaissance Systems, or MUMSERS—now is nearing fulfillment. The "missing link" was the maturation of nanotechnologies, which now hold great promise for yielding machines, electronic devices, and other useful products that are microscopic in size. The ability to deploy devices such as MUMSERS and GEMS will significantly enhance our ability to monitor the world's oceans and atmosphere, helping governments worldwide better predict the weather and alert their citizens to potentially threatening storms and pollutants. That the Lauton Institute was at the forefront of such applications is a matter of great satisfaction to me and to the researchers at the Institute's Center for Picotechnology Innovation.

Notes

1. Guizzo, R., "Flying Away," *IEEE Spectrum*, January 2004.
2. Heisselluft, Emil, "Microscopic Ubiquitous Mobile Sensors and Electronic Reconnaissance Systems (MUMSERS)," *Elek. Phys.*, Vol. XXVI-II, No. 4, April 1985.
3. See, for example, <<http://www.ncsu.edu/research/results/vol4/main.html>>.

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If you're looking for a tunable mobile or portable HF antenna, but those cool motorized models don't fit in your radio budget, consider one of MFJ's manual screwdrivers. AD5X has our review.

CQ Reviews:

The MFJ-1664 Portable Screwdriver Antenna

BY PHIL SALAS,* AD5X

Over the last several years, my passion has turned from building electronic circuits to building antennas. Now while I enjoy operating some HF mobile, I *really* enjoy operating HF *portable*. Thus, I'm always looking for the ultimate portable antenna—i.e., something relatively light and convenient to carry around with me. Enter MFJ with antennas designed for *both* the mobile and portable enthusiast.

New MFJ Manual Screwdriver Antennas

MFJ recently announced some new manual screwdriver antennas that are very interesting. All of these antennas utilize 1.7-inch diameter coils wound on PVC tubes (tinned copper wire wound at 12 turns per inch), and all antennas include both 4½-foot and 10-foot collapsible whip antennas. The 4½-foot whips are good enough to use with the antennas in mobile applications, whereas the 10-foot whips can only be used in non-mobile environments, as they are not designed to stand up to normal highway speeds. Of course, you simply can screw a 9-foot CB whip into these MFJ antennas for a higher efficiency mobile setup if desired. All the antennas utilize the standard 3/8×24 antenna thread. Table I summarizes the antennas as advertised.

These antennas are very clever in that a 2-inch OD (outside diameter) aluminum tube with finger-stock slides up over the coil and is held in place with a nylon-tip thumbscrew. This method of shorting out coil turns gets around the de-"Q"ing of the coil, which can occur when a clip lead is used to short the



Photo 1— The author holding the disassembled MFJ-1664 antenna, including whip sections. Ease of assembly and disassembly makes the antenna convenient for portable operating. (Photos courtesy of the author)

turns. Also, grounding of the coil is through the coil wire itself—i.e., the outer aluminum sleeve does not make contact with the mast (remember, the thumbscrew is nylon tipped). This makes adjustment of the coil very insensitive to contact with your fingers while you tune the antenna. According to MFJ, "The coil

shorts from the low-impedance (50-ohm) side, not the high-impedance (antenna) side, as do all other screwdriver type antennas. This makes adjustments easy, because the antenna is not sensitive to hand detuning."

MFJ also recognized the fact that base matching capacitors or inductors

| Antenna | Coil Length | Coverage w/4.5-ft. whip | Coverage w/10-ft. whip |
|----------|-------------|-------------------------|------------------------|
| MFJ-1661 | 12 inches | 20–6 meters | 40–2 meters |
| MFJ-1664 | 24 inches | 60–6 meters* | 80–6 meters |
| MFJ-1662 | 15 inches | 40–2 meters | 60–2 meters* |
| MFJ-1668 | 36 inches | 80–6 meters | 80–6 meters |

* Advertised as 40 meters, but actually works down to 60 meters.

Table I— Band coverage of different models of MFJ manual screwdriver antennas, with 4½-foot whip and with 10-foot whip. (Source: MFJ specifications)

*e-mail: <ad5x@arrl.net>

Configuration: Base loaded, Mobile Mount, 4 1/2-ft. whip

| Band | Base Match | Band | Base Match | Band | Base Match |
|------|------------|------|------------|------|------------|
| 80 m | — | 30 | 620 pF | 15 m | 120 pF |
| 60 m | 1200 pF | 20 | 330 pF | 12 m | 120 pF |
| 40 m | 820 pF | 17 | 120 pF | 10 m | 120 pF |

Configuration: Base loaded, Mobile Mount, 10-ft. whip

| Band | Base Match | Band | Base Match | Band | Base Match |
|------|------------|------|------------|------|------------|
| 80 m | 1500 pF | 30 | 220 pF | 15 m | none |
| 60 m | 820 pF | 20 | 200 pF | 12 m | none |
| 40 m | 620 pF | 17 | none | 10 m | none |

Configuration: Base loaded, Ground Mounted, 10-ft. whip

| Band | Base Match | Band | Base Match | Band | Base Match |
|------|------------|------|------------|------|------------|
| 80 m | 820 pF | 30 | 200 pF | 15 m | none |
| 60 m | 510 pF | 20 | 200 pF | 12 m | none |
| 40 m | 330 pF | 17 | 120 pF | 10 m | none |

Table II— Values of base matching capacitors needed for different bands in three common configurations of the MFJ-1664 manual screwdriver antenna. (See text for details.)

are often necessary with electrically short antennas and so provided a thumbscrew on the shaft to make it easier to attach these external matching devices. More on this later.

MFJ-1664 Measured Data

The antenna I wound up evaluating is the MFJ-1664 (see photo 1). I chose this because I'm always looking for as small a portable antenna as I can get. I don't really care for 80 meters for portable operation, because you're at a disadvantage with respect to antenna efficiency and transmit power. However, 60 meters is a different story. Since everyone is limited to 50 watts ERP, things are a lot more equal. I was sure that the MFJ-1661 didn't have enough coil to resonate the antenna on 60 meters, and I was unsure whether the MFJ-1662 had enough coil for the job. Since the MFJ-1664 advertised coverage from 80-6 meters with the 10-foot whip, I knew that I'd get 60 meters with this antenna. As it turned out, I found that the MFJ-1664 also covers 60 meters with the 4.5-foot whip. I've since learned that the MFJ-1662 will cover 60 meters with the supplied 10-foot whip, but not with the 4 1/2-foot whip.

In order to evaluate this antenna, I tried it in several different configurations:

1. Mobile mounted as designed (base loaded) with the 4 1/2-foot whip (see photo 2).

2. Mobile mounted as designed (base loaded) with the 10-foot whip.

3. Ground-mounted using the antenna as designed (base loaded) with the 10-foot whip and with six 16-foot radials (see photo 3).

Since short antennas need base matching in order to give you a good

VSWR, I also determined the base matching capacitors necessary in the three different configurations (see Table II).

Finally, the MFJ-1664 is very easy to resonate using an SWR analyzer (MFJ-259B in my case). As I mentioned earlier,



Photo 2— The MFJ-1664 mounted on the back of the author's VW New Beetle. The white piece at the bottom with the black switch is his variable capacitance switchbox for quickly changing base matching capacitors. (See "Base Matching" in the text for details.)

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er, I could hold the thumbscrew and, after moving the shorting assembly up and down, see very little change when I released the thumbscrew. I also found that I could make marks on the aluminum tube with a permanent-marking black felt-tip pen so I could easily return to the previous setting without any problem.

Base Matching

Because short antennas need some sort of base matching to transform the low impedance to 50 ohms, MFJ has

provided a thumbscrew on the lower mast section of these antennas so that you can add either inductive or capacitive shunt matching. The necessary capacitors for base matching were defined in the Table II. You can also put an MFJ-910 Mobile Matcher in-line at the antenna base (this is a capacitor switch box), or you may wish to use inductive matching, such as with a Lakeview Inducti-Match. The base mount shown in the photos is an enhanced version of my base match/



Photo 3— The MFJ-1664 also makes an excellent portable or temporary antenna when ground mounted with 16-foot wire radials.

mount published in the February 2004 issue of *QST*.¹

Summary

The new MFJ series of manual screwdriver antennas are both versatile and affordable. These antennas use the standard 3/8x24 thread, so any convenient, standard mount can be used. As an example, since the MFJ-1664 weighs only two pounds, it is a good candidate for mounting on a tri-magnet roof-mounting assembly such as the MFJ-336T, or on one of the sturdier trunk-lip or hatch-back mounting devices such as the MFJ-345T. Take a look at this series of manual screwdriver antennas from MFJ. They can satisfy both your portable and mobile interests.

List prices of the MFJ manual screwdriver antennas are as follow: MFJ-1661 \$119.95; MFJ-1662 \$129.95; MFJ-1664 \$149.95; MFJ-1668 \$159.95. All are available directly from MFJ (300 Industrial Park Rd., Starkville, MS 39759; phone 662-323-5869; web <<http://www.mfjenterprises.com>>); or from any MFJ dealer. ■

Note

Salas, Phil, AD5X, "A Mobile Antenna Base With Internal Capacitive Matching," *QST*, February 2004, p. 43.

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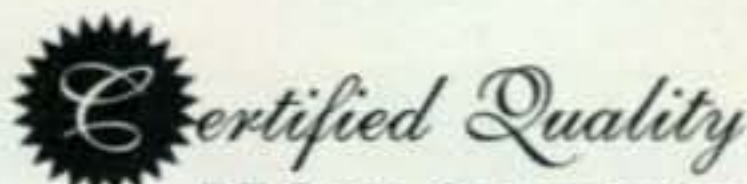
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Despite the gloomy picture painted in Part I for hams living in home owner association controlled homes, National Antenna Consortium President KGØKI says in Part II that there may be *SOME* hope in *SOME* circumstances.



Home Owners Associations, Covenants, and the Radio Operator

Part II: Living with your Home Owner's Association

BY FRED BAUMGARTNER,* KGØKI

In the first part of this article we covered what you might not have known about home owners' associations (HOAs) and painted an accurate, although rather dismal, view of the increasing power of HOAs and the near universal negative impact on amateur radio. Still, there are some limited successful strategies with HOAs, but there are also traps.

Abandonment

Most covenants look alike because they are derived from the same boilerplate promoted by the national organizations. One popular prohibition is a ban on all transmitters. I bring this up, because obviously cell phones and baby monitors are banned with this language, yet no HOA has made any move to enforce this provision. Many hams feel that this constitutes abandonment. If the covenants are abandoned, they simply cease to exist (although they may come back under certain circumstances).

In reality, this approach almost never works. While it might seem unfair, the fact that selective enforcement occurs is far from abandonment. The HOA has been elected to determine when and what to enforce, and a court likely will support selective enforcement against an amateur with equipment that communicates around the world, versus the

baby monitor that only broadcasts within the house. While to an engineer this doesn't make sense, to a judge it is a matter of degree, and one is reasonable and one is not.

If the covenants are widely unenforced, there is an argument for abandonment. It is not a strong argument, except maybe in extreme circumstances. Just because there are dish antennas, and other violations, doesn't make your antenna alright.

Technicalities and Loopholes

Virtually all covenants contain some loopholes. Using one of these is not going to win you any popularity contests, and more than likely, if you get away with it, it will be the last thing you get away with. . . . so use it wisely.

Most covenants require that an application for improvement be granted or denied, typically within 14 days. If your group is somewhat sloppy, and you take advantage of the holidays, have proof of delivery, etc., and the HOA doesn't respond, most covenants deem this a default approval. This has to be as clean as you can get it. If there is any uncertainty about where and how to send the application, you need to send it to all parties that might claim to be the proper entity. Copy the chairman, the HOA lawyer, any firm it uses for administration, etc. *Warning:* Even if this works, it doesn't mean the HOA can't litigate. It also doesn't mean a court won't consider some part of your application or process

unreasonable, or the HOA's excuse for failure to respond in time reasonable.

Another approach is to get approval for something that is primarily something else acceptable, but just happens to be an antenna. The flagpole antenna is a popular way of exercising this loophole, and even HOAs with covenants that prohibit flagpoles, given the current wave of patriotism, are inclined to grant a variance.

Prior Approval Before Purchase

In the one-time-only situation where a homebuilder is selling a new home or lot and has not yet turned over the HOA to the residents, this authorization may be easy to obtain in the form of a letter of approval. Unfortunately, once the HOA is turned over to the elected residents, the approval may be withdrawn. We are aware of a number of instances in which builders provided an approval letter, but refused to record the exception with the property deed. Their lawyers aren't dumb; recording your single-lot exclusion makes them potentially liable for any problems that might result from your (approved) "violations" of the covenants under which the other homeowners live. In addition, excluding your unique property from HOA control violates the representation made to the other owners that the entire neighborhood is covenant-controlled. Further, the builder knows that you likely will accept the letter of approval at its face value.

*President, National Antenna Consortium
e-mail: <kg0ki@arrl.net>

If this scenario is followed, the ham erects an antenna, the HOA is turned over to the neighborhood, and all is well until the ham replaces, modifies, or adds an antenna. The HOA likely will then require approval of the "improvement," and of course that isn't likely to happen. It's less likely that the association will rescind the approval and ask for removal of the antenna, but so-called grandfather provisions are seldom included in covenants, and thus are very subjective. Neither party is on strong ground, so we have a likely standoff with neither party able to change anything. Eventually the antenna will need to be replaced or maintained and approval will be denied.

Going to Court

Now let's consider what happens if the HOA decides to litigate in this or a similar situation. It is to be expected that the HOA board will have taken some sort of community vote, and will have as evidence that they are the properly elected officials and that the community wishes to limit your antennas. You argue that you have had antennas for years, and the use is grandfathered, although there is no language in the covenants covering grandfathered

rights. The HOA argues that things change, and that by living in a covenant-controlled community, the residents have elected to live under the HOA supervision. All other things being equal, the HOA has the favor of the court based upon the democratic ideal of serving the majority and your implied willingness to follow their desires.

One variation of the "get prior approval" theme is to have the seller sign-off on your right to erect antennas. Besides the fact that few people would accept that liability, the practical enforcement is to sue the previous owner. This is a bloody, contentious battle that doesn't end in your getting an antenna. It is also possible that you might lose, as a court may well see the defendant as having provided reasonable assurance "to the best of their knowledge." Even if you win, courts are reluctant to assign the kind of damages you will think fair and reasonable. A jury will surely sympathize with the HOA.

Temporary Antennas

In a few cases, there is no real language in the covenants that prohibits parking a trailer with a crank-up tower, or some temporary antenna you set up in the backyard on a weekend. The nice thing

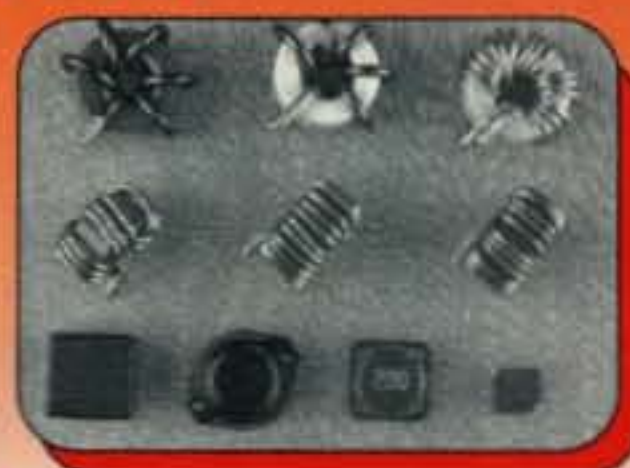
about this approach is that once you get a complaint, if you get a complaint, you can just stop setting up your antenna and go camping on weekends. Most covenants, however, have some limits on vehicle parking, and hazards, or simply ugly things, and make no distinction between temporary and permanent. Read the covenants and rules and you likely will see some vague, general language that can be applied to prohibit your temporary antenna. Also, remember, they can always change the rules, and one day the temporary antenna simply will be illegal. At best, this is a below-the-radar approach, or a temporary solution. Another option, of course, is to operate mobile outside your neighborhood!

Political Favor

You hear time and time again that "all you need to do is throw a party and have some discussions over a beer." That was probably once true, and in some places it may still be true. On the other hand, you also hear about women breaking down in tears, claiming your antenna will ruin the neighborhood, make their homes worthless, mess up their TVs, and harm their kids and pets. I won't suggest which is the most likely

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Typical SWR- 1.5 or less
Weight- 1.8 lbs.

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Total Length of Antenna in 80mt position- 56"
Freq. Coverage Continuous- 6mt thru 80mt
Power Rating- 200 watts P.E.P.
Typical SWR- 1.5 or less
Weight- 1.9 lbs.

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situation, but I haven't heard of the making-friends approach being that successful in recent times, or in middle-class to upscale neighborhoods, or in larger neighborhoods.

Besides, hams rarely are noted for their charisma and charm. Once upon a time, the advice was to let the neighbors see your station, show them the fun of ham radio, and expect that the HOA will be sympathetic. If it works for you, you are blessed. In any case, it probably doesn't pay to be the neighborhood outcast. On the other hand, that may be unavoidable. The vast majority of discussion will be well outside of your earshot and beyond your ability to defend. A little is likely to get back to you, and you'll probably be appalled by what people can think and say to and about each other. If, on the other hand, charisma is your strong suit, that is a wonderful tool.

One big "gotcha" is that most covenants allow any single resident to sue to enforce any part of the covenants he or she feels is not being enforced by the HOA. This is specific language in most covenants. Should your neighbor have an illegal trash pile, and the HOA fails to follow up on your request to enforce the ban on trash piles, you can, under most covenants sue to enforce them yourself. If you are thinking you can get rid of those cell phones and baby monitors by evoking this provision, and hope the HOA will back off and grant your antenna, think seriously about how a court will view your suit.

Power Plays

If you have the intestinal fortitude, a realistic legal opening, exceptional cash reserves, and patience, then the power play may work. If the HOA is somewhat disorganized and underfunded, sue them. Most covenants require that "no application be unreasonably denied." If you have a basis to support that point of view, litigate but plan to take an acceptable compromise. Some HOAs would rather grant you some antenna than litigate. Here is where your lawyer can step in and negotiate a settlement, and you might still be able to avoid having your mailbox egged. Do not expect this to be cheap or easy. This can take a long time, be very expensive, and you have a better than even chance of losing. Be prepared to cut your losses at any time.

The flip side of this is to put up the antenna and let them sue you. The same rules as above apply, except that you have the antenna, maybe you can

keep it up through the appeals, and maybe the HOA will lose interest. On the other hand, when you get off this ride, you pay the bills and likely will wind up with nothing but warm memories of your antenna. If you are so inclined, try to do this during a sunspot maximum.

Bottom Line

If there were an overwhelmingly successful HOA strategy, it would be used over and over again. The reality is that there might be a slim opening at best for anyone living in the bulk of the world where covenants exist. On the other hand, while hams are a minority, there is a possibility that legislation might balance the HOA problem. Nothing poses as big a threat to ham radio as HOAs—not spectrum grabs, not no-code licenses, not even the internet or Broadband over Power Lines. HOAs are well-established, control a massive percentage of available housing, and without federal legislation to limit their power, are very difficult if not impossible to challenge successfully.

What can be done? Certainly the ARRL has increased its efforts, particularly over the covenant restrictions. I think it took amateurs a while to realize how quickly the world was becoming covenant restricted, how strict those restrictions are, and that this is a potentially fatal threat to our hobby.

**Toward a National
Antenna Policy**

This isn't to say that all is well in non-covenant areas. All amateurs should be familiar with PRB-1, the FCC requirement for reasonable accommodation in local regulation. Anyone who looks at PRB-1 court cases, though, can see that what is considered reasonable has eroded over time, and courts are tending to weigh a vague federal administrative edict against the often more compelling specific local (consider state's rights) regulation. To say that PRB-1 isn't useful is ridiculous. PRB-1 is useful, but it is aging and eroding.

Roughly half of the states have some amateur antenna regulation relief effort passed or in progress. Most often, these are efforts to extend PRB-1 into state law, plugging the courts' option to place local regulation over the FCC's order. A few counter the really large hole in PRB-1 and provide some substance to the term "reasonable accommodation." In our world, where a handheld or a small loop antenna is seen as "reasonable accommodation" (and the ads in our magazines don't mention any compro-

mise), this becomes the bar for what defines reasonable. However, the vast majority of these laws deal only with state and local government regulations. To the best of my knowledge, only a few amateur groups seeking state relief have elected to take on the HOAs.

Plus, amateurs aren't the only ones with antenna regulation problems. Broadcasters and cellular operators have even more egregious problems (they don't even have PRB-1). However, there are differences. Commercial operators with towers benefit from an environment that keeps their competition from getting a tower. Existing towers get higher rent, new technologies have trouble getting the coverage they need to compete, and new radio and TV stations won't split the advertising pie any further. On the other hand, some commercial ventures have the finances and expertise to play the tower game in a big way.

Two years ago, the National Antenna Consortium (NAC) was formed to seek fair and reasonable tower and antenna regulation on a national level for all users. The theory was to convince Congress to grant, as a package, a certain unconditional minimum right to an antenna or tower tied to an FCC license, and a means of seeking more than the minimum with a process that had real

quantifiable standards and was fast and affordable.

The theory comes from the FCC's scope of regulation. Radio is an interstate affair, and here we have the FCC granting a license, and a state or local government, or HOA, in effect overriding that license by limiting the antenna or banning transmitters or some other such nonsense. Localities are not particularly reality based when it comes to determining the technical requirements for antennas and towers. Any visit to any contested tower hearing will introduce you to a whole series of issues, many of which anyone with any technical knowledge would consider foolish. Nonetheless, whether metaphysics or mystic revelations, all complaints have to be answered. There is no standard for weighing the issues, and certainly little radio expertise among the jurists and administrators. The exception might be radio-frequency radiation. Even here, communities have enacted with varying success, non-ionizing radiation limits stricter than the federal standards.

If the NAC is successful, there will be a unified policy which simply says that for such a license, and in such a location, this is the minimum installation provided for and permitted without question. In addition, given a prescribed set

of conditions, a process would be set up for that right to be extended.

This is not an easy challenge. A unified policy means the players have to act in a unified manner. In this case, there is some concern that amateurs will be tarred with the same brush as the large commercial tower owners. The same is true of commercial interests that don't want to be tied to a "hobby." Further, there is always the have and have-not issue. Tower and antenna reform isn't all that interesting if you already have what you need. Asking commercial and amateur users to support "the right thing"—even if it doesn't hurt right now—is always tough, but it is necessary.

Without some voice of balance, tower and antenna regulation and restrictions will continue to increase. It is neither in the best long-term interest of the telecommunications industry, consumers, or amateur radio. And what is bad for amateur radio is bad for emergency communications, national technical advancement, our basic technical education and skill levels, and international relations. A national antenna policy makes solid sense, especially in a free, technically advanced society.

For more information, please visit the NAC website at <<http://www.antenna-consortium.org>>. ■

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What You've Told Us...

Our February survey asked how useful you found our annual "market survey" articles on currently available ham gear, and we were quite encouraged by your responses. Just about 80% of you read the market survey article in that issue and had read previous market surveys as well.

In a response that should make our advertisers happy, 86% of you said you'd either bought new ham gear in the past three years or plan to buy some in the coming year, and over half of you said you used the *CQ* market survey as a tool in choosing your new radio. In addition, 71% of you said you find these articles helpful in choosing a radio, and 83% of you feel that other people will find them helpful. Nearly all of you who responded (92%) feel the market survey articles are valuable to you in staying current with what's on the market, and 80% feel other people will find them valuable for that as well (only 1% said no to that; the other 19% responded "don't know").

A majority of you (52%) prefer having the tables organized by features, while about one-quarter of you each prefer organization by manufacturer (27%) and by price class (23%), respectively. Finally, three-quarters of you find the text and the tables to be equally useful, while 16% get more out of the tables and 7% favor the text.

Our free subscription winner this month is Ray Read, AD5CK, of Woodway, TX.

Reader Survey April 2004

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 an incentive, we'll pick one respondent each month and give that person a complimentary one-year subscription (or subscription extension) to *CQ*.

This month, we'd like to hear your views on various components of the ARRL's licensing and bandplan proposals.

Please indicate your views on...

Circle Response
Card #

1. Creating a new no-code entry-level license with a limited mix of voice, code, and digital privileges on HF and VHF bands:
 - Agree.....1
 - Disagree.....2
 - No opinion.....3
2. Eliminating the code requirement for General Class:
 - Agree.....4
 - Disagree.....5
 - No opinion.....6
3. Merging existing Technician and Tech-Plus licensees into the General Class without an additional exam:
 - Agree.....7
 - Disagree.....8
 - No opinion.....9
4. Maintaining the current 5 wpm code requirement for Extra Class:
 - Agree.....10
 - Disagree / Eliminate it.....11
 - Disagree / Increase speed.....12
 - No opinion.....13
5. Merging existing Advanced Class licensees into the Extra Class without an additional exam:
 - Agree.....14
 - Disagree.....15
 - No opinion.....16
6. "Refarming" current Novice CW subbands to produce larger voice subbands on 80, 40, and 15 meters:
 - Agree.....17
 - Disagree.....18
 - No opinion.....19
7. Limiting "new Novice" power to 50 watts on 10 meters and above to avoid the need for RF safety questions on the entry-level exam:
 - Agree.....20
 - Disagree.....21
 - No opinion.....22
8. What you think the overall result would be of the FCC's adopting the ARRL's plan or something very similar:
 - Help ham radio in the long run.....23
 - Have no effect on ham radio in the long run.....24
 - Hurt ham radio in the long run.....25
 - No opinion.....26
9. Are you an ARRL member?
 - Yes.....27
 - No.....28
10. Do you feel the ARRL generally represents your views on amateur radio issues?
 - Yes.....29
 - No.....30

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

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ARRL Petitions FCC for New Entry-Level Ham Class with Code-Free HF Operation

The American Radio Relay League is adding its petition for changes in amateur radio testing and licensing requirements to the more than a dozen already on file at the FCC. The League's proposal goes beyond most of the others, calling for creation of a new entry-level license class with HF voice, data, and CW privileges (but no code test); consolidation of existing Technician, Tech Plus, and General Class operators into a code-free General; and a merger of Advanced Class into Extra Class, which would retain a 5 word-per-minute code test requirement. In addition, the ARRL calls for expanded voice subbands on those HF bands that currently have Novice allocations.

All of the activity, of course, is caused by the various countries that make up the International Telecommunications Union agreeing last summer that Morse code proficiency should no longer be a necessity when operating on the high-frequency Amateur Service bands. A United Nations organization, the ITU is the body that oversees all international radio rules and regulations.

Except for WRC-03, the recently ended World Radiocommunication Conference, the only changes made to the international Amateur Service regulations over the last 75 years have concerned the frequency above which amateurs may operate without Morse testing.

At its Washington, DC conference in 1927, the ITU (then called the International Telegraph Union) allocated frequency bands to the various radio services and established operating guidelines and operator qualifications. It was deemed important that amateurs prove an ability to transmit and receive communications in Morse signals since, at the time, radiotelegraphy was the primary means of long-range communication.

Since then the administrations comprising ITU have reviewed and voted to relax the Amateur Service's mandatory Morse proficiency requirement at every international conference capable of doing so.

In 1947 (Atlantic City) the ITU agreed that Morse proficiency should only be required when the operation took place on frequencies below 1000 MHz (1 GHz). At WARC-59, the 1959 World Administrative Radio Conference, this level dropped to 144 MHz. A further reduction to 30 MHz was made at WARC-79. This eventually led to the creation of the no-code Technician Class license in 1991.

Up until last year, Article S25.5 §3 of the international Radio Regulations read:

25.5 § 3. 1) Any person seeking a license to operate the apparatus of an amateur station shall

prove that he is able to send correctly by hand and to receive correctly by ear, texts in Morse code signals.

The administrations concerned may, however, waive this requirement in the case of stations making use exclusively of frequencies above 30 MHz.

At WRC-2003 (convened in Geneva, Switzerland from June 9 to July 4, 2003) the article was revised to make the Morse code testing requirement a matter for each country to decide for itself. Effective July 5, 2003, Article S25.5 §3 reads:

25.5 § 3. 1) Administrations shall determine whether or not a person seeking a license to operate an amateur station shall demonstrate the ability to send and receive texts in Morse code signals.



Petitions Filed with the FCC

It didn't take long for Morse-related Petitions for Rulemaking seeking to implement the WRC-03 accord to start pouring into the FCC. Some simply wanted to do away with Morse code testing. Others proposed all sorts of variations that would relax, retain, or expand the code requirement in some form. Although they attracted thousands of comments from the amateur community, the ARRL opted not to file comments on any of them, instead deciding to make its own proposal after seeking members' views on the issue.

The problem the ARRL has is trying to advance ham radio while keeping its 170,000 members convinced that the League is working on their behalf. Most are long-term higher-class licensed radio amateurs whose interests primarily include DXing and contesting. Many of these members do not want additional competition for their signals.

This is further complicated by the fact that the Administrative Council of the International Amateur Radio Union adopted a resolution at their October 2001 meeting in Guatemala City opposing continued Morse testing. The IARU is a federation of some 150 national amateur radio societies from around the world. The ARRL formed the IARU in 1925 and serves as its headquarters society. The ARRL also funds the IARU and provides its principal officers.

The current official IARU position is that while Morse code continues to be an effective and efficient mode of communication used by many thousands of radio amateurs, "...the position of Morse as a qualifying criterion for an HF amateur license is no longer relevant to the healthy future of amateur radio."

The IARU further stated in its resolution that "... IARU policy is to support the removal of Morse code testing as an ITU requirement for an ama-

*Chairman, NCVEC Rules Committee
Member, Question Pool Committee
1020 Byron Lane, Arlington, TX 76012
e-mail: <w5yi@cq-amateur-radio.com>

teur license to operate on frequencies below 30 MHz." More on this later.

The January 2003 ARRL Board Meeting

Acting on the new international Amateur Service regulations, the ARRL Board of Directors voted at its annual meeting on January 16 to petition the FCC to create a new entry-level ham license that would include HF phone privileges without requiring a Morse code test. The League also proposed consolidating all current licensees into three classes, retaining the Element 1 Morse requirement, now 5 wpm, only for the highest class license.

The proposals, developed by the ARRL Executive Committee, "...continue a process of streamlining the amateur licensing structure that the FCC began more than five years ago but left unfinished in the Amateur Service license restructuring Report and Order (WT 98-143) that went into effect April 15, 2000."

The plan adopted by the Board varies only slightly from the Executive Committee's recommendations. (The only difference is an additional 50 kHz of CW spectrum being added to the bottom end of each HF CW/data band proposed for the new entry-level license.)

The proposed new entry-level license class, which the League is calling "Novice" for now, would require a 25-question written exam, on which a candidate would have to get at least 19 correct in order to pass. An advantage to retaining the name "Novice" is that it conforms to the programming already in place in the FCC's Universal Licensing System. A disadvantage is that the legacy (pre-2000) Novice carries lifetime CW credit, but the new Novice would not.

The new license class proposed by the ARRL would offer beginners a much wider sampling of what amateur radio has to offer than either the current Novice or Technician Class licenses. The new Novice would have access to limited HF CW/data and phone/image privileges on 80, 40, 15, and 10 meters as well as VHF and UHF privileges on 6 and 2 meters and on 222-225 and 430-450 MHz. A Novice operator would be prohibited, however, from being the control operator of a repeater, auxiliary, or beacon station, and the current Novice allocation on 1270-1295 MHz would be removed.

Power output would be restricted to 100 watts on 80, 40, and 15 meters and to 50 watts on 10 meters and higher. This

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lower limit above 28 MHz would avoid the need for the more complex RF safety questions in the Novice question pool.

ARRL CEO David Sumner, K1ZZ, said the idea was to give new Novice licensees more opportunity to try out different amateur radio modes than is currently available to Technicians, while retaining a motivation to upgrade. Under the League's plan, current Novice licensees—now numbering less than 5 percent of all radio amateurs—would be "grandfathered" into the new entry-level class without further testing.

ARRL's Band Plan For the 21st Century

In March 2002 the League asked the FCC to redistribute Novice spectrum,

since the Commission had stopped issuing new Novice licenses in 2000. At the time, the ARRL said that eliminating the Novice and Technician-Plus CW bands and reapportioning these "inefficiently deployed segments" would help to alleviate overcrowding elsewhere, an admission that more phone spectrum was needed.

Now, two years later, the FCC still has not acted on the ARRL's "Novice re-farming" petition (RM-10413), and the League incorporated that plan into its latest proposal. Table I indicates the various bands and modes that the League wants allocated to the new "Entry Level Novice" and frequency amendments to the existing General and Amateur Extra Classes.

| Band | Class | Current Band | ARRL Petition | Increase/Decrease |
|---------|-------------------------|---------------|------------------|-------------------|
| 80 m | Extra-CW/Data | 3.500-3.750 | 3.500-3.725 | -25 kHz |
| | Extra-Phone | 3.750-4.000 | 3.725-4.000 | +25 kHz |
| | General-CW/Data | 3.525-3.725 | 3.525-3.725 | Same |
| | General-Phone | 3.850-4.000 | 3.800-4.000 | +50 kHz |
| | Novice-CW/Data | 3.675-3.725 | 3.550-3.700 | +100 kHz |
| | Novice-Phone | None | 3.900-4.000 | +100 kHz |
| 40 m | Extra-CW/Data | 7.000-7.150 | 7.000-7.125 | -25 kHz |
| | Extra-Phone | 7.150-7.300 | 7.125-7.300 | +25 kHz |
| | General-CW/Data | 7.025-7.150 | 7.025-7.125 | -25 kHz |
| | General-Phone | 7.225-7.300 | 7.175-7.300 | +50 kHz |
| | Novice-CW/Data | 7.100-7.150 | 7.050-7.125 | +25 kHz |
| | Novice-Phone | None | 7.200-7.300 | +100 kHz |
| 15 m | Extra-CW/Data | 21.000-21.200 | 21.000-21.200 | Same |
| | Extra-Phone | 21.200-21.450 | 21.200-21.450 +0 | Same |
| | General-CW/Data | 21.025-21.200 | 21.025-21.200 | Same |
| | General-Phone | 21.300-21.450 | 21.275-21.450 | +25 kHz |
| | Novice-CW/Data | 21.100-21.200 | 21.050-21.200 | +50 kHz |
| | Novice-Phone | None | 21.350-21.450 | +100 kHz |
| 10 m | Extra-CW/Data | 28.000-28.300 | 28.000-28.300 | Same |
| | Extra-Phone | 28.300-29.700 | 28.300-29.700 | Same |
| | General-CW/Data | 28.000-28.300 | 28.000-28.300 | Same |
| | General-Phone | 28.300-29.700 | 28.300-29.700 | Same |
| | Novice-CW/Data | 28.100-28.300 | 28.050-28.300 | +50 kHz |
| | Novice-Phone | 28.300-28.500 | 28.300-28.500 | Same |
| 6 m | Extra/General-All modes | 50-54 | 50-54 | Same |
| | Novice-All modes | None | 50-54 | +4 MHz |
| 2 m | Extra/General-All modes | 144-148 | 144-148 | Same |
| | Novice-All modes | None | 144-148 | +4 MHz |
| 1 1/4 m | Extra/General-All modes | 222-225 | 222-225 | Same |
| | Novice-All modes | 222-225 | 222-225 | Same |
| 70 cm | Extra/General-All modes | 420-450 | 420-450 | Same |
| | Novice-All modes | None | 430-450 | +20 MHz |
| 23 cm | Extra/General-All modes | 1240-1300 | 1240-1300 | Same |
| | Novice-All modes | 1270-1295 | None | -25 MHz |

Table I— Comparison between the existing Amateur Service bands and those proposed by the American Radio Relay League. As a general rule, there are smaller CW subbands and more phone spectrum. The CW/Data subbands listed above are CW/Data only. CW may, of course, also be used on the voice subbands (except on 5 MHz). Radio amateurs should comply with the generally accepted band plans.

The ARRL license restructuring plan calls for no changes in privileges for the Extra and General Class on 160, 60, 30, 20, 17, or 12 meters. Novice licensees would have no access to those bands.

Under this proposal, the middle group of licensees—Technician, Tech Plus (Technician with Element 1 code credit), and General—would be merged into a new General license that also would not require a Morse examination. Current Technician and Tech Plus license holders would automatically gain current General Class privileges without additional testing. The current Element 3 General written examination would remain in place for new applicants.

Current Advanced Class licensees would be merged into the Extra Class, also without an additional examination. The current Extra Class exam elements, including the Element 4 written exam and the Element 1 5-wpm code exam, would remain unchanged for upgrades from other classes.

The League Board indicated that it "...saw no compelling reason to change the Amateur Extra Class license requirements." The ARRL plan calls on the FCC "...to combine the current Advanced and Amateur Extra Class licensees into Amateur Extra, because the technical level of the exams passed by these licensees is very similar." (Some publishers and distributors are already complaining that this automatic upgrade will adversely impact their sales of General and Extra Class license preparation material since applicants would automatically be upgraded from the Technician and Advanced Class without examination.)

The ARRL wants new applicants for Extra to continue passing the 5 words-per-minute Morse code examination because, as Sumner explains, "...the Board felt that the highest level of accomplishment should include basic Morse capability." Current Novice, Tech Plus, and General licensees would receive lifetime 5 wpm Morse credit.

Conflict with the IARU Constitution?

The ARRL proposal to retain Morse testing for the Extra Class license appears to be in conflict with the IARU constitution, which says in part, "A Member-Society has the obligation to represent and promote IARU in its country and/or territory and shall ensure that the principles, resolutions, and recommendations of the IARU are made known to all amateurs within its area of influence."

At this writing, the ARRL's Petition for Rulemaking has yet to be assigned a Rule Making file number by the FCC. However, this is expected by the time you read this. Radio amateurs may view the ARRL proposal on the League website at: <<http://www.arrl.org/news/restructuring2/restrux2-petition.pdf>> (Beware, it's 34 pages long!). Once an RM number has been assigned, comments may be submitted to the FCC via its Electronic Comment Filing System (ECFS). (Click on "Search for Filed Comments." In the "Proceeding" field enter

the rulemaking number, with "RM in upper-case and the hyphen included.)

Of course, it is unknown at this time what the FCC ultimately will decide to do or when it will decide to do it. There are certain to be thousands of comments filed on the ARRL petition, which the FCC staff will have to read and digest—and consolidate with the petitions already filed and commented on—before making a recommendation to the Commission itself for a Notice of Proposed Rule Making. Stay tuned...

73, Fred, W5YI

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Lost in the Sands of Time?

When radio first began, at the beginning of the 20th century, the crystal diode was considered the last word in RF detection. When spark transmitters were the rage, crystal sets were the receivers of choice. Although other detection methods existed, the galena (lead sulfide) crystal found in nature provided the greatest sensitivity (at the time), and as a result radio receivers using this type of crystal were extremely popular. For the rare amateur who doesn't know

what a crystal set is, we refer you to fig. 1 to show just how simple it really is. Version 1 is the simplest of all, but receives all signals of sufficient strength present at the antenna. Version 2 uses a tuned circuit to attempt to get a little bit of selectivity.

The way either version works is simplicity itself. RF is picked up by the antenna (or the antenna and tuned tank circuit), and the crystal diode then rectifies the received RF, developing an audio signal across the earphones. For the set to work properly, however, the received RF voltage has to be greater than the forward threshold of the diode.

*c/o CQ magazine

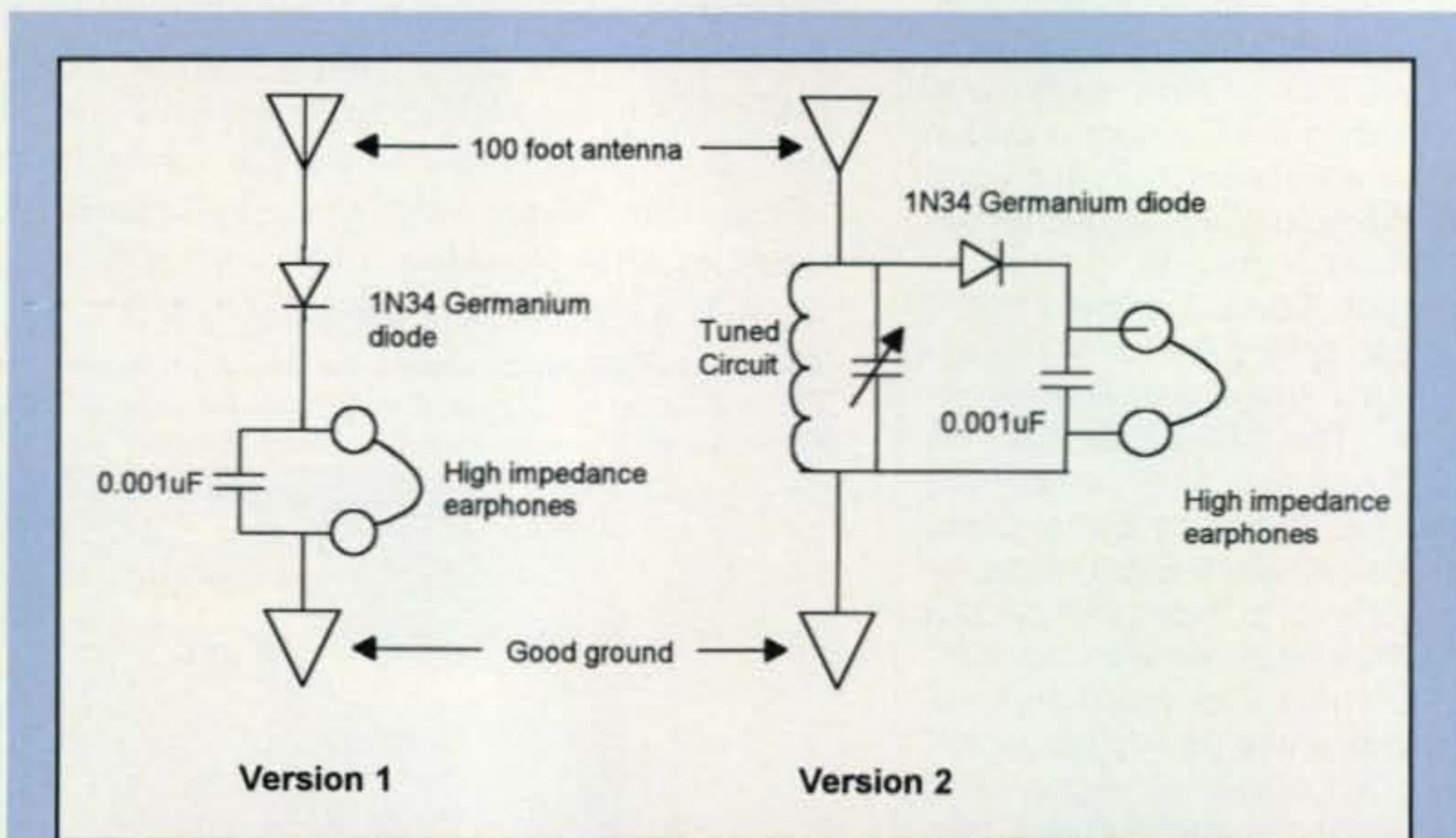


Fig. 1— Two versions of the popular crystal set of the 1920s.

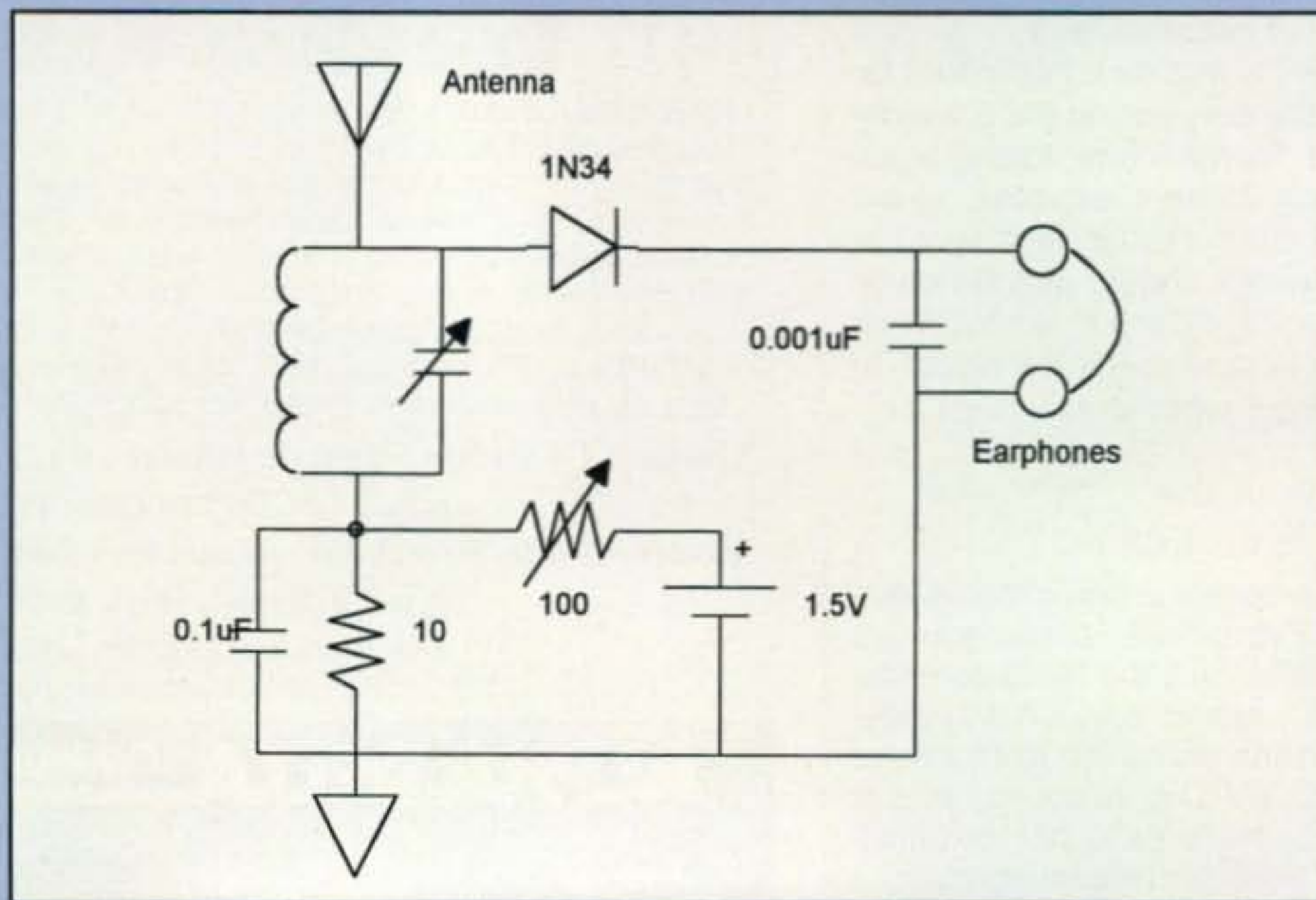


Fig. 2— Biased-diode crystal set.



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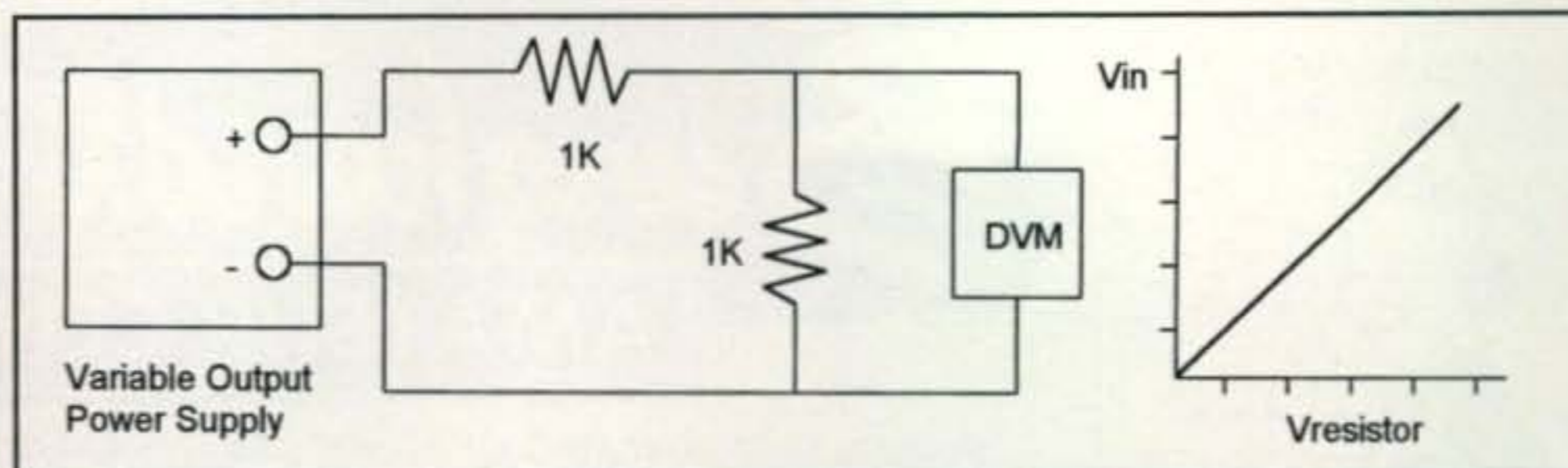


Fig. 3— Characteristics of a positive resistor.

This means that unless the voltage is greater than a few tenths of a volt, the diode will not conduct and the signal will not be heard.

All of this was well known, and to try to make the circuit more sensitive, various methods were tried. Fig. 2 shows one way that was explored to try to overcome this forward-bias limitation. In this approach the crystal was pre-biased to the point where it was just about to conduct. The thought was that if one could adjust this pre-bias voltage closely enough, signals down into the microvolt region might actually be able to be detected. For all of this to work properly, though, the crystal diode had to be checked for the greatest forward-conduction-to-reverse-bias ratio possible. This is where our investigation begins.

After looking at a number of very old manuscripts describing these "testing and characterizing" techniques, we found two very interesting circuits. However, before we describe them, first consider the basic circuit of fig. 3. As you increase the voltage from the power supply, the voltage across the 1000-ohm load resistor obviously will increase. This is perfectly normal, since the resistor is a simple positive resistance.

Now let's look at fig. 4. This was one of the circuits that was investigated as a possible RF detector (we don't know if it was ever employed), but it has a very strange characteristic. As you increase

the voltage applied to this circuit, the voltage first starts to rise, as you would expect. When you reach the point where the diode begins to conduct, however, the output voltage now starts to decrease! If you don't believe this, build the circuit of fig. 4 with a 1N34 germanium diode, a 0- to 5-volt adjustable power supply, and a digital voltmeter, and check it out yourself. For the theorists among us who love to quote Ohms Law, it would appear that you have violated that law and created a circuit that has *negative* resistance, since an increase in applied voltage is now producing a *decrease* in output voltage!

Now what does this "negative resistance" mean? It simply means that any normal resistive losses present in the rest of the circuit should be able to be cancelled (even with some negative resistance left over) if the value of the negative resistance is greater than the value of the positive resistance. Remember, resistors in series always add.

Isn't it amazing what was discovered before the transistor, and for that matter, even before the vacuum tube? It took until the 1950s for a similar negative resistance device, the tunnel diode, to be developed. The trick now is how to use this unique feature, and this is where experimentation comes in.

I must caution you that I have not investigated any of these circuits in detail, but I invite all of the experi-

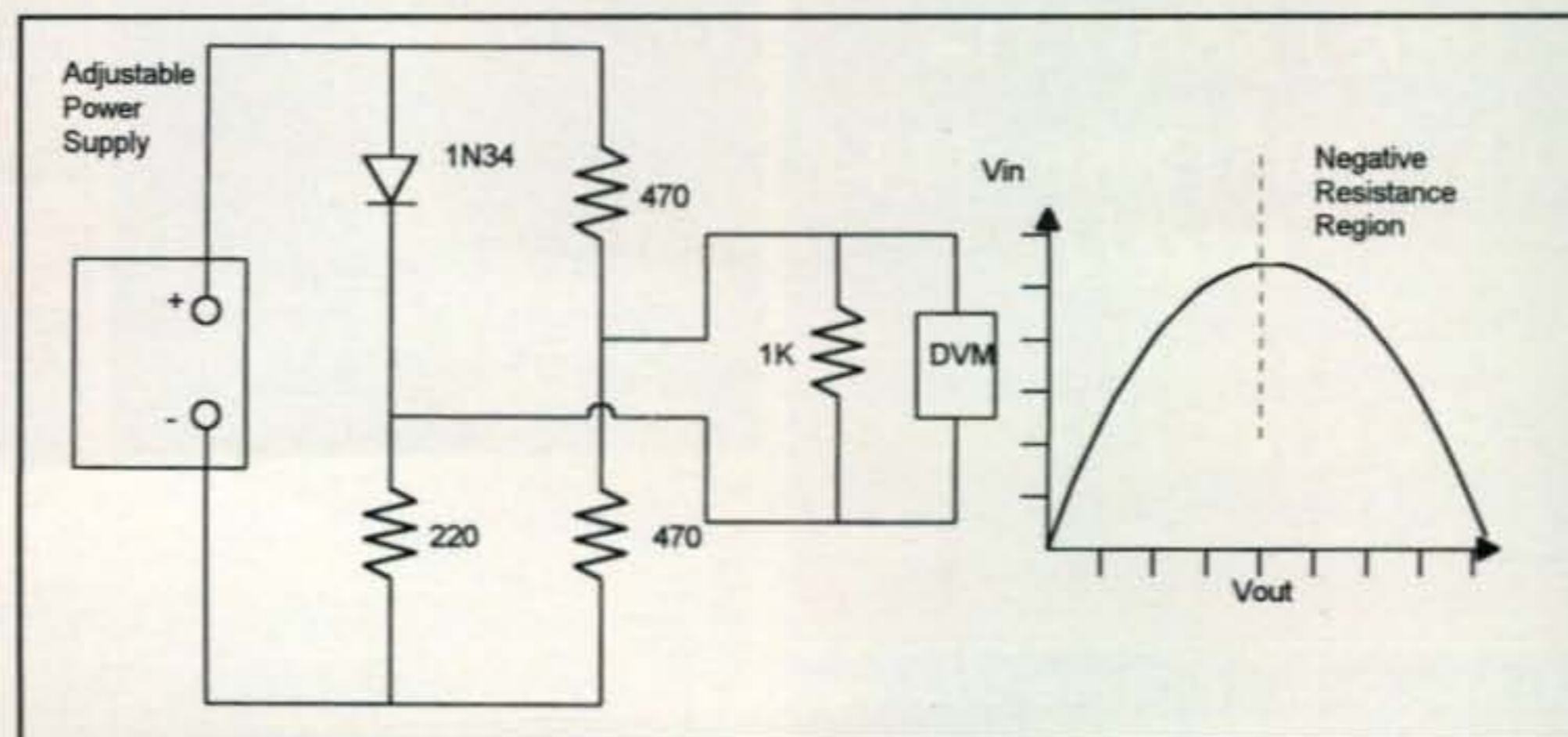


Fig. 4— A circuit that demonstrates negative resistance.

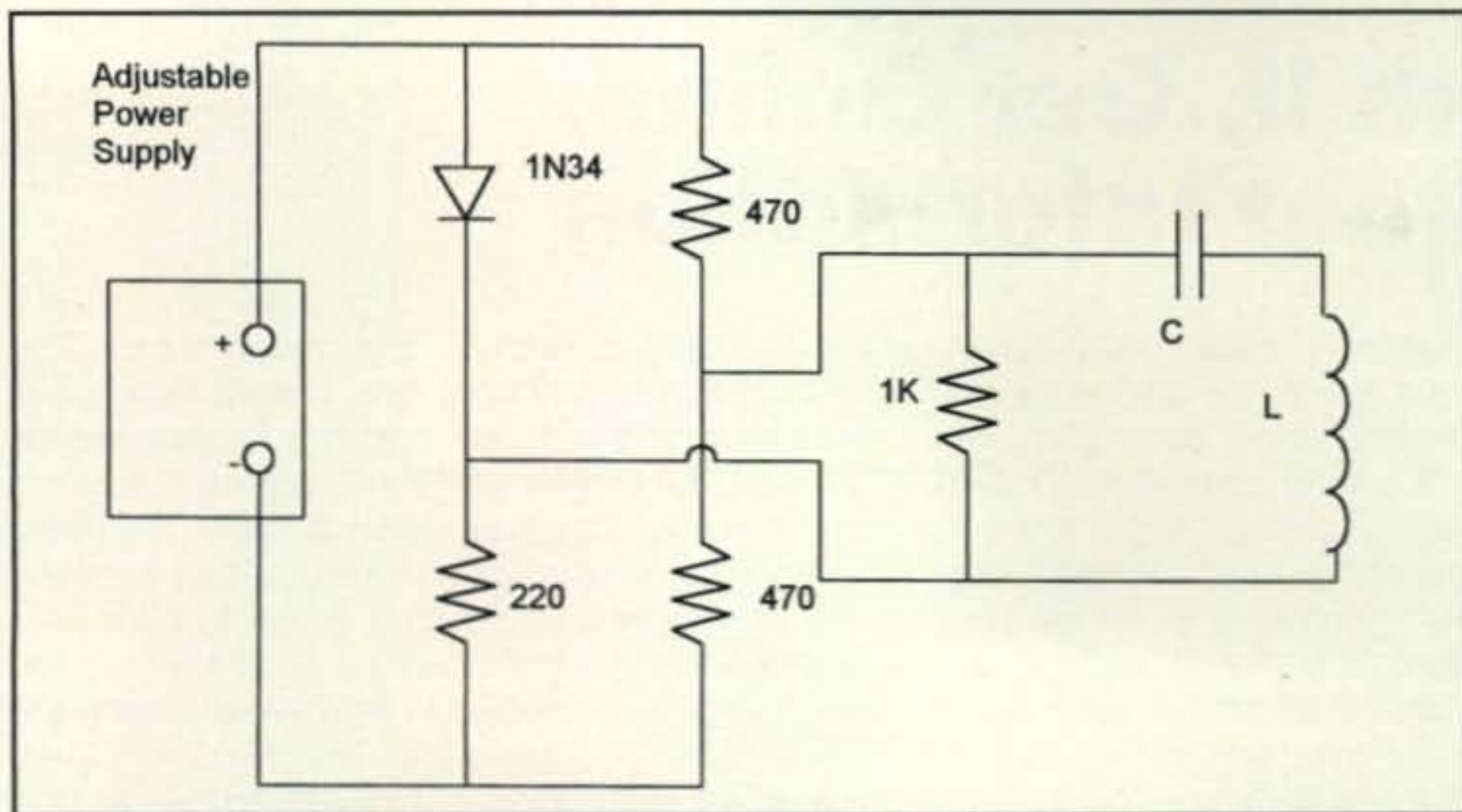


Fig. 5— Potential negative-resistance oscillator.

menters out there to "get off the couch" and see what you can find. I also suggest that your experimentation be done with galena, lead sulfide, iron pyrites, or germanium diodes (such as the 1N34 and its cousins), since that is what was used originally. It is quite possible that these point-contact devices have other characteristics that come into play of which we are not aware or which have been "forgotten" in the past.

For a "push in what might be the right direction," consider fig. 5. Here we have added a tuned circuit to the negative resistance circuit. Can this be made to oscillate? Remember, negative resistance means that normal resistive losses in the tuned circuit should be able to be eliminated. If fig. 5 can be made to oscillate, how high in frequency can it go? I leave this up to you, but remember, tunnel diodes operated into the GHz region or higher.

Fig. 6 is still another approach to generating negative resistance. Here the diode is connected in reverse-bias fashion and the applied voltage slowly

increased. Again, the voltage across the series tuned circuit will increase until the reverse-bias region of the diode is reached. Then the diode will "break-down" (or avalanche), creating a negative-resistance region, and the circuit may (will?) oscillate. In this circuit we have included an audio transformer and speaker to operate at a frequency low enough to actually be heard so as not to require any special test equipment.

Depending on the diode you use, the reverse breakdown region may be quite high, so make your choice carefully or you may need a hundred volts or even more! Also be careful, as 100+ volts can hurt! Once you have negative resistance tamed, why not investigate negative impedance, voltage, current, or even frequency? Who knows what this might mean or what else you might find?

Since April (and all that goes with it) is the beginning of spring, it is a great time to investigate such strange and unique negative phenomena. Let us know what you discover.

73, Irwin, WA2NDM

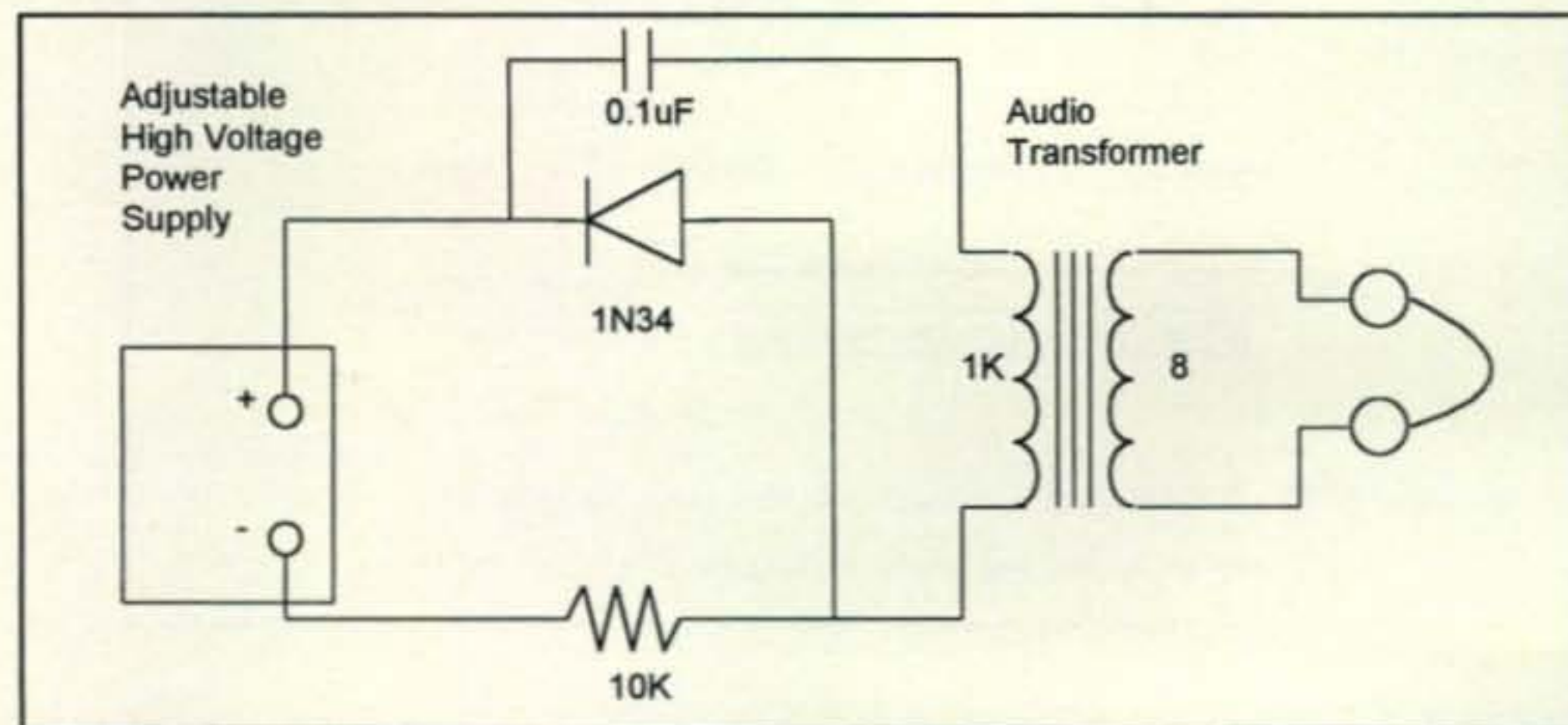


Fig. 6— Another negative-resistance oscillator.

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Get With It, Get Online, Get Instant Information

Are you a "go-to" person? You know, the person other people go to for advice or an answer to a question about some obscure fact or procedure? I think everyone should have a go-to person. Here at the office, I seem to be a go-to guy for a lot of miscellaneous and odd facts about all kinds of stuff (I have a go-to person myself). A quick phone call, e-mail, or call on the radio to a friend will sometimes get you an instant answer. Of course, you have to trust the source of your information, and hopefully your go-to person is reliable and has true information, rather than false information. . .

This sort of reminds me of being in the fourth grade. Our teacher, Mr. Dempsey, would yell, "Look it up!" when we asked him to help us spell a word while we studied English. I can still remember everyone in the class grumbling about that. As I look back, it really wasn't so bad, and most of us learned to use the dictionary.

In any case, here we are in the 21st century, and as often as I can, I try to teach the person seeking instant information (also known as "laziness") to use a 20th century tool—the *internet*.

The internet and search engines are truly amazing. Here is a radically non-ham radio example of the information retrieval search capability these days: I recently watched an old episode of the TV show "The Sopranos," and an interesting and

strange song played in the background. The sound bite was probably less than 30 seconds, and I caught the really odd but bumpy words "Kentucky fried blow" or "Kentucky fried flow" or something like that. Rap music is not on my usual play list (I listen to jazz), so I had no idea what the song was or who performed it. Being curious, I typed "Kentucky fried blow flow Sopranos" in the search engine, and bam! I had 19 results and the search took 0.19 seconds. The song is called "Kentucky Fried Flow" by Armand Van Helden and appears in The Sopranos Episode 45, "Everybody Hurts." The internet is truly an amazing tool.

The Old Way, and the New Way

Focusing back on ham radio, I am constantly looking at the internet for information. The whole world truly is at your fingertips when you are online and start hitting the keyboard. Do you need to buy something, but don't know where to go? In the past, I would either call a friend on the telephone or radio, or look it up in the telephone directory. Likewise, I previously used a printed cross-reference guide to find replacement or new semiconductors for projects.

It is so much faster and more convenient, however, to search for something with a computer rather than skim page-by-page through a printed resource. Now I need to say here that I am a "print person." I do have manuals and data books and cross references and catalogs and other stuff on paper. I also prefer printed material when I take reading material into the restroom with me. Until

*16428 Camino Canada Lane, Huntington Beach, CA 92649

e-mail: <kh6wz@cq-amateur-radio.com>




Fig. 1— The new way to "look it up." Google.com and other internet search engines put a world of information at your fingertips. Just make sure the information is trustworthy.

"e-books" are cheap and safe enough to take with me on those trips, my library will remain mostly paper-based.

I am slowly learning, though, that it is faster and easier to use the computer to search for something. (Well, actually, it really hit me hard when I almost couldn't see the really tiny type in a cross-reference guide when I was looking for a special IC for a fox-hunting project I was building. That was a bit embarrassing. I had to ask the clerk behind the counter to look it up for me. Yes, the kid used the computer and found the replacement device in a few seconds.)

Just about all programs, including word-processing and spreadsheet programs, have some sort of search or find capability. Isn't it easier to just hit "ctrl-F" and type the part number rather than search manually through a whole document? Also, if you are not sure of the entire part or model number, most search utilities can find partial letter-number combinations.

Have you seen the ARRL Handbook on CD-ROM? At first I hated reading the files on my monitor. I used a lot of paper when I printed certain chapters and sections, when I didn't want to sit in front of my computer to read about something. I also missed "flicking" from page to



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| <p>Beginner's Corner A place for beginners to the hobby, or newcomers to HF to get answers to their questions.</p> | 187 | 01-14-2004 09:41 | wb2d |
| <p>CQ Ham Radio Oral History Project</p> | 2 | 11-11-2003 23:51 | W2VU |

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Fig. 2— The CQ forums can be an interesting place to visit. You can post a question or comment, and readers from all over the world can see it and respond.

page to look at pictures and tables. There really isn't an electronic equivalent for that, because browsing, while paperless, isn't fast enough, and you sometimes need to know what you are looking for. It's just like driving with no

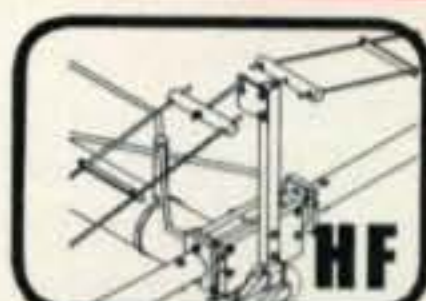
destination in mind; you just drive and look and stop when you see something interesting. You don't need maps or directions, and sometimes maps and directions get in the way of the enjoyment of *just looking*.

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References

The ARRL Handbook for Radio Communications, 2004 edition, The American Radio Relay League (CD-ROM version, ISBN: 0-87259-198-0, and printed version, ISBN: 0-87259-196-4).

Shea, Gary, KC9CRZ, "Going, Going, Gone! Ten Steps to Successfully Selling Ham Gear in an On-line Auction," *CQ*, November 2003, p. 18.

Semiconductor Cross-Reference Guides

NTE: <<http://www.nteinc.com>>

PartMiner, Inc.: <<http://www.freetradezone.com>>

Ham Radio Chat Rooms, Forums, and Reflectors

A Comprehensive List of Amateur (Ham) Radio Chat Rooms on IRC and The Internet:

<<http://www.chatmag.com/topics/pasttimes/hamradio.html>>

The CQ Forums: <<http://www.cq-amateur-radio.com/cgi-bin/Ultimate.cgi>>

QRZ.com: <<http://www.qrz.com/board.html>>

Spam and Pop-Up Blockers

WebAttack Internet Tools:

<<http://www.webattack.com/Freeware/misctools/fwpopblock.shtml>>

ZD Net: <<http://downloads-zdnet.com.com/3150-7786-0.html>>

An article on spam blockers (CNET News): "Spam blockers may wreak e-mail havoc," by Dedan McCullagh, May 27, 2003; <http://news.com.com/2010-1071_3-1009745.html>

PC World: <<http://www.pcworld.com/downloads/browse/0,cat,1447,sortIdx,1,00.asp>>

Note: This is not a complete list, nor is this an endorsement of any particular product. There are thousands of places to try. Use your favorite search engine to find more!

However, the CD-ROM version of the *Handbook* has many fascinating features that can only be duplicated electronically. For example, in the section on ignition noise, there is an audio file of what the different types of "hash" sound like. Wonderful! By the way, I started with the CD-ROM version to "force" myself into the 21st century, but ended up buying the printed version later. You might consider saving yourself some trouble by getting them both at the same time. Here is a money-saving hint: Look for a "previous year" edition; you can often get a discount on the "old" book.

Online Auctions, E-Commerce, and a Caveat

An excellent article about buying and selling through online auctions appeared in the November 2003 issue of *CQ* (see the References box). Read that article for some really good hints and tips, and as people say, bid responsibly.

One of the most important things to remember is to know when to stop bidding. You can easily get caught up in the excitement of winning the bid just to win, and not realize that you might have been able to purchase a similar item elsewhere for less. Then again, if it is something you really want and you have the funds to get it, and if it makes you feel good rather than bad, well, just go for it!

Be sure to read the eBay Security Center for hints about safe trading and security before you begin your bidding, and be extra careful about revealing

your credit and financial information over the internet. (Remember, many established amateur radio dealers also sell used gear, and while the gear might be more expensive than what you find online, you have an extra degree of security in dealing with a known, established business. In addition, most dealers check out used gear to make sure it works before selling it, and offer some sort of warranty.—ed.)

Let's Chat

A fascinating forum for exchanging information in "real time" is the internet chat room. I sometimes visit technical chat rooms to find the very latest updates on topics such as upcoming contests and construction projects. The chat room is the internet version of a roundtable discussion on the radio, in which groups of people gab about all sorts of topics. You can find them using your favorite search engine.

Closely related to the chat room is the internet forum. Companies sometimes host forums so they can keep in touch with their customers. A "moderator" usually watches over the posts to make sure things run smoothly and to see that everyone obeys the rules and policies. You simply type in your comment or question and wait for replies. *CQ* has a forum on its website that covers several ham radio topics. Stop by and post a comment or a question sometime. Go to <<http://www.cq-amateur-radio.com/cgi-bin/Ultimate.cgi>>, or just go to the *CQ* home page at <<http://www.cq-amateur-radio.com>>, click on "Q&A"

from the menu on the left, and then select the forum of your choice.

Another internet news source is the e-mail "reflector," on which e-mail messages are posted to a group of members. Members respond or comment on posted information. It's sort of like seeing a message thumb-tacked to a bulletin board, but in this case, the information comes directly to you via e-mail. Several ham radio-related places to check are listed in the References section in this column.

In all cases, you will have to register with the host company or group and create a user name and password. Equipment for sale, product reviews, ham-radio-related news, a callsign database, and tons of information are all available from these "person-to-person" message resources.

And Now a Word About Spam

It seems to me that I get more and more useless and unwanted information via e-mail (spam) than ever before. It's probably due to the new laws against the junk phone calls; the telemarketing companies need another outlet for their junk information. In any case, there are software products that can reduce the amount of spam, or unwanted junk mes-

sages, that you receive. Most of these programs do not automatically delete messages, but instead "save" them in a temporary folder so that you can choose to read, or delete, each one. Some of the more aggressive programs will eat up and automatically destroy too many messages, so you should be careful when using these utilities. I simply delete messages when I do not recognize the sender or the subject.

A Basic Rule to Remember

Always remember that it probably would be a good idea to apply a basic rule as you seek information: Try to second-source, rather than second-guess, that the information you get is valid and true. Of course, there are some sources we should be able to trust. I certainly would trust something that came from the *Information Please Almanac* or the Library of Congress. Just because something appears on the internet doesn't mean that it is true. Watch out for the "fake" second source—those references that simply go back to the same original source. Use the power of the internet to gather information, and you, too, can become one of those "go-to" people. Don't forget to share this secret with others. 73, Wayne, KH6WZ

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Emergency Communications Resources & CQ Reviews: ARRL Level 1 Emcomm Course

We have two Guest Editors for this month's "Public Service" column:

Jerry Boyd, KW7J, is a retired Chief of Police and a former Chief of a rural Fire/EMS agency. He's been a licensed amateur since 1958 and has over 40 years of experience in amateur radio emergency communications, and has written numerous books and articles on the subject. Jerry offers advice on emergency communications training resources available to hams.

Contributing Editor Gordon West, WB6NOA, is also an experienced emergency communicator. He recently completed Level 1 of the ARRL Amateur Radio Emergency Communications Course and reviews the course and what he learned (a lot more than he expected to!).

WA3PZO will return next month.

—W2VU

Is traditional ham radio emergency training—principally operating in nets and at non-emergency public service events—enough in today's world? "Emcomm" authority and longtime ham Jerry Boyd,* KW7J, says no, and offers an outline for (post 9/11) 21st century emergency communications training.

Having authored a number of books and articles on the subject of amateur radio emergency communications, or "Emcomm," I am often asked what types of training courses are most relevant for those involved. Given the expanded role our service enjoys post-9/11, it is clear that to respond appropriately when we are summoned, our training must be relevant, current, and documented.

There are differing levels of Emcomm involvement amongst the members of our radio service. Thus, the level of training appropriate and required will vary depending upon the type and magnitude of involvement of individual amateurs. The American Radio Relay League (ARRL) has, correctly, defined training levels through its three-tier continuing education Emcomm courses. (See WB6NOA's evaluation of the ARRL Level 1 Course, following this article.—ed.) For our purposes, the training levels can be defined as basic, intermediate, and advanced. It seems a fair statement that as long as training is relevant to our mission, there is almost no such thing as too much training.

What follows is, admittedly, opinion. However, it is opinion based upon over 40 years of involvement in amateur radio Emcomm and over 35 years as a professional in public safety. The basic premises which underlie these recommendations are: amateurs, to be effective in providing emer-



Amateur radio is finding greater acceptance in our post-9/11 world, but current training is essential if we are going to meet the needs of served agencies. Here Chris Kregel, KBØYRZ, helps with communications at a Colorado forest fire. (FEMA Photo by Michael Rieger)

gency communications, must be trained; amateurs, to be accepted and utilized particularly by those in public safety, must be trained; amateurs, to be safe when providing Emcomm support, must be trained. With those "bottom lines" in mind, this is what I recommend:

Basic Training

To have the fundamentals needed to provide any meaningful Emcomm assistance, one needs to complete the following:

1. ARRL Emcomm Continuing Education Course, Level I

*e-mail: <KW7J@arrl.net>

†CQ Contributing Editor, 2414 College Dr., Costa Mesa, CA 92626

e-mail: <wb6noa@cq-amateur-radio.com>

2. Basic Incident Command System (ICS) such as the Emergency Management Institute (Department of Homeland Security-DHS-/FEMA) course IS-195

3. Emergency Preparedness USA (DHS/FEMA Course IS-002) or the American Red Cross Introduction to Disaster Course

4. Basic first aid/CPR

5. Basic ARRL National Traffic System (NTS) message handling

Intermediate Training

In addition to the basic courses, add the following:

1. ARRL Level II training

2. DHS/FEMA Course IS-292—Disaster Basics

3. DHS/FEMA Course IS-242—Effective Communication

4. Subscribe to and read on a regular basis the training section of the weekly EMCOMM Bulletin (contact <K6SOJ@arrl.net> for subscription information)

Advanced Training

In addition to both the basic and intermediate courses add the following:

1. ARRL Level III training

2. DHS/FEMA Course 244—Developing and Managing volunteers

3. DHS/FEMA Course 275—The Role of the Emergency Operations Center

4. DHS/FEMA Course IS-288—The Role of Voluntary Agencies in Emergency Management

5. If possible attend one of the following, each of which is held annually:

a. Emcomm West (held in northern California or Nevada); see info on the web at <www.emcomm.org/emcomm>

b. The Communications Academy (held in Seattle, Washington); see info at <www.commacademy.org>

6. DHS/FEMA IS-240—Leadership & Influence

Keep Everything, Re-read Regularly

For a variety of important reasons, liability and otherwise, retain in your files copies of all certificates of completion for any Emcomm-related training in which you participate. In addition, most of the courses recommended in this article come with study guides or other hard-copy materials. It is a good idea to periodically re-read those to keep the learning points fresh in your mind.



The American Red Cross Introduction to Disaster course is among the basic-level training KW7J says every ham interested in emergency communications should have. He also recommends Red Cross basic first aid and CPR training. (American Red Cross photo)

As amateur radio Emcomm providers, we are only as good as the training we have received, and we will only be used to the extent to which we are trained. Thanks for taking the time and devoting the effort to this all important aspect of our radio service. ■

In this follow-up to KW7J's recommendations on current emergency training that every amateur needs, Contributing Editor WB6NOA† shares his experience in taking the ARRL's introductory "Emcomm" course.

I have just completed the American Radio Relay League's continuing education course, "Introduction to Amateur Radio Emergency Communications," the first of three levels of the ARRL's Amateur Radio Emergency Communications Course (ARECC). Yes, I passed. I also learned a lot more than I expected from an introduction to emergency comms course.

"One of the basic tenets of amateur radio is to provide a pool of experienced communicators during emergencies," comments the course manager, Dan Miller, K3UFG.

"All amateur radio operators are encouraged to become certified in emergency communications, and the ARRL course is suitable for newly licensed operators," adds another League official.

The online or classroom course is part of the ARRL's certification and continuing education program. The federal government and United Technologies Corporation (UTC) have awarded the

League grants that allow course registrants to be reimbursed upon the successful completion of their studies (see "Grant Facts"). Each student has a financial stake in completing the course: The modest course fee of \$45 for ARRL members if you take it online or as a hybrid class (more on that later) will be reimbursed after you finish the course and take the simple online, 25-question, multiple-choice exam.

The Level 1 emergency communications course is divided into 22 sections called Learning Units. You can study on the computer off-line by downloading one Learning Unit at a time. After going over the material in the unit or out of the gray Level 1 emergency communications course book (they are almost identical), you will be asked to take a simple five-question, multiple-choice test, followed by doing a simple assignment that is then reviewed by your online mentor.

It is the online mentor who brings success to this course! Your mentor is an



active ham who probably spends four hours an evening tracking his or her assigned students. My mentor, Howard Coleman, N6VDV, was almost like a pen pal when we finished up on the final assignment. Even though I was tied up for an entire week during the southern California fire storms, he continued to encourage me to regularly turn in the assignments and keep pace with the rest of the class.

He reviewed each assignment sent to him via the internet and responded with an electronic checkmark if the assignment was complete. For me, many times he added some additional lines of information to add to the course learning process.

The course is designated to last for eight weeks. You can get through the assignments in as little or as long a time as you want, but you need to finish before the class closes.

SAVE BIG ON ANTENNAS, TOWERS & CABLE

TELESCOPING ALUMINUM TUBING

| | |
|------------------------|----------------------|
| DRAWN 6063-T832 | 1.250" ... \$1.55/ft |
| .375" | \$1.75/ft |
| .500" | \$1.95/ft |
| .625" | \$2.25/ft |
| .750" | \$2.50/ft |
| .875" | \$2.75/ft |
| 1.000" | \$3.00/ft |
| 1.125" | \$3.50/ft |

In 6' or 12' lengths, 6' lengths ship UPS. Call for 3/16" & 1/4" rod, bar stock, and extruded tubing.

BENCHER / BUTTERNUT

| | |
|------------------------|--------|
| Skyhawk, Triband Beam | \$1129 |
| HF2V, 2 Band Vertical | \$249 |
| HF5B, 5 Band Minibeam | \$359 |
| HF6VX, 6 Band Vertical | \$339 |
| HF9VX, 9 Band Vertical | \$369 |
| A1712, 12/17m Kit | \$54 |
| CPK, Counterpoise Kit | \$129 |
| RMKII, Roof Mount Kit | \$159 |
| STRII, Roof Radial Kit | \$125 |
| TBR160S, 160m Kit | \$139 |

More Bencher/Butternut-call

COMET ANTENNAS

| | |
|---------------------------|-----------|
| GP15, 6m/2m/70cm Vertical | \$149 |
| GP6, 2m/70cm Vertical | \$139 |
| GP9, 2m/70cm Vertical | \$169 |
| B10NMO, 2m/70cm Mobile | \$36 |
| SB14, 6m/2m/70cm Mobile | \$59 |
| SBB224NMO, 2m/220/70cm | \$69 |
| SBB2NMO, 2m/70cm Mobile | \$39 |
| SBB5NMO, 2m/70cm Mobile | \$49 |
| SBB7NMO, 2m/70cm Mobile | \$69 |
| UHV4/UHV6 | \$109/135 |

Much more Comet in stock-call.

DIAMOND ANTENNAS

| | |
|-------------------------|-----------|
| D130J/DPGH62 | \$79/139 |
| F22A/F23A | \$89/119 |
| NR72BNMO/NR73BNMO | \$39/54 |
| NR770HBNMO/NR770RA | \$55/49 |
| X200A, 2m/70cm Vertical | \$129 |
| X500HNA/X700HNA | \$229/369 |
| X510MA/510NA | \$189/189 |
| X50A/V2000A | \$99/149 |
| CR627B/SG2000HD | \$99/79 |
| SG7500NMO/SG7900A | \$75/112 |

More Diamond antennas in stock.

GAP ANTENNAS

| | |
|-------------------------|-------|
| Challenger DX | \$289 |
| Challenger Counterpoise | \$29 |
| Challenger Guy Kit | \$19 |
| Eagle DX | \$299 |
| Eagle Guy Kit | \$29 |
| Titan DX | \$329 |
| Titan Guy Kit | \$29 |
| Voyager DX | \$409 |
| Voyager Counterpoise | \$49 |
| Voyager Guy Kit | \$45 |

Please Call for Delivery Information.

WEEKDAY HOURS:

9 AM-5 PM CST

SATURDAY HOURS:

9 AM-12 NOON CST

CREDIT CARDS:

M/C, VISA, DISCOVER

CUSHCRAFT ANTENNAS

| | |
|------------------|--------------|
| 13B2/A148-10S | \$159/89 |
| A270-6S/A270-10S | \$79/99 |
| A3S/A4S | \$459/549 |
| A50-3S/5S/6S | \$99/169/269 |
| A6270-13S | \$199 |
| AR2/ARX2B | \$55/69 |
| AR270/AR270B | \$89/99 |
| R6000/R8 | \$309/459 |
| X7/X740 | \$649/269 |
| XM240 | \$679 |

Please call for more Cushcraft items.

M2 VHF/UHF ANTENNAS

| | |
|---------------------------|--------------|
| 144-148 MHz | |
| 2M4/2M7/2M9 | \$95/109/129 |
| 2M12/2M5WL | \$165/209 |
| 2M5-440XP, 2m/70cm | \$179 |
| 420-450 MHz | |
| 440-470-5W/420-450-11 | \$139/95 |
| 432-9WL/432-13WLA | \$179/239 |
| 440-18/440-21ATV | \$129/149 |
| Satellite Antennas | |
| 2MCP14/2MCP22 | \$169/239 |
| 436CP30/436CP42UG | \$239/279 |

M2 ANTENNAS

| | |
|---------------------------|-----------|
| 50-54 MHz | |
| 6M5X/6M7JHV | \$209/269 |
| 6M2WLC/6M9KHW | \$459/499 |
| 10/12/15/17/20m HF | |
| 10M4DX, 4 Element 10m | \$399 |
| 12M4DX, 4 Element 12m | \$399 |
| 15M4DX, 4 Element 15m | \$449 |
| 17M3DX, 3 Element 17m | \$399 |
| 20M4DX, 4 Element 20m | \$529 |

More M2 models in stock-please call.

MFJ

| | |
|------------------------------|-------|
| 259B | \$219 |
| 269 | \$299 |
| 941E | \$109 |
| 945E | \$99 |
| 949E | \$139 |
| 969 | \$169 |
| 986 | \$289 |
| 989C | \$309 |
| 1798, 80-2m Vertical | \$249 |
| 1796, 40/20/15/10/6/2m Vert. | \$189 |

Big MFJ inventory-please call

LAKEVIEW HAMSTICKS

| | | |
|---------------|---------------|---------------|
| 9106..... 6m | 9115..... 15m | 9130..... 30m |
| 9110..... 10m | 9117..... 17m | 9140..... 40m |
| 9112..... 12m | 9120..... 20m | 9175..... 75m |

All handle 600W, 7' approximate length, 2:1 typical VSWR... \$24.95

HUSTLER ANTENNAS

| | |
|---------------------------|---------------|
| 4BTV/5BTV/6BTV | \$129/169/199 |
| G6-270R, 2m/70cm Vertical | \$169 |
| G6-144B/G7-144B | \$109/179 |

Hustler Resonators in stock-call.

FORCE 12-MULTIBAND

| | | |
|-------|--------------------------|--------|
| C3 | 10/12/15/17/20m, 7 el | \$599 |
| C3E | 10/12/15/17/20m, 8 el | \$649 |
| C3S | 10/12/15/17/20m, 6 el | \$539 |
| C3SS | 10/12/15/17/20m, 6 el | \$559 |
| C4 | 10/12/15/17/20/40m, 8 el | \$759 |
| C4S | 10/12/15/17/20/40m, 7 el | \$679 |
| C4SXL | 10/12/15/17/20/40m, 8 el | \$979 |
| C4XL | 10/12/15/17/20/40m, 9 el | \$1119 |
| C19XR | 10/15/20m, 11 el | \$959 |
| C31XR | 10/15/20m, 14 el | \$1299 |

Please call for more Force 12 items.

ROHN TOWER

| | |
|----------------|---------------|
| 25G/45G/55G | \$89/189/239 |
| 25AG2/3/4 | \$109/109/119 |
| 45AG2/4 | \$209/225 |
| AS25G/AS455G | \$39/89 |
| BPC25G/45G/55G | \$75/99/110 |
| BPL25G/45G/55G | \$85/109/125 |
| GA25GD/45/55 | \$68/89/115 |
| GAR30/GAS604 | \$35/24 |
| SB25G/45/55 | \$39/89/109 |
| TB3/TB4 | \$85/99 |

Please call for more Rohn prices.

GLEN MARTIN ENGINEERING

| | |
|--------------------------------|-------|
| Hazer Elevators for 25G | |
| H2, Aluminum Hazer, 12 sq ft. | \$359 |
| H3, Aluminum Hazer, 8 sq ft. | \$269 |
| H4, HD Steel Hazer, 16 sq ft. | \$339 |

Aluminum Roof Towers

| | |
|----------------------------|-------|
| RT424, 4 Foot, 6 sq ft. | \$159 |
| RT832, 8 Foot, 8 sq ft. | \$239 |
| RT936, 9 Foot, 18 sq ft. | \$389 |
| RT1832, 17 Foot, 12 sq ft. | \$519 |
| RT2632, 26 Foot, 9 sq ft. | \$869 |

COAX CABLE

| | |
|--------------------------|-------------|
| RG-213/U, (#8267 Equiv.) | \$.36/ft |
| RG-8X, Mini RG-8 Foam | \$.19/ft |
| RG-213/U Jumpers | Please Call |
| RG-8X Jumpers | Please Call |

Please call for more coax/connectors.

TIMES MICROWAVE LMR® COAX

| | |
|-------------------|-----------|
| LMR-400 | \$.59/ft |
| LMR-400 Ultraflex | \$.89/ft |
| LMR-600 | \$1.19/ft |
| LMR600 Ultraflex | \$1.95/ft |

ANTENNA ROTATORS

| | |
|--------------------|-----------|
| M2 OR-2800P | \$1249 |
| Yaesu G-450A | \$249 |
| Yaesu G-800SA/DXA | \$329/409 |
| Yaesu G-1000DXA | \$499 |
| Yaesu G-2800SDX | \$1089 |
| Yaesu G-550/G-5500 | \$299/599 |

ROTATOR CABLE

| | |
|-----------|---------------------|
| R62 (#18) | \$.32/ft. |
| R81/82 | \$.25/ft./\$.39/ft. |
| R84 | \$.85/ft |

TRYLON "TITAN" TOWERS

| | | |
|-------------------------------------|---------------------|--------|
| SELF-SUPPORTING STEEL TOWERS | | |
| T200-64 | 64', 15 square feet | \$1209 |
| T200-72 | 72', 15 square feet | \$1429 |
| T200-80 | 80', 15 square feet | \$1649 |
| T200-88 | 88', 15 square feet | \$1949 |
| T200-96 | 96', 15 square feet | \$2249 |
| T300-88 | 88', 22 square feet | \$2189 |
| T400-80 | 80', 34 square feet | \$2089 |
| T500-72 | 72', 45 square feet | \$1979 |
| T600-64 | 64', 60 square feet | \$1869 |

Many more Trylon towers in stock!

US TOWER

| | |
|-----------------|-------------|
| MA40/MA550 | \$999/1549 |
| MA770/MA850 | \$2599/3999 |
| TMM433SS/HD | \$1349/1649 |
| TMM541SS | \$1789 |
| TX438/TX455 | \$1279/1749 |
| TX472/TX489MDPL | \$2899/7299 |
| HDX538/HDX555 | \$1499/2549 |
| HDX572MDPL | \$6669 |

Please call for help selecting a US Tower for your needs. Shipped factory direct to save you money!

UNIVERSAL ALUMINUM TOWERS

| | |
|---------------|-----------------|
| 4-40'/50'/60' | \$539/769/1089 |
| 7-50'/60'/70' | \$979/1429/1869 |
| 9-40'/50'/60' | \$759/1089/1529 |
| 12-30'/40' | \$579/899 |
| 15-40'/50' | \$1019/1449 |
| 23-30'/40' | \$899/1339 |
| 35-30'/40' | \$1019/1569 |

Bold in part number shows wind-load capacity. Please call for more Universal models. All are shipped factory direct to save you money!

TOWER HARDWARE

| | |
|----------------------------|---------|
| 3/8"EE / EJ Turnbuckle | \$11/12 |
| 1/2"x9"EE / EJ Turnbuckle | \$16/17 |
| 1/2"x12"EE / EJ Turnbuckle | \$18/19 |
| 3/16" / 1/4" Big Grips | \$5/6 |

Please call for more hardware items.

HIGH CARBON STEEL MASTS

| | |
|-----------------------------|-----------|
| 5 FT x .12" / 5 FT x .18" | \$35/59 |
| 10 FT x .18" / 11 FT x .12" | \$129/80 |
| 16 FT x .18" / 17 FT x .12" | \$179/129 |
| 20 FT x .25" / 21 FT x .18" | \$315/235 |
| 22 FT x .12" / 24 FT x .25" | \$149/379 |

PHILLYSTRAN GUY CABLE

| | |
|--------------------------|-----------|
| HPTG1200I | \$1.45/ft |
| HPTG2100I | \$1.59/ft |
| PLP2738 Big Grip (2100) | \$6.00 |
| HPTG4000I | \$.89/ft |
| PLP2739 Big Grip (4000) | \$8.50 |
| HPTG6700I | \$1.29/ft |
| PLP2755 Big Grip (6700) | \$12.00 |
| HPTG11200 | \$1.89/ft |
| PLP2758 Big Grip (11200) | \$18.00 |

Please call for help selecting the Phillystran size for your application.

TEXAS TOWERS

A Division of Texas RF Distributors, Inc. • 1108 Summit Avenue, Suite #4 • Plano, TX 75074

(800) 272-3467

LOCAL CALLS:

(972) 422-7306

EMAIL ADDRESS:

sales@texas Towers.com

INTERNET ADDRESS:

www.texas Towers.com

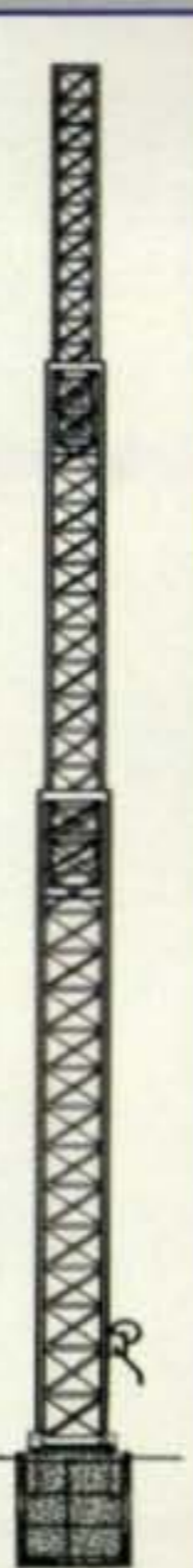
GREAT US TOWER CRANK-UP DEALS!

TX SERIES CRANK-UP TOWERS

- Handles 35 square feet of antenna load at 50 MPH, 14.75 square feet at 70 MPH.
- All models supplied with hinged T-base, anchor bolts, hand winch (except motor drive models), top plate, and rotor plate.
- MDP & MDPL models include motor drive
- Options include coax arms, raising fixtures, masts, motor drives, and more!

Now shipping from CA for west coast customers, and KS for east coast and midwest customers, to reduce freight cost!

| TX SERIES HEAVY DUTY CRANK-UP TOWERS | | | | | |
|--------------------------------------|----------|----------|------------|------------|------------|
| TOWER MODEL | MAX. HT. | MIN. HT. | WT. (LBS.) | LIST PRICE | SALE PRICE |
| TX-438 | 38' | 21'6" | 355 | \$1,523 | \$1,279 |
| TX-455 | 55' | 22' | 670 | \$2,107 | \$1,749 |
| TX-472 | 72' | 22'8" | 1040 | \$3,462 | \$2,899 |
| TX-472MDP | 72' | 22'8" | 1210 | \$5,571 | \$4,499 |
| TX-489MDPL | 89' | 23'4" | 1800 | \$9,034 | \$7,299 |



HDX SERIES CRANK-UP TOWERS

- Heavy duty, handles 44.7 square feet of antenna load at 50 MPH, 35 square feet at 70 MPH.
- All models supplied with hinged T-base, anchor bolts, hand winch (except motor drive models), top plate, and rotor plate.
- MDPL models include motor drive
- Options include coax arms, raising fixtures, masts, motor drives, and more!

Now shipping from CA for west coast customers, and KS for east coast and midwest customers, to reduce freight cost!

| HDX SERIES HEAVY DUTY CRANK-UP TOWERS | | | | | |
|---------------------------------------|----------|----------|------------|------------|------------|
| TOWER MODEL | MAX. HT. | MIN. HT. | WT. (LBS.) | LIST PRICE | SALE PRICE |
| HDX-538 | 38' | 21'6" | 600 | \$1,807 | \$1,499 |
| HDX-555 | 55' | 22' | 870 | \$3,162 | \$2,549 |
| HDX-572MDPL | 72' | 22'8" | 1600 | \$8,281 | \$6,669 |
| HDX-589MDPL | 89' | 23'8" | 2440 | \$10,841 | \$8,699 |
| HDX-689MDPL | 89' | 23'8" | 3450 | \$20,943 | \$16,499 |
| HDX-5106MDPL | 106' | 24'8" | 3700 | \$22,791 | \$17,549 |

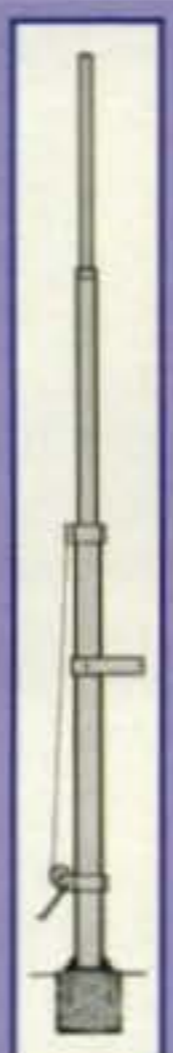


MA SERIES CRANK-UP MASTS

- Handles up to 22 square feet of antenna load. (See chart below)
- MDP models include motor drive.
- All models supplied with anchor bolts, load-actuated hand winch, and house bracket.
- Options include coax arms, raising fixtures, motor drives, self-supporting and rotator bases, remote control panel, and more!

Now shipping from CA for west coast customers, and KS for east coast and midwest customers, to reduce freight cost!

| MA SERIES CRANK-UP MASTS | | | | | | | |
|--------------------------|----------|----------|------------|------------------|------------------|------------|------------|
| MAST MODEL | MAX. HT. | MIN. HT. | WT. (LBS.) | 50 MPH (sq. ft.) | 70 MPH (sq. ft.) | LIST PRICE | SALE PRICE |
| MA-40 | 40' | 21'6" | 242 | 16.5 | 6.8 | \$1,209 | \$999 |
| MA-550 | 55' | 22'1" | 435 | 22 | 9 | \$1,875 | \$1,549 |
| MA-550MDP | 55' | 22'1" | 620 | 22 | 9 | \$3,584 | \$2,999 |
| MA-770 | 71' | 22'10" | 645 | 15.5 | 5.5 | \$3,091 | \$2,599 |
| MA-770MDP | 71' | 22'10" | 830 | 15.5 | 5.5 | \$4,890 | \$3,999 |
| MA-850MDP | 85' | 23'6" | 1128 | 15.3 | 6.3 | \$6,591 | \$5,499 |



TMM SERIES COMPACT CRANK-UP TOWERS

- Handles 20 square feet of antenna load at 50 MPH, 8 square feet at 70 MPH.
- Compact design is great for areas with tower restrictions, or where a less intrusive installation is desirable.
- All models supplied with hinged T-base, anchor bolts, load-actuated hand winch, 8' steel mast, top plate, and rotor plate.
- Options include coax arms, raising fixtures, motor drives, thrust bearing, remote control panel, and more!

Now shipping from CA for west coast customers, and KS for east coast and midwest customers, to reduce freight cost!

| TMM SERIES COMPACT CRANK-UP TOWERS | | | | | |
|------------------------------------|----------|----------|------------|------------|------------|
| TOWER MODEL | MAX. HT. | MIN. HT. | WT. (LBS.) | LIST PRICE | SALE PRICE |
| TMM-433SS | 33' | 11'4" | 315 | \$1,626 | \$1,349 |
| TMM-433HD | 33' | 11'4" | 400 | \$1,970 | \$1,649 |
| TMM-541SS | 41' | 12' | 430 | \$2,135 | \$1,789 |



WEEKDAY HOURS:
9 AM-5 PM CST

SATURDAY HOURS:
9 AM-12 NOON CST

CREDIT CARDS:
M/C, VISA, DISCOVER

TEXAS TOWERS

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sales@texastowers.com

INTERNET ADDRESS:
www.texastowers.com

The ARRL's Dan Miller, K3UFG, who put together the course and now runs it, got me interested by loaning me the 160-page Level 1 book. I told him my computer time was limited, and he said the book would be a great way to work the course without staring at the computer screen for hours. It worked well, covering some very interesting Learning Units, including:

- Your relationship with the served agency
- The many amateur radio emergency comm organizations
- The many served agency communications systems
- Comm skills and net procedures
- Message handling and National Traffic System
- Incident Command System (ICS)
- Modes and equipment choices for emergency comms
- Activation and setup
- Personal safety, survival, and health considerations
- Alternate comm systems and methods

I was most impressed with the plain-language writing of the book. You can tell that the authors truly understand what's happening out in the field with emergency communicators. There is an entire chapter that deals with going in with ham equipment and ending up as the chief operator of an altogether different type of radio system! The authors talk frankly about shelters that are equipped with free telephone service, which certainly impacts on how many messages we could pass over the National Traffic System.

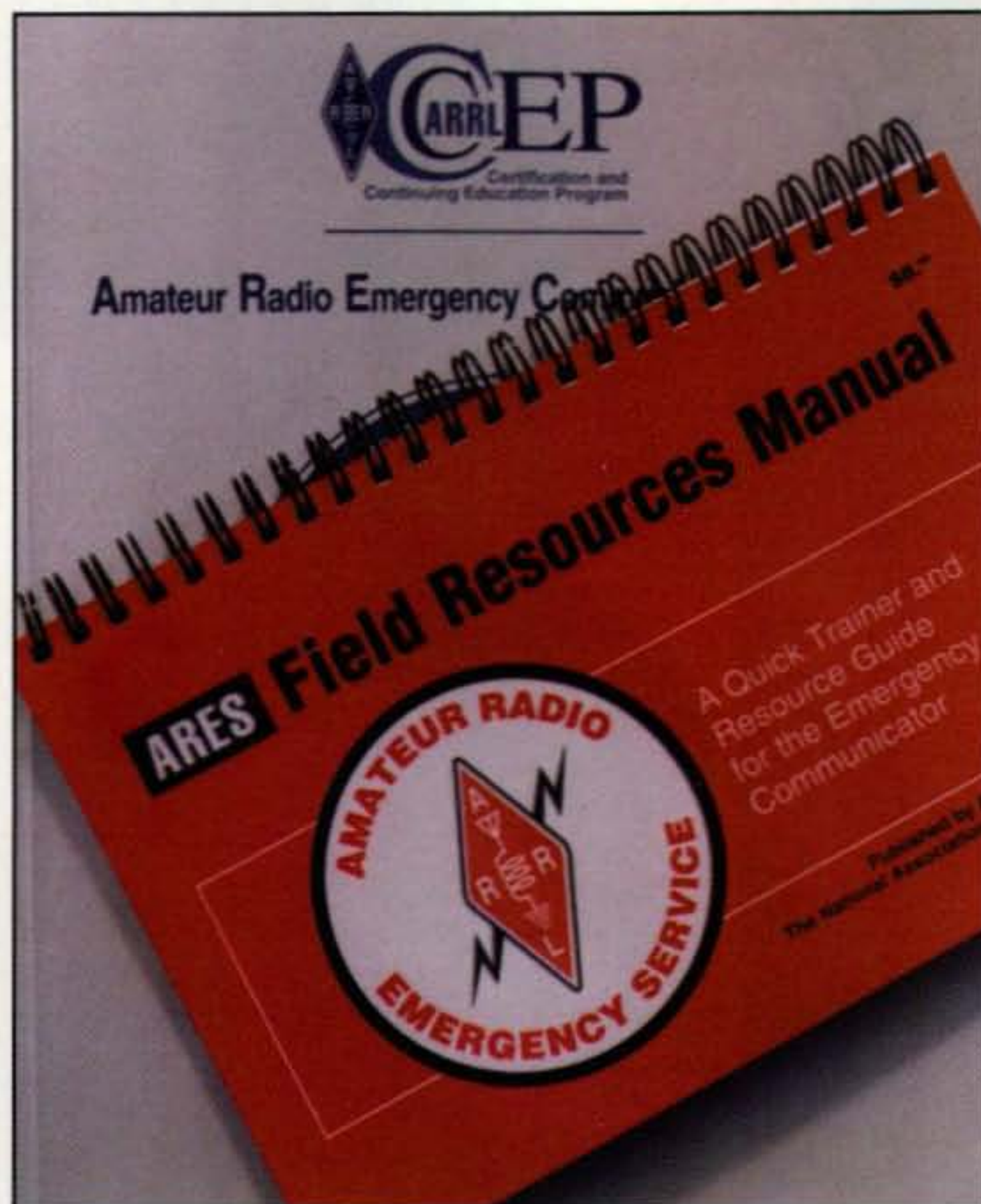
The course is *very* up to date on alternate communication systems, including the brand new five channels of Multi Use Radio Service (MURS), along with Family Radio Service (FRS) channels and GMRS (General Mobile Radio Service) operation associated with well-respected REACT teams.

As you progress through the eight-week Level 1 course, your mentor continues to review your assignments and, as mine did, offers a nudge if he hasn't heard from you in a while.

"Gordo, you may be ruining my student completion record if I don't see more assignments coming in on time. I am sure that I can file a news story with Bill Pasternak that he would enjoy airing on many, many, many repeaters. Who knows, it might even show up in the ARRL Letter if you don't complete your assignments on schedule, . . ." wrote Howard, N6VDV, worried that I had disappeared from the computer during the California fire storms. However, it was this lively tongue-in-cheek letter that exemplifies all of the hard work that mentors put in to keep students on track. I have heard from other Level 1 graduates that *their* mentors would regularly write to them to keep them on track with assignments, and it seems that this less-than-threatening interchange between student and mentor gets great results!

I learned a lot of material about which I didn't realize I didn't have a clue, such as the organizational structure of the ARRL Amateur Radio Emergency Service (ARES), a lot of good info on the National Traffic System (NTS), and plenty of great information about the ARRL "radiogram" form and the word "check." The check is the number of words only in the text section of a message, and on my assignment, my mentor came back and showed me exactly where I had miscounted within the radiogram.

The course also gives you resources to look up all sorts of important information to set yourself up as a disaster radio responder, with good book choices such as the *Public Service Communications Manual*, published by the ARRL, and the League's *Emergency Coordinator's Manual*, edited by Steve Ewald, WV1X. However, the most valuable book that I learned about, ordered, and now *treasure* as part of my emergency response kit is the flip-page *ARES Field Resources Manual*, a quick trainer and resource guide for the emergency com-



The Amateur Radio Emergency Communications Course gray Level 1 book and the important Field Resources Manual.

municator. I didn't even know this book existed until after I completed a specific learning unit in the Level 1 course.

Again, I found information I never knew was in place on the ham bands. For instance, did you know that ham operators in the middle of the wilderness with absolutely zero repeaters in their area find each other on the 2-meter band by monitoring at the top of the hour for 5 minutes? What 2-meter frequency? That's right—the national simplex calling frequency, 146.520 MHz.

Throughout the book you can tell it is *fresh material*, talking about the near-universal Anderson Power Pole DC connector for emergency communicators, all about our place in the Incident Command System (see the "Public Service" column, November 2003 CQ), and some very frank talk about the similarities and differences between RACES units and their rigid callout procedures versus ARES units with a more flexible emergency activation protocol.

Hybrid Class Option

In selected areas of the country you can begin with your Level 1 course in a classroom setting through a *hybrid class*. The hybrid format is the recommended method for those of you who don't like to go online with a computer. You may register for the class and take the final assessment online, but all of the instruction might be in a classroom, or on the air, or just reading over the gray Level 1 course book by yourself. To see all about in-home or classroom Level 1 courses, go to <<http://www.arrl.org/cce>>. If you want to take a look at the complete course in the Level 1 book, contact the ARRL and ask for the *Amateur Radio Emergency Communications Course Level 1, Second Edition*, (a) book, and they will gladly sell you one without any obligation to take the formal course.

Grant Facts

The Corporation for National and Community Service renewed the ARRL Level 1 federal training grant through August of 2004. The grant of \$180,000 is for the second year of the three-year grant. In the first year of the grant, the ARRL provided the emergency communications training course to nearly 1700 volunteers. Over the life of the three-year grant, the ARRL plans to train some 5000 hams, according to Course Manager Dan Miller, K3UFG. For the second year of the grant, he says, the federal government is requiring the League to focus on bringing together all parts of the amateur radio emergency communications spectrum, including ARES, RACES (the Radio Amateur Civil Emergency Service), etc., to provide all groups with common training.

A separate \$150,000 grant from United Technologies Corporation is earmarked chiefly to sponsor Level 2 and Level 3 emergency communications courses from the League. Level 2 is to develop net control skills, and Level 3 is the leadership level.

If you are worried about how complicated it is to sign up for the course on the computer, it's a snap. Go to the ARRL page and click on ARRL course registration. You will immediately see plenty of League home-study computer courses and your EC-001 Level 1 course as available or "all classes are full." Pre-registration by mail will assure that you get a seat in the upcoming class. Some of the classes are open only to ARRL members, yet others may be open to non-members during the year.

The computer will guide you through the registration process and your payment of the \$45 fee, which is refunded after successful course completion. ARRL members pay \$45, which is discounted from the normal \$75 paid by non-ARRL members due to the fact that their membership dues helped defray the development costs. (Registration priority goes to ARRL members, and non-members do not qualify for the tuition reimbursement.)

After successful registration, you receive a welcome letter that confirms your registration and payment and explains the withdrawal policy.

The welcome letter also talks about the importance of your mentor, and again, the mentor is key to the absolute success of the ARRL online courses. If you have a question of a general nature, you can check the postings under the button marked "conference" in the menu bar on the left of your screen, and you can get help online to get you over any question area.

A couple of days later you will receive another registration message containing your user name and password for entering the course. You'll also receive information about optional course material. I recommend you get the book to study when you're not next to the computer, as I did out at the fire scenes.

For technical support, go to <www.ctdlc.org/help>, where you can find support on how to use the course conference and how to navigate through the course. You can also find information on upgrading your browser or installing "plug ins" for your browser. You can reach the technical support line at (860) 832-3887. This service is offered by the Connecticut Distance Learning Consortium.

Then your mentor comes in on your computer, and this is when your course

comes to life—a real live person to track your progress, and keep your nose to the textbook or the screen. By the end of the Level 1 course, you will have a new-found friend in ham radio!

To learn more about the ARRL amateur radio emergency communications courses, visit the ARRL certification and continuing education site at <http://www.arrl.org/cce>, or contact the Emergency Communications Course Manager, Dan Miller, K3UFG, at <dmiller@arrl.org> or phone (860) 594-0340.

Congratulations to the American Radio Relay League for getting the course online, and additional congratulations for lining up mentors throughout the country who will immediately become an instructor friend to see you successfully through the many courses the ARRL offers. ■

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FCC: BPL NPRM on the Table

The principal topic covered in this month's column is the Broadband over Power Lines (BPL) threat to all of us hams. Granted, we who operate in the VHF and above spectrum overall will not be nearly as affected as our counterparts on HF. Even so, we do stand to be big losers should Access BPL gain a toehold in the broadband internet service provider (ISP) market.

Why else is BPL the topic of this column? We are in the bull's-eye of BPL technology in two ways. First, since the technology uses the spectrum of 2–80 MHz, our 6-meter band can be directly adversely affected, and indirectly affected due to harmonic radiation. Also, due to harmonic radiation our 2-meter band can be adversely affected.

On both 6 and 2 meters, users in our specialty of weak-signal operation rely upon super-sensitive receivers for picking those weak signals out of the noise. In tests run last summer, ARRL Lab Manager Ed Hare, W1RFI, operated mobile in communities testing BPL. Using a Kenwood TS-440, Hare copied interference from BPL services that ran the S-meter at a constant S-6 reading, with spikes at S-9. The interference was so intense that it wiped out all but the strongest signals on the 15- and 20-meter ham bands. Imagine what this would do to our 6- and 2-meter ham bands! Even the latest version of the WSJT software would be hard pressed to work through this maze of interference.

On February 12th the FCC issued Notice of Proposed Rulemaking (NPRM) 04-29 on BPL. While the text of the NPRM was not available at press time, the FCC news release on the action states in part:

As part of its ongoing efforts to promote access to broadband services for all Americans and to encourage new facilities-based broadband platforms, the Federal Communications Commission today proposed changes to certain technical rules that will foster broadband deployment using the significantly untapped capabilities of the nation's power grid, while safeguarding existing services against harmful interference.

The Part 15 rule changes, proposed in a Notice of Proposed Rulemaking (Notice), set forth procedures to measure the radiofrequency (RF) energy emitted by equipment used to provide broadband service over power lines and establish particularized interference mitigation requirements. By facilitating access to broadband over power lines (BPL), the Commission takes an important step toward increasing the availability of broadband in rural and underserved areas because power lines reach virtually every home and community in the country. In areas in which consumers already have broadband access, BPL enhances competition by providing another broadband alternative. These proposed changes will also facilitate the ability of electric utilities to dynamically manage the power grid itself, increasing network reliability.

Specifically, the Notice adopted by the Commission:

- proposes rules requiring BPL devices to employ adaptive interference mitigation techniques to prevent harmful interference to existing users, such as public safety and

VHF Plus Calendar

| | |
|------------|---|
| Mar. 27–28 | Second weekend European EME contest. See last month's column for details. |
| Apr. 4 | Good EME conditions. |
| Apr. 5 | Full Moon, 144 MHz Spring Sprint. See text. |
| Apr. 8 | Moon Perigee. |
| Apr. 11 | Very Poor EME conditions. |
| Apr. 12 | Last Quarter Moon. |
| Apr. 13 | 222 MHz Spring Sprint. See text for details. |
| Apr. 18 | Moderate EME conditions. |
| Apr. 19 | New Moon. |
| Apr. 21 | 432 MHz Spring Sprint. See text for details. |
| Apr. 22 | <i>Lyrids</i> meteor shower predicted peak. |
| Apr. 23–24 | Southeast VHF Society Annual Conference. See text for details. |
| Apr. 24 | Moon Apogee. |
| Apr. 25 | Poor EME conditions. |
| Apr. 27 | First Quarter Moon. |
| May 1 | Microwave Spring Sprint. See text for details. |

—EME conditions courtesy W5LUU.

New 241-GHz Record

Brian, WA1ZMS/4, and Peter, W4WWQ, found the magic combination of weather, equipment, and perseverance, and it paid off and extended not only their previous distance records on 241,000 MHz, to 79.6 km, but also achieved VUCC award #1 for working five geographic grid squares. (Details in next month's column.)

amateur radio operators. These techniques would enable BPL devices to cease operations altogether, dynamically reduce transmit power, and/or avoid operating on specific frequencies to prevent harmful interference;

- proposes developing a public database that would include information such as location, operational frequencies, and modulation type of BPL devices, which will facilitate the resolution of interference issues in a timely fashion;

- seeks comment on specific RF measurement guidelines for BPL devices and other carrier current systems. These guidelines will ensure that emission measurements for these systems are made in a consistent manner. While the Notice addresses RF measurement guidelines, it does not propose any changes to existing applicable emission limits.

Notably, some electric utilities already use a lower speed version of BPL technology to manage their internal networks. Widespread deployment of BPL devices will afford these same companies added benefits such as remote power outage notification, load management to reduce peak power usage, improved load balancing, and remote meter reading capabilities.

Let's look at the FCC proposals in this NPRM. The first proposal will require BPL devices "to employ adaptive interference mitigation techniques to prevent harmful interference to existing users, such as public safety and amateur radio operators. These techniques would enable BPL devices to cease operations altogether, dynamically reduce transmit power, and/or avoid operating on specific frequencies to prevent harmful interference."

Reporting on how the Commission sees this proposal in operation, the February 12, 2004 online edition of the *ARRL Letter* quoted FCC Commissioner Kathleen Abernathy, who asked FCC Office of Engineering Technology Chief Edmond Thomas to describe a likely interference scenario and "how

e-mail: <n6cl@fuller.edu>

it might play out" in terms of the NPRM's interference mitigation provisions:

Thomas said that because BPL systems would have to be registered, it would be easy to determine if one were in operation in the complainant's vicinity. "If the answer is yes, they report the interference to the provider," Thomas continued. "The provider has the capability to adjust his power and the frequency of operation to mitigate the interference."

Thomas said that in most such circumstances, the BPL provider—as a Part 15 user—would "notch out the frequencies that are offending."

If we were to believe Thomas, then it would simply be a service-manual procedure to get rid of the interference. However, this proposal is problematic because of the second item of the FCC proposal. Let's look at what the FCC proposes.

As the quote from Thomas eludes, the second item of the proposal will require BPL users to "develop a public database that would include information such as location, operational frequencies, and modulation type of BPL devices, which will facilitate the resolution of interference issues in a timely fashion."

Commenting on this aspect of the proposal, ARRL CEO Dave Sumner, K1ZZ, stated in the same edition of the *ARRL Letter*, "The Commission clearly recognized that the existing Part 15 emission limits are inadequate to stop interference, but it's placing the burden of interference mitigation on the licensed user that's supposed to be protected." In other words, it will be up to us hams to initiate the complaint concerning the interference. We already know how difficult it is to get most public utility companies to cooperate in dealing with faulty power lines and equipment interference from power lines. Now the FCC proposes that we add yet another type of interference to wrangle over with the utility companies.

One other aspect regarding the first proposal is the mention in the first sentence of preventing "harmful interference to existing users, such as public safety and amateur radio operators." In that sentence the FCC needed to be quite a bit more specific, such as naming those services that would be impacted, in particular the military and homeland security. Regarding the latter, the Federal Emergency Management Administration (FEMA) filed late comments last December that are quite critical of BPL. These comments can be read at: <http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6515292045>. A summary

of the comments and a link to this URL can be found on the ARRL website at: <<http://www.arrl.org/news/stories/2003/12/08/1/?nc=1>>.

The only good news (if one can call it that) in the proposal is contained in the last sentence of the third proposal, which states: "While the Notice addresses RF measurement guidelines, it does not propose any changes to existing applicable emission limits." Even this aspect of the proposal is problematic in light of the following questions: In actuality, will this provision work? Once

the equipment is in place, who is to monitor whether or not the equipment is in compliance with these applicable emission limits? We find the answer to the second question embedded in the second proposal—that will be us, the recipients of the interference!

What Can We Do?

The deadline for this column precluded including information on when to comment on this specific NPRM. You are urged to go to the FCC's website

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(<http://www.fcc.gov>) and be redirected from there. While more than 5100 comments were logged with the FCC during the Notice of Inquiry period last year, it seems that most of them were ignored by the FCC, which means that we will have to repeat ourselves in commenting on this NPRM.

For an extensive technical discussion concerning BPL, go to: <<http://www.arrl.org/tis/info/HTML/plc/>>. At this location you will see a variety of sources that will help you formulate an informed technical response to the NPRM. For more information on shortwave radio comments related to the interference caused by BPL, go to the following websites:

A European DX Council paper is posted at: <<http://www.edxc.org/modules.php?op=modload&name=Sections&file=index&req=viewarticle&artid=1&page=1>>.

A BBC research and development white paper is posted at: <<http://www.bbc.co.uk/rd/pubs/whp/whp013.html>>.

I strongly urge each one of you to make comments on the NPRM. In addition, I strongly urge each one of you to write to your congressional representatives and let them know about this threat. In particular, we need to contact those representatives and senators

who serve on the important respective FCC oversight committees.

Regarding the House of Representatives, the following (in alphabetical order) are members of the House of Representative's Energy and Commerce Committee's Subcommittee on Telecommunications and the Internet: Joe Barton, TX; Charles F. Bass, NH; Michael Bilirakis, FL; Mary Bono, CA; Rick Boucher, VA; Christopher Cox, CA; Barbara Cubin, WY; Jim Davis, FL; Nathan Deal, GA; Peter Deutsch, FL; John D. Dingell, MI; Michael F. Doyle, PA; Eliot L. Engel, NY; Anna G. Eshoo, CA; Vito Fossella, NY; Paul E. Gillmor, OH; Bart Gordon, TN; Gene Green, TX; Edward J. Markey, MA; Karen McCarthy, MO; Charles "Chip" Pickering, MS; Bobby L. Rush, IL; John Shimkus, IL; Cliff Stearns, Vice Chairman, FL; Bart Stupak, MI; W. J. "Billy" Tauzin, Ranking Member, LA; Lee Terry, NE; Edolphus Towns, NY; Fred Upton, Chairman, MI; Greg Walden, OR; Ed Whitfield, KY; Heather Wilson, NM; and Albert R. Wynn, MD.

Regarding the Senate, the following (in alphabetical order) are members of the Senate's Commerce, Science, and Transportation Committee's Communications Subcommittee: George Allen,

VA; Barbara Boxer, CA; John Breaux, LA; Sam Brownback, KS; Conrad Burns, Chairman, MT; Maria Cantwell, WA; Byron Dorgan, ND; John Ensign, NV; Peter G. Fitzgerald, IL; Ernest Hollings, Ranking Member, SC; Kay Bailey Hutchison, TX; Daniel K. Inouye, HI; John F. Kerry, MA; Trent Lott, MS; Bill Nelson, FL; John D. Rockefeller, WV; Gordon Smith, OR; Olympia J. Snowe, ME; Ted Stevens, AK; John Sununu, NH; and Ron Wyden, OR.

If your representative's or senator's name appears above, then you owe them a letter. Write to them today and explain your opposition to the FCC's proposal for Access BPL. Please write reasonable and intelligent letters explaining the harmful effects of the interference and the potential impact relating to *homeland security*. These two words (*homeland security*) are the buzzwords that just may get their attention.

BPL: What's Really at Stake?

In the Fall 2003 issue of *CQ VHF* magazine I wrote the following in my editorial, and it is appropriate that it be repeated here in *CQ*:

If you believe the American Radio Relay League, the Broadband over Power Line



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(BPL) service is perhaps the greatest threat to our hobby to date. Is this the case, or is it really, as Glenn Hauser¹ of the *DX Listening Digest* reports United Power Line Council spokesman Brett Kilbourne as saying, "This is an enormous money maker for them [meaning the ARRL], because many hams will be more willing to donate if they believe their hobby is in peril. There is certainly a financial incentive."

What are the issues? For utility companies who are responsible for the delivery of electricity to all of our homes, BPL technology provides the point for them to enter the high-speed Internet service providing business in a big way—actually much bigger than any other provider presently is capable of doing—all because of the built-in delivery vehicle, the medium-level, 1,000 to 40,000 volt power lines.

To understand something about BPL, let's delve a bit deeper into this business of BPL.

Basically, there are two proposals on the table. One is for In House BPL service and the other is for Access BPL service. The proponents of In House service want BPL service to be available within buildings, and the proponents of Access service want BPL service available over those outside medium-level power lines. While somewhat problematic, In House BPL is not nearly the problem that Access BPL is, for two reasons: technical and economic.

The sympathetic argument for Access BPL is that folks in rural areas and remote-

access areas cannot presently obtain high-speed Internet service such as is delivered via cable or a digital subscriber line (DSL) to those of us who live in metropolitan areas serviced by either one or both types of services. They have a point. Even though I live in the metropolitan area of Tulsa, Oklahoma, I do remember that it wasn't that long ago when we didn't have either cable or DSL service available to us here in the city.

Now enters BPL with the offer to serve the rural and remote-access potential customer with their existing powerlines. However, in order to do so, they need some major concessions from the FCC in the form of huge relaxations of regulations.

At the moment, things look pretty rosy for these proponents—particularly when it comes to the FCC. According to positions taken by the five FCC commissioners, most of them, including Kathleen Abernathy, Jonathan Adelstein, Kevin Martin, and Chairman Michael Powell, want to take a "light regulatory hand" approach. According to Piper Rudnick,² only one, Michael Copps, is concerned with the issue of cross-subsidization from a power utility's regulated energy activities, "especially as this issue pertains to non-competitive markets." Regarding the technical considerations, however, Copps has no issues with the rest of the commissioners' light regulatory hand approach.

Considering that all five commissioners are in favor of this light regulatory hand approach, the users of over-the-air com-

munications have their work cut out for them. For example, it doesn't bode well for us to read about Commissioner Abernathy's speech to the United Powerline Council's annual meeting in which she exuded praise for BPL while ignoring the problems associated with the service.

Speaking of problems, here is where I see an issue that is getting little attention: In my reading the text of Abernathy's speech,³ I have a problem with her justification of the FCC's light regulatory hand approach. In particular, she states:

"As a regulator, I am keenly interested in BPL technology for a number of reasons. One of my central objectives as an FCC commissioner is to facilitate the deployment of broadband services to all Americans. I also fundamentally believe that the FCC can best promote consumer welfare by relying on market forces, rather than heavy-handed regulation. The development of BPL networks will serve both of these key goals. It will not only bring broadband to previously unserved communities, but the introduction of a new broadband pipeline into the home will foster the kind of competitive marketplace that will eventually enable the Commission to let go of the regulatory reins. I want consumers to have a choice of multiple, facilities-based providers, including not only cable and DSL, but also powerline, wireless, and satellite services. Such a robustly competitive and diversified marketplace is something I would call broadband Nirvana."



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She goes on to state, "There is little question that BPL services will compete with more-established cable modem and DSL services—and in some markets, satellite and fixed wireless services."

In particular, I am concerned that she is attempting to say that on the one hand, the marketplace will be the judge of who is the best provider of high-speed Internet service. On the other hand, by saying that BPL will "bring broadband to previously unserved communities," she admits that BPL will be the initial monopoly service provider in these communities. Where is the marketplace competition in these previously unserved communities? How can BPL be competing with non-existing competitors in these communities?

Getting back to my earlier point concerning the sympathetic argument for the rural and remotely served areas, we in the major metro areas here in Oklahoma are in the minority of geographic coverage at the moment. There are many rural communities that are without adequate Internet service, let alone the higher speed service that cable and DSL can provide. While the various cable and telephone companies are rushing to upgrade their equipment and thus be able to offer such services to these rural communities as quickly as they can economically do so, in some cases these communities are at least a few years away from gaining access to higher speed Internet service.

Enter BPL. Using those existing medium-level power lines, with the go ahead from

New Crew Aboard ISS This Month

Last month's column speculated on the previously announced crew change that would have left onboard no amateur radio operator among the Expedition 9 crew. In mid-February NASA announced that an entirely new crew would launch this month. The Expedition 9 crew will consist of astronaut Mike Fincke and cosmonaut Gennady Padalka, RN3DT. Padalka, 45, will serve as Expedition 9 commander and Soyuz commander, while Fincke, 36, will be the NASA ISS science officer and flight engineer. Fincke passed his amateur radio Technician class exam in mid-February, in plenty of time for Expedition 9's April 18 launch from Russia aboard a Soyuz vehicle. (Source: February 13 ARRL Letter.)

the FCC, electrical powerline companies could be up and running in a matter of months, well ahead of their potential cable and DSL competitors—thus, no competition, and no reliance on market forces to determine who will be the best provider of higher speed Internet services.

While it is commendable that the ARRL stay on point in commenting on the technical problems associated with BPL, I think that in addition the League needs to address the economic problem by also taking the approach that should the FCC give the electrical powerline industry carte blanche to enter these rural and remote areas with BPL service, it would immediately create a business monopoly that will be extremely difficult, if not impossible, for potential competitors to over-

come. As such, these potential competitors would in all likelihood abandon these areas, thereby leaving BPL as the only service available. Furthermore, in being the only service available, where would there be the incentive to do its best to provide the best possible service? The answer is that there wouldn't be any incentive.

It seems to me that as the only player in the rural location, "This is an enormous money maker for them [meaning the electrical powerline industry]. There is certainly a financial incentive."

Do these words seem familiar to you, Mr. Kilbourne? I thought that they might be.

Notes:

¹ See: <http://www.worldofradio.com/dxld3172.txt>

² See: <http://www.piperrudnick.com/db30/cgi-bin/pubs/CommAlertMay03.pdf>, page 6

³ See: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-239079A1.doc

Current Contests

Spring Sprints: These short-duration (usually four hours) VHF+ contests are during April and May. This year's dates and times are as follows: 144 MHz, April 5, 7–11 PM local; 222 MHz, April 13, 7–11 PM local; 432 MHz, April 21, 7–11 PM local; Microwave, May 1, 6 AM to 1 PM local; and 50 MHz, May 8, 2300 UTC Saturday to 0300 UTC Sunday. Sponsored by the East Tennessee Valley DX Association, information on



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these contests is at <http://www.ETDXA.org>. Click on the VHF/UHF link to get to the contest information section.

The 2 GHz and Up World Wide Club Contest: Sponsored by the San Bernardino Microwave Society, this contest runs from 6 AM on May 1 to 12 midnight on May 2 (36 hours). The object is for worldwide club groups of amateurs work as many stations in as many different locations as possible on 2 GHz through Light. Rules are available at: http://www.ham-radio.com/sbms/club_contest/2GHzUp.pdf.

Conventions and Conferences

Southeast VHF Society: The society's 8th annual conference will be hosted April 23-24 at the Holiday Inn Hotel & Suites in Marietta, Georgia. The direct number for the hotel is 770-952-7581. Be sure to mention "Southeastern VHF Society Conference" to get the special room rate. Copies of the registration form and the conference flyer are available at: <http://www.sevhfs.org>.

Dayton Hamvention®: The Dayton Hamvention® will be held as usual at the Hara Arena in Dayton, Ohio, May 14-16. For more information, go to: <http://www.hamvention.org>. Your

editor is scheduled to be one of the speakers for the VHF forums.

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, and to ask questions about format, media, hardcopy, e-mail, etc., contact the persons listed below.

The 38th annual **Central States VHF Society Conference** will be held July 22-25 at the Delta Meadowvale Resort and Conference Centre in Mississauga (Toronto), Ontario, Canada. The deadline for submitting final papers is May 1. Submit your proposal as soon as possible to Bob Morton, Technical Chairman and V.P., ve3bfm@csvhfs.org.

The 11th **International EME Conference** will be held at the College of New Jersey, in Ewing, New Jersey, August 6-8. Submit your proposed paper/talk topic as soon as possible to Marc Franco, N2UO, eme2004@qsl.net.

Current Meteor Showers

The *Lyrids* will be active during April 19-25. It is predicted to peak around

0410 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.

A minor shower and its predicted peak is *pi-Puppids* (peak at around 0900 UTC on April 23).

The above information is courtesy of the International Meteor Organization and their website, <http://www.imo.net>.

And Finally . . .

The following is from Phil, NØKE: "Mike Newbold, KØYO, the most active 6-meter operator in DN60, was vacationing in Baja, Mexico just before Christmas and was savagely beaten and robbed. His eyesight was severely affected but is improving, and he also has ringing in his ears. Gary Yantis, WØTM, has established the Mike Newbold Fund. If you would like to help Mike, contact Gary gyantis@midtec.com or Phil pfski@vail.net.

"Mike returned home to find a QSL in his mail from NH7RO for a 6-meter QSO during the big sun flares at the end of last October. This gives Mike 6 Meter WAS. It was quite an accomplishment to work KH6, as Mike has a sizable mountain directly west of his QTH."

Until next month... 73 de Joe, N6CL



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Microphone Mania 2004—Part II

Our lighthearted review of every radio amateur's favorite station accessory, microphones, continues this month, and once again our emphasis is on those magnificent-looking gems of the 1950s and '60s. What an era it was, with the famous "Deco" look influencing everything from home appliances and portable radios to jukeboxes and microphones. Oh, the glitz . . . the glamour! Just getting behind one of these mics today is a thrill of the best kind. Once again we must trim our written words to make room for a lavish pictorial display of mics for your viewing pleasure. Thus, let's thus briefly thank Bob Heil, K9EID, for more of his mic views (continued from last month's column) and introduce Bill Marx, W2CQ.

About Our Guest

Our special guest this time is Bill Marx, W2CQ, of Fort Lauderdale, Florida, and his enthusiasm for

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collecting microphones (over 200 to date) is equaled only by his long-term interest in and devotion to amateur radio. Bill has been president of the South Florida DX Association for the past three years, loves classic rigs, and has an entire house of restored-to-new Collins, Drake, Hammarlund, and Hallicrafters gear to prove it. The list is awesome and includes the famous 75A-4 and KWS-1 "Gold Dust Twins," the 51J-4, R-390, TR-3, TR-4, HQ 180, SP-600, SX28, and SX100. Just reading the model numbers brings on an adrenaline rush!

Bill was first licensed as KN2PEQ in 1958, when he lived on Long Island, New York. His first station was an SX-99 and a DX-35, which were replaced with an HT-9 after becoming a General. Bill recalls working CW with a dear little Vibroplex Lightning Bug and using the buzz of mercury vapor tubes as a side tone (sound familiar?).

When asked why he collects mics, Bill says, "I just admire their beauty and charm. I see them as metal sculptures and sheer works of art, especially the Deco styles. Mics are small and easier to move than vintage rigs, and they also are increasing in



Photo 1— The simple elegance and neat "Deco" look that made Turner mics such as this model 33D popular during the 1950s and '60s still keep them irresistibly attractive today. This little gem would truly add class and flash to any amateur radio setup, especially if retro-fitted with a modern Heil element and red grill cloth. (Photo courtesy W2CQ, owner, and VE3NGW)



Photo 2— Bold, sweeping lines and the authoritative good looks of a real radio broadcast microphone make this vintage Turner model 34X a real attention grabber. It is equipped with a crystal element to mate with older vacuum-tube gear and was used as a prop in several '50s-era movies. Note original sales tags still intact on mic owned by W2CQ and photographed by VE3NGW.



Photo 3— Another popular chrome-head mic during the early 1960s was this economically priced Electro Voice model 630. It featured a high-impedance and fairly wide-range dynamic element, it was designed mainly for PA use, and it also proved to be a good mic for SSB with new-era vacuum-tube transceivers such as the R. L. Drake TR-3 and National NCX-5. (Photo courtesy W2CQ and VE3NGW)

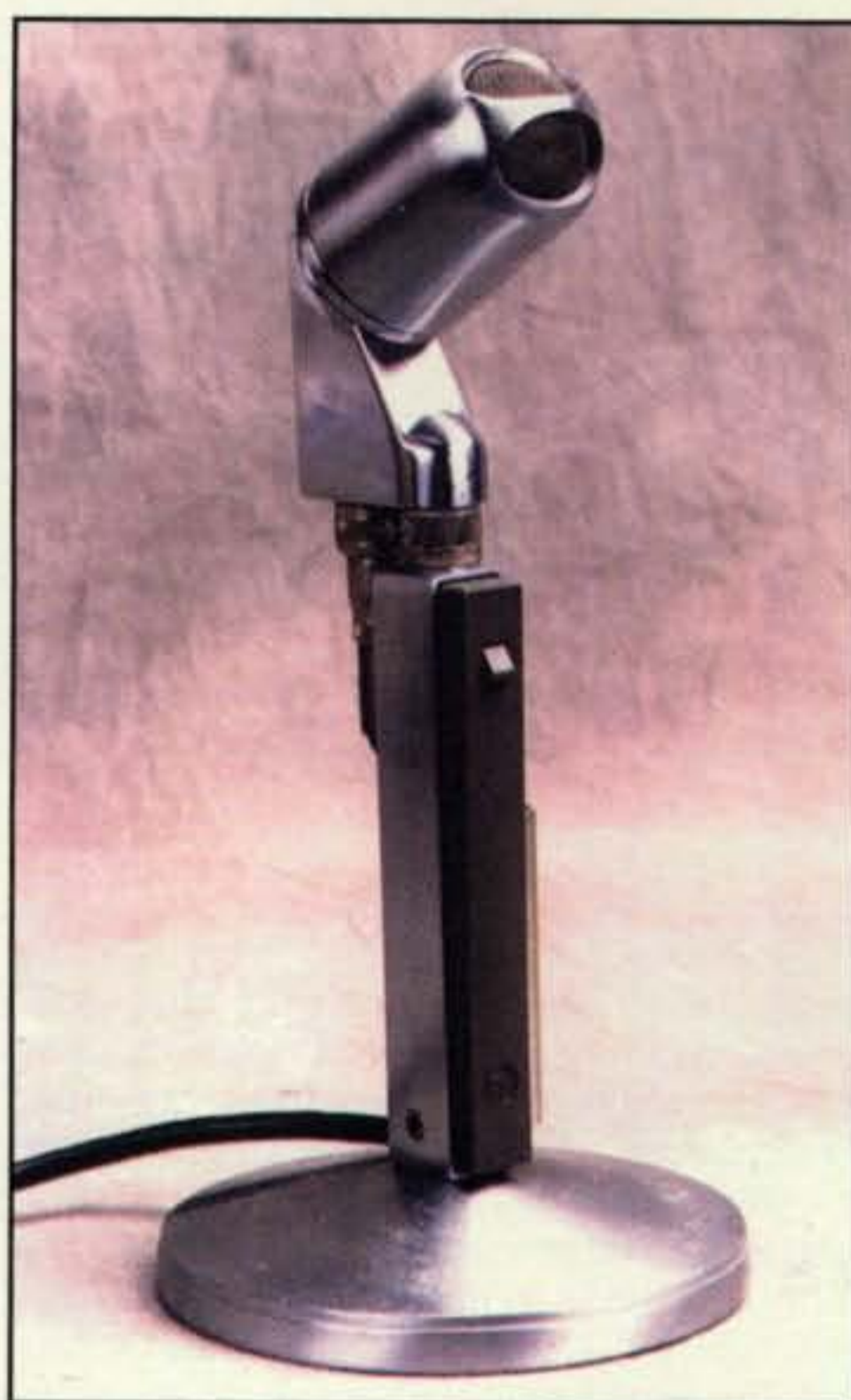


Photo 4— The palm-size Electro Voice model 638 was also engineered mainly as a PA mic, but an optional screw-on Grip-To-Talk (GTT?) stand made it a quite appealing SSB mic. Complementing bases and stands, incidentally, are just as important as many collectable microphones. (Photo courtesy W2CQ and VE3NGW)



Photo 5— Is there a radio amateur among us, new or old, who does not recognize and appreciate the eternal beauty of Electro Voice's famous model 664 mic? The dual-impedance, dynamic-element beauty was found in broadcast stations from coast to coast, favored by many top rock-'n'-roll bands of the '60s and '70s, and used in numerous amateur SSB setups. (Photo courtesy W2CQ and VE3NGW)



Photo 6— Even more glamorous than the standard chrome Electro Voice 664 is this dazzling gold-plated version, which was favored by churches and stage musicians. I call it the "Blank Check Mic," because Electro Voice advertised it by stating "give us a blank check and this is the mic we will give you." It is an ideal mate for the famous Collins Gold Dust Twins, the KWS-1, and 75A-4 for sure! (Photo courtesy Bob Heil, K9EID)

on the transmitter's high voltage (plus the VFO, if it was external), and also switch the antenna. Up to four switches were toggled, and several seconds delay during each "over" were common (real manual T/R switching for sure!).

Disenchanted with multitask switching, many technically inclined amateurs added a three- or four-pole relay to their transmitter or receiver and used its contacts to handle various T/R functions. Occasionally, the receiver's or transmitter's operate/standby switch was changed from a single- to a double-pole version so the extra contacts could operate the relay. The switch was then renamed the T/R switch.



Photo 7— Electro Voice also produced the non-reflective gray-case model 666, which was a television version of the famous 664. It has a slightly wider frequency response and sharper cardioid pattern for less pickup from the rear, and was seen in many TV newscasts of the '60s. It may not be gold, but it is a rare and a goodie! (Photo courtesy K9EID)

value with each passing day." What else can we say except home is where the ham gear is! Thanks to W2CQ and his photographer friend, VE3NGW, for sharing many of this month's mic views. If you have questions (or extra mics), incidentally, you can reach Bill at <bmarx@bellsouth.net>.

Mic Talk

While studying this column's views, newer amateurs may notice several older microphones lack a Push-To-Talk (PTT) bar or button and understandably may ask how they address T/R switching needs. The answer is simple: They don't.

Prior to the era of transceivers, a typical amateur radio setup consisted of a separately manufactured receiver and transmitter sharing a single antenna (for example, a Hammarlund receiver, Johnson transmitter, and homemade dipole). The Transmit/Receive sequence usually involved manipulating rig-mounted panel controls to switch the receiver to standby, switch

During that same era, Dow Key Company introduced a coaxial relay with SO-239 connectors for antenna switching plus side leaf contacts for receiver and transmitter activation. Naturally, it gained widespread popularity. Enterprising amateurs even devised ways to activate Dow Key relays from pushbuttons installed in mic bases (homebrewing was so much fun!). Eventually, manually switched

gear was overshadowed by transceivers and PTT-equipped mics.

Several options are available today for adapting a "switch-less" mic for PTT operation. The first and easiest is to use the manual T/R switch on the front panel of most base-style transceivers. As an alternative, or if you use a compact mobile transceiver, just route PTT wires from the rig's mic socket to a small push-button mounted in a 35-mm film canis-

ter. It will work just as well as a mic-mounted switch—maybe better!

Starting Your Own Microphone Collection

Does the idea of collecting, refurbishing, and maybe occasionally using classic mics on the air today sound appealing but you are unsure how to get started in the game? No problem. Just

Mister Showerhead A "Make It Your Way" Mic

Thinking about a really unusual microphone to complement your second rig or VHF setup? Maybe something a bit funky to boot? Say hello to "Mister Showerhead." He is slim, trim, available in chrome or plastic, and just like the famous Mister Potato Head of the 1960s, you can assemble him in a number of different ways. You can fit him with a front grill made from a sink strainer, a multicolored pot scrubber, or just add a small foam windscreen to the front. You might even cut or drill a noise-canceling port on the top and tone-resonating ports on the sides, then paint the frame to match your rig. Add an inline or base-mounted push-button for Push-To-Talk, a dangling pull chain for pull-to-talk, or a big-foot switch for stomp-to-talk, then attach the mic to your desk or custom stand using regular plumbing hardware. No two Mr. Showerheads will look the same, but that's fine: they just reflect each amateur's creativity. Maybe we should hold a contest to recognize the most unique-design mic.

Assembling Mister Showerhead is easy. First, visit the plumbing, kitchenware, and

crafts sections of your local variety store to secure a shower head, support pipe, base or wall flange, screw-on fittings, tea strainer, and some foam cushion material. Shopping time limited? Take a good look at the shower heads in your own home, preferably those stored in the basement workshop rather than one in use (artistic little things, aren't they?). Use a screwdriver, pliers, can opener, or portable jackhammer to open the front and remove the insides, and then install a high-quality communications-grade mic element and back mounting baffle in the shower head.

Your choice of a suitable element is very important here, as that is what makes every mic sound different. A two-dollar element will sound like a two-dollar element (yuck), and omission of a back baffle can noticeably alter tonal response. Heil Sound's famous HC-5 full-range element and HC-4 DX element are our first (and second) choice, and the element's mounting baffle is a piece of cardboard cut to fit just inside the shower head. Attach the element to the baffle with double-sided tape, add a thin



Meet Mister Showerhead, the mic of a thousand faces and super-sounding audio (assuming inclusion of a top-notch element and back baffle). This particular version has a Heil element behind a mesh sink-strainer grill covered with a windscreen cut from black foam. A ring of white tape holds the foam to the showerhead and adds a touch of class. April Fools? No, it's . . . Spring Fantasy!

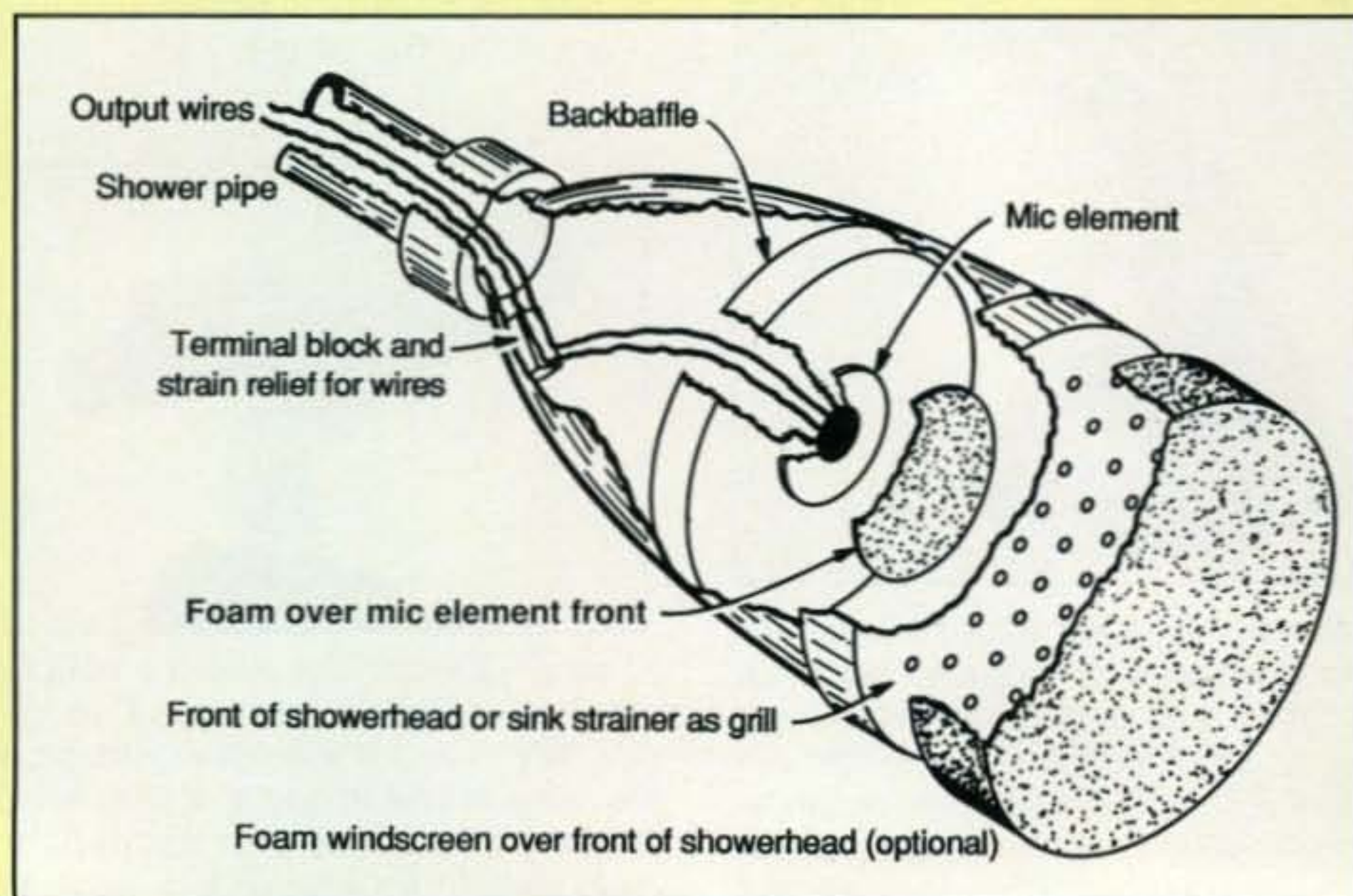


Fig. 1—General outline for assembling your own Mister Showerhead mic. Just like Mister Potatoheads of eras past, the final design of each mic will differ according to selected parts and personal creativity.

layer of foam over the element's front as a dust and blast cover, and then close your devised front grill against the cover. Route the element's output wires to a stress-relieving terminal block, connect an output cable, and then use your transceiver's mic equalizer to match overall response to your voice and enjoy the results.

Your second rig or VHF setup does not have a built-in equalizer? No problem. Check out the dual-band and 8-band equalizers with noise gates and more available from <www.w2IHY.com> or toll free from W2IHY at 877-739-2449. The equalizers are RF-protected and have fine-calibrated slider pots so you can set them for a rich, full-bodied broadcast sound, reset them for a more concentrated and treble sound for DXing, and reset back to full-body in a flash. Now that's doing it in style!

Remember to send us photos of your personally devised Mister Showerhead for inclusion in future mic columns, too. Your work deserves the recognition!



Photo 8— One look and you can understand how this Altec "Salt and Pepper" mic acquired its nickname. Every big-time newscaster of the 1940s had a Salt and Pepper mic. It surfaced in interviews, newsreels (remember those at the movies?), and more. Some folks attached them to stands (note rear mount) and some used them handheld style. (Photo courtesy K9EID)

remember the old proverb "Where there's a will, there's a way."

Basement storage rooms of schools and churches, warehouse areas of old radio repair shops and parts stores, plus town meeting halls and auditoriums are good places to look for classic mics. eBay is another possibility, but prices may be high and quality or condition



Photo 9— The famous Brush Crystal element microphone. This little beauty was especially known for its high gain and omnidirectional pattern. Indeed, its sensitivity was legendary. Maybe that explains why it was such a popular item for amateur radio use during the era of vacuum tubes. It could really modulate a rig! (Photo via K9EID)

questionable. We have seen eBay take many good amateurs off the air for long periods, so at least you will be helping to drop QRM levels. If this continues, though, the bands will be almost void of U.S. stations.

Microphones seldom "go bad" like vacuum tubes, but many golden oldies have suffered excess abuse, as revealed by nicks and scratches in their casings. A simple clip-lead hookup to an audio amplifier's input or between the wiper of a volume control and ground in a pocket transistor radio usually reveals if a mic works and sounds decent. You can then contemplate whether to repaint or rechrome it, add new grill cloth, and consider if it will be a showpiece or a "use piece," complete with new cable and rig-mating plug. Remember to enjoy the pursuit as your collection grows, learn as many details as possible about each mic you acquire, and take pride in your endeavors. You are preserving significant radio communications history, a most commendable effort from any point of view!

Conclusion

We trust you have enjoyed the views this month and last, and heartily invite (encourage!) you to share pictures of



Photo 10— This marvelous-looking little gem is an RCA SK46 velocity mic. It is a high-gain PA-type microphone, and it was especially popular for complementing church and school sound systems during the 1950s. (Photo via K9EID)

your own favorite mic(s) plus tales of their history/use via future columns. Let's see those homebrew beauties, too, and can any of our readers out there explain the classic concept of loop modulation? 73, Dave, K4TWJ

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A Visit to Nikola, err . . . Niagara Falls

Are you one of the lucky ones who takes a winter vacation? Or maybe you're a "snow-bird" who lives in the north most of the time but spends winter in a warmer climate?

Living in southern California, I often take great joy in "rubbing it in" to my frozen friends during the winter months. I unashamedly send to my eastern acquaintances the warm-weather reports along with requests for ice cubes, saying our patio drinks are getting too warm. I usually send these notes in December and January. Besides being impish, they help remove some of the sting of my (ouch) monthly mortgage payment.

Where would your typical southern California family of four spend a winter weekend in mid-January? Try Niagara Falls. It's amazing; there are hardly any crowds there when the temperature is hovering in single-digit Fahrenheit degrees. We virtually had the place to ourselves! The wisdom of our decision was subject to second-guessing by my thin-blooded children as we stepped onto the tarmac at the Buffalo airport into a pleasant outdoor temperature of two degrees (that's Fahrenheit). Two, as in "barely plural," according to my son, who, left to his preference, would play baseball every day of the year. Gosh, when we changed planes in Pittsburgh earlier, it was four times as



Frozen California kids, K6SJR and KD6ARA, amid the icy beauty of winter at Niagara. (Photos by AA6JR)

warm (whew!). In contrast, as we were leaving our home for the L.A. airport, we passed some neighborhood kids manning a lemonade stand.

Actually, the Niagara adventure was a combined family visit and business excursion. Bringing the kids along was a last-minute decision, but a good one. Here's what made it special.

Some years back, the BBC aired a TV show that drew a logical set of connections through history to some invention or bit of knowledge that has

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View of the USA Niagara Power Project (right) and on the opposite side of the gorge, the Sir Adam Beck power complex in Ontario, Canada.



Powerful lights bathe Niagara in changing colors each night, adding to the winter majesty.

served us well in modern times. I don't recall the name of the show, but in British terms, as well as mine, it was very creative and well done.

Niagara captivates. It's an awesome, yet beautiful display of power. As I stood by the frigid brink of Niagara Falls, mesmerized by the volume of the water and the roar it makes as it cascades into the gorge below, I was launched on my own journey, linking connections. An engineer friend once remarked to me, "Two things in engineering you can always count on: Gravity always works and you can't compress a liquid."

With the thundering falls as a backdrop, one can only imagine what the first settlers of that area thought. Gravity and a lot of water were soon put to work powering mills of all descriptions. With the arrival of the generating of electricity, Niagara was a natural. However, the earliest generating systems were DC (direct current), which didn't travel well over long distances. Having a lot of cheap power available in one place doesn't get you very far.

Nikola Tesla

Enter Nikola Tesla, an émigré from Serbia who was fascinated with electricity and just about anything you could do with it. His myriad discoveries rival those of Edison. Tesla worked with Edison for a while, but later they competed with each other over how power should be distributed. The results are still in use to this very day. Edison backed DC; Tesla, working with Westinghouse, proved that alternating

current, or AC, was effective over long distances, sending power some 25 miles (a long distance back then) from Niagara Falls to Buffalo in 1896.

Tesla seems to have been well ahead of his time in many areas. He was also a radio pioneer. He envisioned using the entire Earth as a resonating antenna. There were demonstrations of delivering sufficient power to light lamps, without the aid of wires. The Tesla coil is a mainstay of museum demonstrations and early monster movies. It is reported that Tesla believed it was possible to deliver power to homes for free through wireless means. (Although if you're concerned about interference from Broadband over Power Lines, or BPL, one wonders if Tesla's system would have wiped out radio communications decades ago!)

He saw many other applications for

electromagnetic waves, including some that were precursors of modern-day radar and medical magnetic resonance imaging, more popularly known as the MRI.

There was a court battle over who really invented radio. Tesla lost that one to Marconi, but there are many who believe Tesla made his case. Reports indicate that he was an amazing visionary, a gifted builder, but a poor businessman. The sad ending is that he died penniless in January 1943, with little recognition for his many breakthrough discoveries and inventions.

Our visit to chilly Niagara took us to several places, including the awesome Niagara Power Project a few miles down river from the Falls, where hydroelectric plants on both the U.S. and Canadian shores churn out clean, low-cost megawatts for much of the northeast, using Tesla's method of AC for long-distance transmission.

Back on an off-the-beaten track part of the Falls, on the U.S. side, however, a place with the unromantic name of Goat Island sits in the middle of the Niagara River, separating the American Falls from the Canadian cataract more popularly known as the Horseshoe Falls (because of its shape). Between a parking lot and a walkway to the American Falls is a small monument to Nikola Tesla. I saw the monument and, briefly forgetting the cold, stopped for a moment to gaze at it and contemplate for a moment the likeness of a man who was the dreamer's dreamer, enshrined at the place of one of his greatest triumphs. Was he a genius, a man "on the edge," or both? I don't know, but I wish I had known him. Among the traits I admire, he was driven by his own curiosity to learn all he could about putting "Magic In The Sky."

73, Jeff, AA6JR

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This month in your "What's New" column we'll focus on some noteworthy, even terrific, ham shack radio gear and accessories, antenna and mobile gizmos, books for the radio shack, and other items we think will be of real interest to you. Let's dig right in.

Radio Gear

Model 7110 Location Broadcast Beacon for APRS. The Automatic Position Reporting System (APRS) is a packet communications protocol for live data broadcast; it permits any number of stations to exchange data just like voice users would. Any station with a TNC can receive the data and resend to all stations to receive and log.

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Photo A— Designed for use on APRS channels as well as voice, the Wi-Sys Model 7110 Location Beacon is the complete solution for position broadcasts on amateur packet radio. Setup is easy with the included configuration software, and there's no need to reprogram in the field. (Photo courtesy Wi-Sys Communications)



Fig. 1— Jeff Milne, VE3EFF, decided give the Wi-Sys Model 7110 Location Broadcast Beacon a test drive. The map shows the route he took and displays message reports along the route. The map shows different color icons indicating the flexibility of the APRS device to report different preprogrammed event triggers. Especially note the black icons over speed alarms, and the light-blue icon, which indicates arrival at a preprogrammed waypoint. (Graphic courtesy Wi-Sys Communications)



Photo B— The broadcast-quality Heritage dynamic microphone offers super-sounding audio with today's transceivers. It has a steel body that's specially "showchromed" for a very lustrous appearance. The mic is shown here with the optional Heil Classic base. (Photo courtesy Heil Sound)



Photo C— Heil Sound has released the new "topless" PLT-2T Proline Balanced Microphone Boom. Internal springs replace the old-fashioned external springs most booms use. The new boom also makes threading a mic cable through the cable channel easy. (Photo courtesy Heil Sound)

communications device for almost any vehicle tracking or monitoring application.

Designed for use on APRS channels as well as voice, the Model 7110 Location Beacon (see photo A and fig. 1) is the complete solution for position broadcasts on amateur packet radio. Setup is easy with the included configuration software and configuration diagrams to get you up and running quickly. User-selectable modes are available with the push of a button on the front panel. There's no need to reprogram in the field!

The unit supports three modes of operation: APRS™, Mic-E™, and pass-through modes. It also comes with configuration software that enables you to set up custom reporting events as well as up to six preset paths and message presets. Flexible radio interfacing via mic, DIN, and audio jack connectors enables you to interface easily to just about any radio. A particularly nice feature is the pass-through mode, which allows you to revert to a simple voice option without having to disconnect the mic and cables.

The easy-to-use front-panel interface allows you to easily select preconfigured paths and preset message settings. The configuration software provided has intuitive interface screens that guide you through entering your callsign, paths, message types, etc. You can also easily set up message triggers based on analog and digital inputs, as well as message triggers based on smart telematic events such as elapsed time, distance, speed, and heading-sensitive reports, as well as waypoint encounters.

The 7110 is \$349US. For more information, including compatibility details, contact Wi-Sys Communications, Inc., 308 Legget Drive, Ottawa, Ontario, Canada K2K 1Y6 (613-254-

7386; e-mail: <sales@wi-sys.com>; on the web: <http://www.wi-sys.com>). You can purchase the 7110 online at the Wi-Sys website.

Accessories for the Shack

Two New Audio Goodies from Heil Sound. Bob Heil, K9EID, founder and president of Heil Sound, Ltd., specializes in top-quality "home theater" design and installation. However, Bob also offers a variety of microphones, headsets/boomsets, stands, booms, cables, and other accessories, many designed for amateur radio. We'll briefly profile two topnotch products this month.

First up is the beautifully finished, broadcast-quality Heritage dynamic microphone (photo B) for super-sounding audio with today's transceivers. Considered by Bob to be a "piece of American art," it has a steel body that's specially "showchromed" for a very lustrous appearance. The cardioid polar-pattern mic has a response of from 40 Hz to 18 kHz with an output level of -55 dB @ 1000 Hz. The mic is \$145.

What would a mic be without a stand or boom? To answer the many requests from broadcast engineers and radio amateurs, Heil Sound has released the new "topless" PLT-2T Proline Balanced Microphone Boom (photo C). Internal springs replace the funky, old-fashioned, and noisy external springs most booms use. The boom also makes threading a mic cable through the cable channel very easy. Suggested retail price is \$75.

Contact Heil Sound, Ltd., 5800 North Illinois, Fairview Heights, IL 62208 (618-257-3000; e-mail: <info@heilsound.com>; on the web: <http://www.heilsound.com>).



Photo D— The MFJ-1263 Microphone Control Center lets you "mix and match" any two microphones to any two transceivers; you don't have to change connectors or rewire. You can prevent your present microphone from becoming obsolete just by pushing a button. (Photo courtesy MFJ Enterprises)

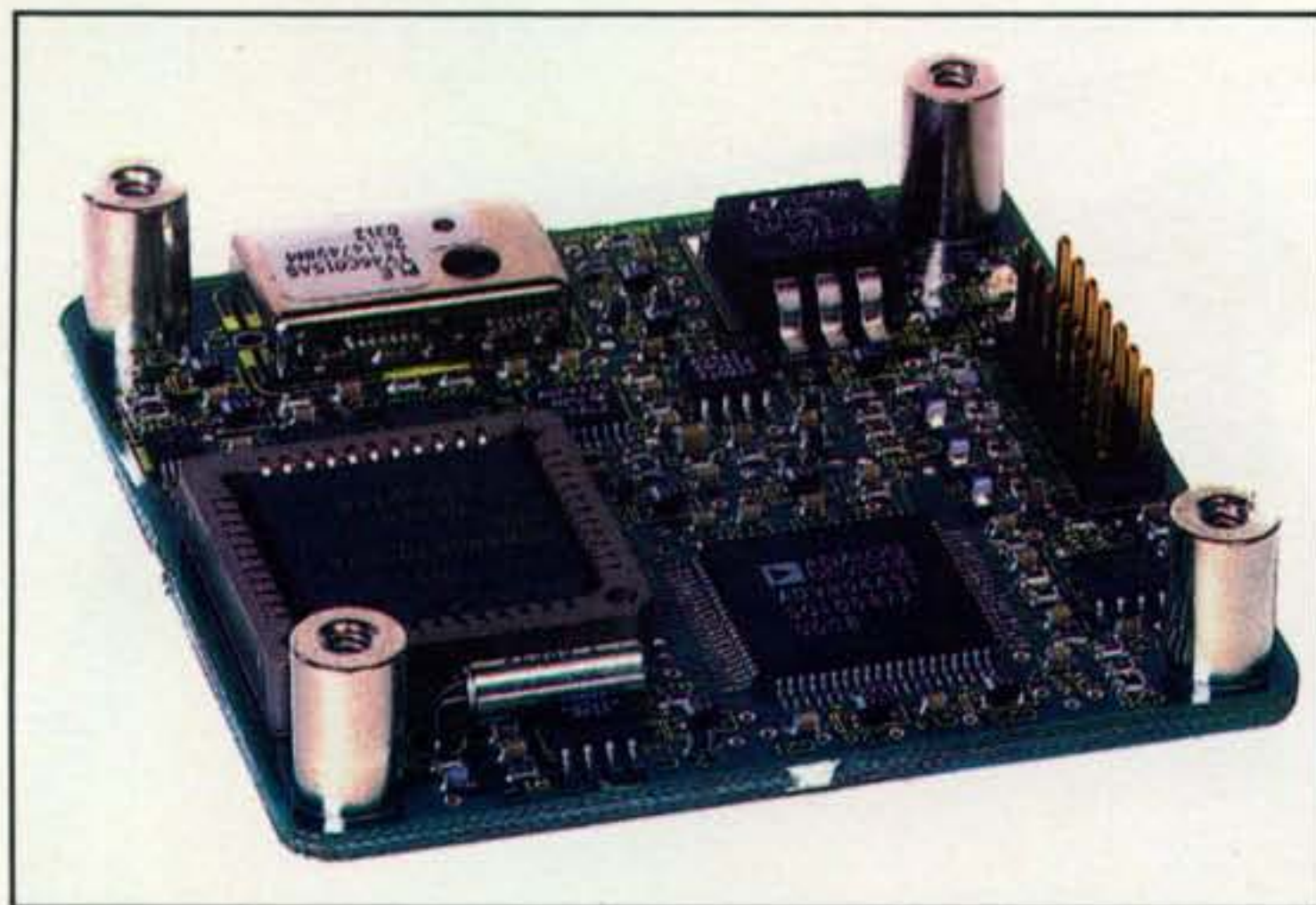


Photo E—The Novatech Instruments Model LPO30A 50 MHz Locking Programming Oscillator Module is an extended version of their popular Model LPO30. This high-end, super-accurate product is for the very well-equipped test or servicing bench. (Photo courtesy Novatech Instruments)

MFJ-1263 Microphone Control Center. While we're on the subject of microphones and mic accessories, we shouldn't omit a handy new accessory from MFJ. We're referring to the MFJ-1263 Microphone Control Center (photo D), which lets you "mix and match" any two microphones to any two transceivers. The mics or transceivers can have 8-pin round or 8-pin modular connectors, so you don't have to change connectors or rewire. Thus, you can prevent your present microphone from becoming obsolete, using it with your spiffy new rig just by pushing a button. You can, for example, instantly switch from a hi-fi ragchewing mic to a hard-hitting DX mic when a "rare one" pops up. An input jack and an on/off switch are provided to insert external audio into the microphone audio input line—great for inputting sound card, SSTV, AFSK, TNC, and other audio sources. The unit



Photo F—The MFJ-919 4:1 Current Balun is a true current balun that doubles as an antenna center insulator, transforming 200 ohms to 50 ohms for convenient antenna feeding. The transmission-line transformer, using 100-ohm characteristic impedance transmission line, is said to provide a flat 160–10 meter response. (Photo courtesy MFJ Enterprises)

works with practically any radio, and internal jumpers configure the \$99.95 unit for your radio.

For additional information or for a free catalog, contact MFJ Enterprises, Inc., 300 Industrial Park Road, Starkville, MS 39759 (phone 1-800-647-1800; e-mail: <mfj@mfjenterprises.com>; on web: <<http://www.mfjenterprises.com>>).

Locking Programmable Oscillator from Novatech. If only the very best will do in your ham shack, workshop, or lab, Novatech Instruments has one for you. It's the Model LPO30A 30 MHz Locking Programming Oscillator Module (photo E), an extended version of the firm's Model LPO30, which we profiled some time ago.

The LPO30A generates frequencies in 1 μ Hz steps to 50 MHz and will lock to and track a reference input of 8 kHz to 19.44 MHz in programmable 8-kHz steps. This makes the unit a ready-made solution for use with system reference clocks, especially for those systems that require multiple precision frequencies. When locked, the LPO30A output maintains the accuracy and stability of the user reference. The unit can be programmed from a PC using an RS232 interface.

For more information and pricing, contact Novatech Instruments, Inc., P.O. Box 55997, Seattle, WA 98155-0997 (206-363-4367; e-mail: <sales@novatech-instr.com>; on the web: <<http://www.novatech-instr.com>>).

Antennas and Accessories

MFJ-919 4:1 Current Balun. The newly introduced MFJ-919 4:1 Current Balun (photo F) doubles as an antenna center insulator, transforming 200 ohms to 50 ohms for more convenient antenna feeding. This "true" transmission-line transformer is said to provide a flat 160–10-meter response. A large, low-permeability ferrite core easily handles full amateur power levels. A SO-239 connector is standard, along with stainless-steel hardware and direct connection to the antenna using 14-gauge stranded copper wire. The unit sports a heavy-duty weather housing.

The MFJ-919 4:1 Current Balun handles 1500 watts and is priced at \$59.95. A similar unit, the MFJ-913, handles 300



Photo G—DX Engineering offers a fully-adjustable capacity hat system, the Hot Rodz™, which can be applied to your Hustler mobile antenna and will allow you to run a significantly smaller loading coil. (Photo courtesy DX Engineering)



Fig. 2— MacLoggerDX is often known as “the Swiss Army Knife of Amateur Radio.” Here’s just one screen display of the truly multifaceted program. (Graphic from the MacLoggerDX website)

watts. Also offered is the MFJ-911, a true 4:1 current balun/unun that transforms 200-ohm balanced and unbalanced loads to 50 ohms.

For more details, contact MFJ Enterprises, Inc. via the firm’s addresses listed above.

Portable and Mobile Goodies

DX Engineering Hot Rodz™ for the Hustler Mobile Antenna. DX Engineering has come up with a way to significantly increase the efficiency of your Hustler mobile whip and other mobile antennas. The firm has designed and built a fully adjustable capacity-hat system, the Hot Rodz™, which can be applied to your Hustler mobile antenna. The DX Engineering Hot Rodz™ (photo G) is a precision-machined 6061-T6 aluminum and stainless-steel capacity hat system.

The Hot Rodz™ will allow you to run with a significantly smaller and less-lossy loading coil, increase the efficiency of the antenna, and as a bonus you will end up with an antenna that may actually be shorter than the original. With the Hot Rodz™, you can, for example, use a 10-meter coil all the way down to below 20 meters—and the antenna height will be shorter than it would be if you used the regular 20-meter coil and stinger!

The Hot Rodz™ system, priced at \$37.50, can be adjusted to your exact frequency, just the way you now adjust the stinger on top of the antenna, but when you adjust the lengths of the Rodz™, the height is not changed and high efficiency is retained. The system comes with a 6061-T6 aluminum hub with stainless-steel set screws and six each of the 6-, 12-, and 24-inch length stainless-steel rods. The rods have slide-on ends that reduce wind-generated static. Optional 48-inch Rodz™ are \$12.95.

Contact DX Engineering, P.O. Box 1491, Akron, OH 44309 (telephone 1-800-777-0703; e-mail: <dxengineering@dxengineering.com>; web: <http://www.dxengineering.com>). The very comprehensive website offers a detailed section on how the Hot Rodz™ work, and also how to use them. Be sure to check out the site.

Software and Computers

MacLoggerDX. MacLoggerDX often is referred to as “the Swiss Army Knife of Amateur Radio,” and for good reason. MacLoggerDX (fig. 2) logs into your favorite Telnet or TNC DX Cluster and as DX Spots are received, it tunes your radio to the spot, looks up the call, and displays the DX station on the grayline map with distance and bearing from your station.

If you decide to work the station, MacLoggerDX is ready to instantly add the QSO and your radio’s VFO information to your log, and it can swing your beam around to work the station directly or via “long path.” MacLoggerDX supports ADIF import/export, which is fully compatible with eQSL.cc and the ARRL Logbook Of the World. MacLoggerDX looks up calls on the internet, in QRZ CD-ROMs, on MapQuest, in its internal ZipCode database, the ARRL country and DX lists, your logbook, and your user callbook.


The program tracks DXCC, IOTA (Islands On The Air), and WAS (Worked All States). It also has a bands display panel that tracks activity by band, and it lets you quickly go to the action. MacLoggerDX can monitor, look up, and plot APRS packets from APRSServe on the net or a connected TNC.

MacLoggerDX also features automatic, one-click generation of eQSL cards; fast and easy printing of logs, envelopes, QSL cards, and bulk address labels; unlimited user-cus-


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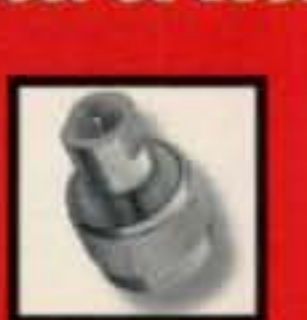
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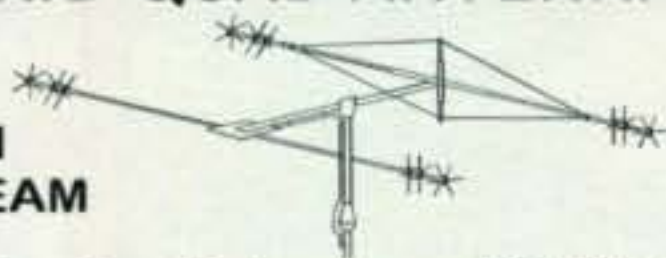
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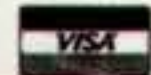
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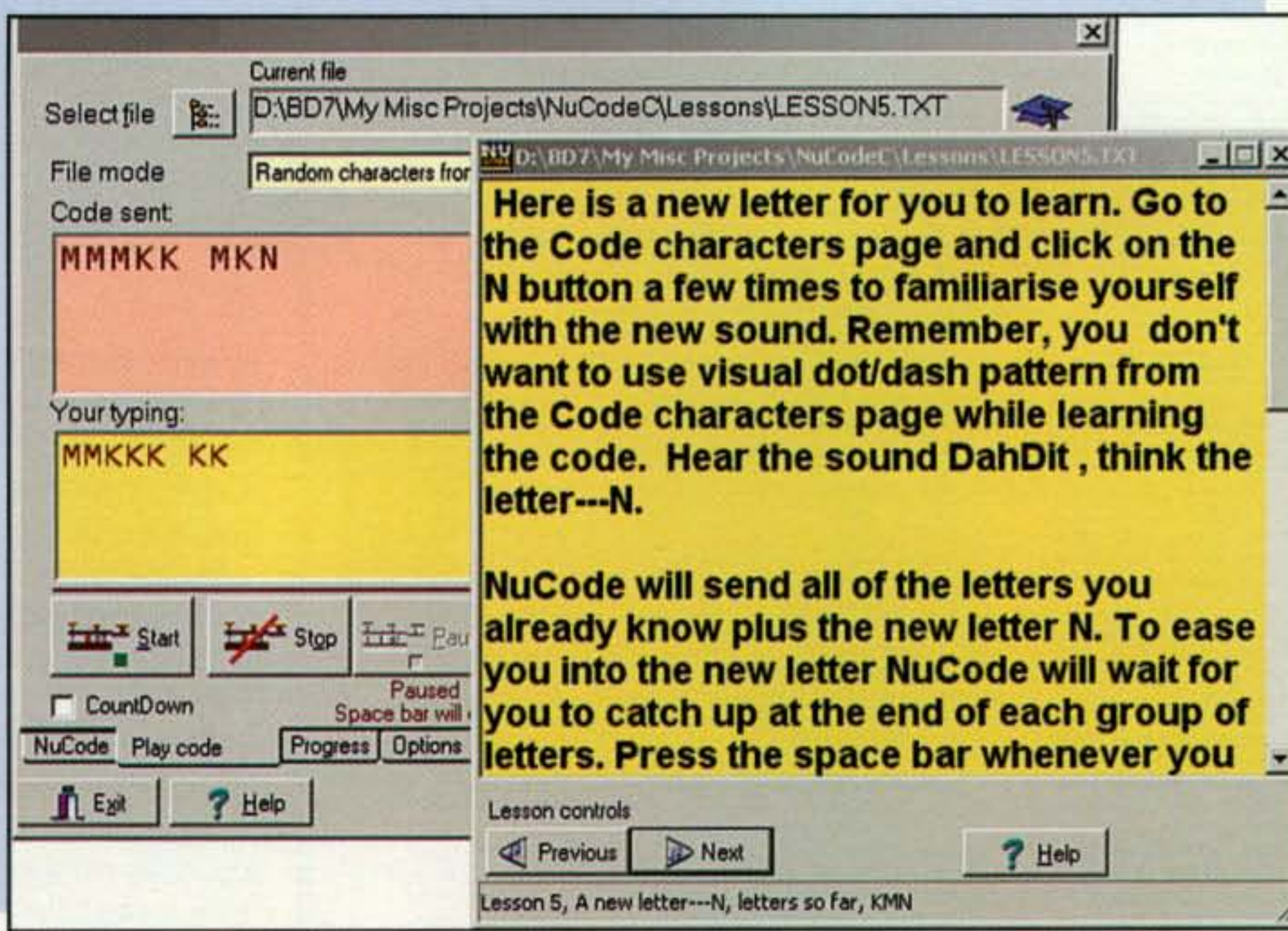


Fig. 3— Nu-Ware in the UK has released NuCode, a Morse code training course that runs under Windows® and is aimed at beginners who want to learn code at the 5-wpm speed with a minimum of fuss. You can start learning code as soon as the program is installed. (Graphic from the Nu-Ware website)

tomizable memories; a drag-and-drop scan list with adjustable delay; UTC scheduled events that automatically switch among summer, winter, week-end, and weekday schedules; and drivers for over 50 popular amateur radio transceivers and SWL receivers.

For more details and pricing, contact Don Agro at Dog Park Software, Ltd., 8 Cliffcrest Drive, Toronto, Ontario, Canada M1M 2K2 (416-261-7977; e-mail: <dagro@dogparksoftware.com>; on web: <http://www.dogparksoftware.com>).

NuCode from Nu-Ware. Nu-Ware in the UK has released NuCode (fig. 3), a Morse code training course that runs under Windows®. It's aimed at beginners who want to learn code at the 5-wpm speed with a minimum of fuss—not to mention helping them to “ace” the FCC 5-wpm code test. NuCode offers structured training based on the code-learning method pioneered by psychologist Ludwig Koch.

Beginners can start learning code as soon as the program is installed. There is no setup required, and the course starts at lesson one straight “out of the box.” On completion of the course, there is a range of extra features that will help build confidence prior to taking a code test. The program can play code from ordinary text files as well as a range of internal character and text generators. A variety of code source materials is supplied, including lists of common

English words and text files of typical amateur radio contacts.

The new program is \$29.95 for a single user license. For more pricing details and a free trial version, contact Tony Lacy, G4AUD, at Nu-Ware, Llanoris, Llanerfyl, Welshpool, Powys, SY21 0EP United Kingdom (phone +44 1938 820496; e-mail: <TonyLacy@Nu-Ware.com>; on the web: <http://www.Nu-Ware.com>).

From the Bookshelf

Instruments of Amplification. H. Peter Friedrichs, AC7ZL, sent us his latest book, *Instruments of Amplification*. The new book introduces the historical and theoretical basis of amplification and then drives the point home with numerous homebrew projects.

Of special note, while other books require you to purchase electronic components to assemble into finished devices, *Instruments of Amplification: Fun with Homemade Tubes, Transistors, and More*, shows you how to build the amplifying components themselves. Thus, some have referred to the book (and others by AC7ZL) as “extreme homebrew”; some have even jokingly coined the term “post-apocalyptic engineering.” Either way, the well-illustrated book is jam-packed with nearly 300 pages of history, science background, basic theory, and hard-to-find, hands-on details pertaining to the construction of an amazing array of homebrew amplify-



Photo H— Instruments of Amplification, by H. Peter Friedrichs, AC7ZL, shows you how to build amplifying components themselves! The extremely sensitive electromechanical amplifying instrument pictured here is called a "Balance Beam Amplifier," and it features carbon and graphite electrodes. Inspired by the Brown Amplifying Relay, it's capable of significant power gain. (Photo courtesy H. Peter Friedrichs)

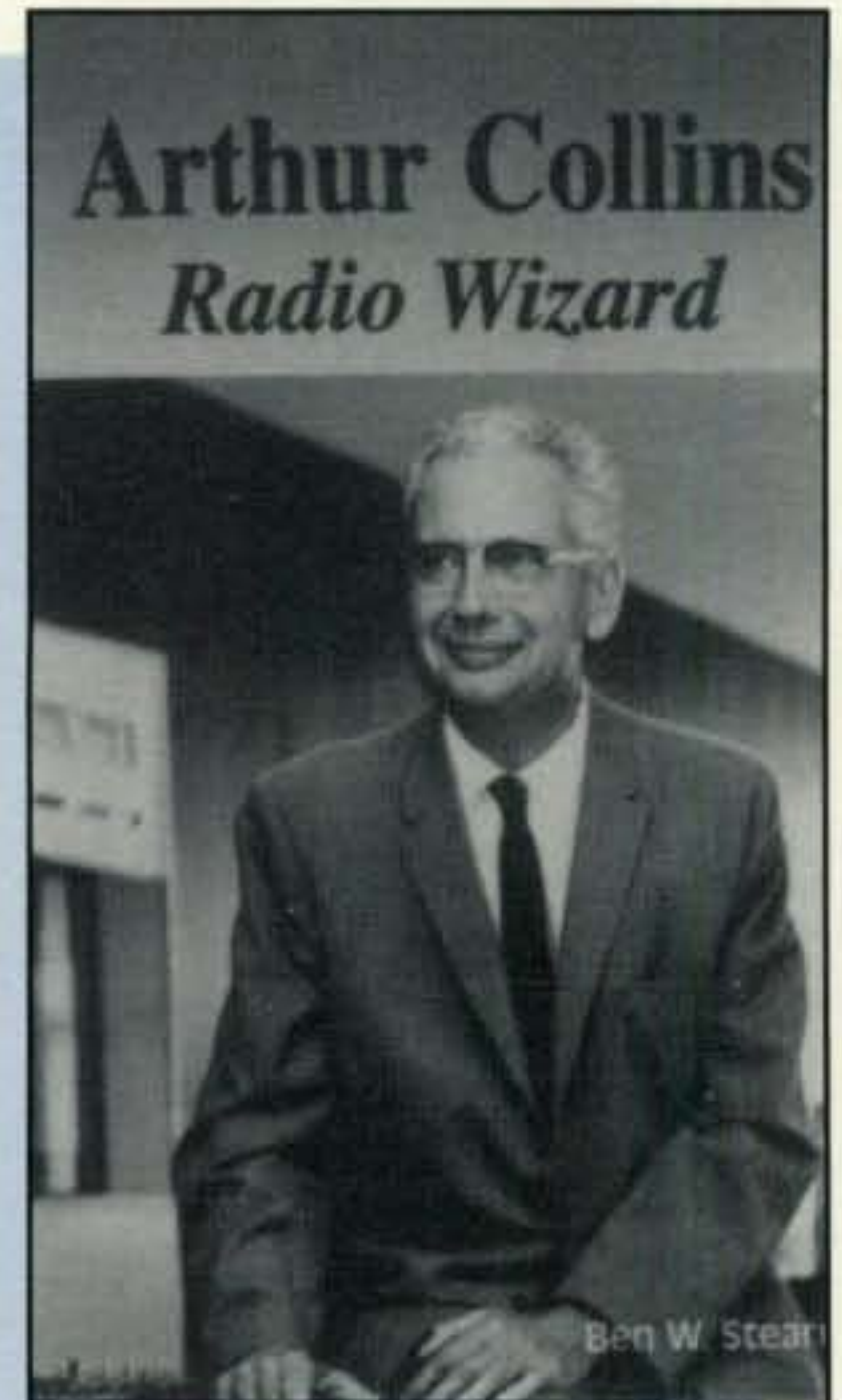
ing devices (example, photo H). Rooted in the same "build it from scratch" philosophy that made his first book, *The Voice of the Crystal*, a success, *Instruments of Amplification* reduces complex devices to their essential elements and then shows how they can be constructed from commonly available materials.

For ordering and other information, contact H. Peter Friedrichs, 8401 North Burke Drive, Tucson, AZ 85742 (e-mail: <pfriedr@mindspring.com>; <<http://www.mindspring.com/~pfriedr/>>). While the books are not available for sale on the website, the site presents an extensive list of sellers and distributors who do stock them.

Arthur Collins, Radio Wizard. Most radio amateurs reading this column have heard of the late Arthur (Art) Collins, W9CXX (later W0CXX). He began manufacturing radio equipment in his home in Cedar Rapids, Iowa in the early 1930s, marking the first time transmitting apparatus was available as an assembled unit. His earliest amateur equipment eliminated the typical radio-room clutter by packaging the ham-shack gear in neat units. No one can claim that Collins invented radio, but he did design and produce many radios that greatly facilitated practical communications. In fact, Collins amateur radio gear long has been considered the "gold standard" for reliability and performance. Collins-made single-sideband radios were used in great numbers early on by the U.S. military services.

By any measure, Art Collins was an incredible fellow, and his passing in

Photo I— The passing of Art Collins in 1987 ended an era. There are many untold stories about his achievements, and many of these are published in *Arthur Collins, Radio Wizard*. As the Collins Radio public relations manager, author Ben W. Stearns provides unique insight into the creator of the Collins Radio Company. (Photo courtesy of Ben Stearns)



1987 ended an era. There are many untold stories about his achievements, trials, and tribulations. Some of these events have been told in other publications, but much of the information published in *Arthur Collins, Radio Wizard* (photo I) is not well-known. The included stories were collected from many individuals, including author Ben W. Stearns. As the Collins Radio public relations manager, Ben provides unique insight into the daily affairs of the creator of the Collins Radio Company.

The fascinating, 394-page, softcover book is available for \$24.95 plus \$5.00

s&h (\$13 outside the U.S.). For more information, contact Collins Book, P.O. Box 2782, Cedar Rapids, IA 52406-2782 (phone 1-866-248-6260; e-mail: <sales@collinsbook.com>; on the web: <<http://www.collinsbook.com>>).

Wrap-Up

That's all for this time, gang. Next time more "What's New." See you then.

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Packet Radio

I guess you could say that packet radio was my first love. When I first got started in amateur radio, around 1986, what got me interested enough to study for the test (besides my Elmer, of course!) was the ability to send data using the hot new mode of packet radio. I eventually got very involved in every aspect of packet, from building network facilities to helping others get started. I used to spend hours playing packet.

As the saying goes, however, that was then and this is now. Packet has not gone away, but interest has faded considerably. In the 1990s, almost every month you could count on at least one of the ham magazines having a feature article on packet radio. Today, I can't remember the last article I saw related to packet. Certainly there hasn't been a beginner's article in many years, but we have plenty of newer hams out there, so I thought we'd revisit what might seem like ancient history to some of you. If you have never operated packet, perhaps you should give it a try.

What is Packet Radio?

Packet radio is a digital mode used mostly on VHF and UHF. With it, you can transfer just about anything you can push out a computer's RS-232 ser-

*P.O. Box 114, Park Ridge, NJ 07656
e-mail: <n2irz@cq-amateur-radio.com>



Photo 1—A Micropower-2 TNC from PacComm atop an ICOM IC-45A. The Micropower-2 was the "cat's meow" back in the late 1980s, with its low-power CMOS circuitry and all ICs in sockets. The old IC-45A is a first-generation synthesized radio, not as convenient as a modern rig for daily use, but perfect for packet.

ial port over the air. Actually, you don't even need a computer; a plain dumb terminal works just fine.

Packet is a connected, error-free mode. This means that in order to transfer any data, you first need to establish a connection to another station. All the data you send is almost certain to be transmitted without errors in transmission or reception.

In the early days of packet you could only connect to local stations. Some bright people developed networking software, which allowed reliable connections over long distances. There used to be half a dozen types of network, but today the dominant one is FlexNet, since it works so well.

Packet gets its name from the way data is sent. The data is broken up into small pieces, or *packets*. Radio noise is less likely to damage a short transmission than a long one, and packetizing the data has advantages in networking and with error handling. Most data in the non-amateur world is sent in packets.

A protocol is an agreed upon way of doing something. In the data world, a protocol defines all the details of how data transfer happens. For packet radio we use the AX.25 (spoken "A X dot twenty five") protocol to manage the translation from RS-232 serial data to "radio" and back again. You see, radio channels are noisy and variable, so a robust protocol was developed just for that environment. Despite a good design, errors from the radio link can occur, so the protocol also checks for errors.

TNCs

The device that handles the translation from RS-232 serial data to a signal that the radio can handle is called a Terminal Node Controller, or TNC. The TNC takes care of all the housekeeping issues associated with AX.25—breaking data into packets, adding address headers to each packet, keeping packets in the right order, dealing with errors, activating the radio's Push-To-Talk (PTT) line, and more. There is also a modem within the TNC which converts the TTL-level packet data into signals that a radio can handle.

Today, you can still buy a hardware TNC; or a Multi-Mode Data Controller, which handles packet and many other digital modes; or you might download a Virtual TNC, which uses your computer and sound card for all of the TNC functions. No matter which solution you choose, the result is the same.

A word about data rates and modulation types: Lower data rates use audio tones, with 1200 Hz representing a "zero" and 2200 Hz representing a "one" (or is it the other way around? I forget). This kind of modulation is called Audio Frequency Shift Keying, or AFSK. AFSK is good, since virtually any radio can be used. Higher data rates need a different kind of modulation, called Frequency Shift Keying, or FSK. With FSK you actually

change the transmitting frequency of the radio a little bit to represent a zero or one. Only specially designed and interfaced radios can send FSK at 9600 baud and above.

Error Detection

Let's take a closer look at error detection, an important part of packet. At the transmitting side, the TNC takes a last look at each packet before it is sent to the modem and calculates a number called a Cyclic Redundancy Check (CRC) checksum. The CRC checksum is tacked onto the packet data and sent over the air. The receiving TNC also calculates a checksum and compares it to the one in the packet. If they match, error-free reception is acknowledged (ACK'd) to the transmitting TNC with a short "ACK" packet, and the transmitting TNC sends the next packet in the sequence.

If there is no ACK from the receiver, it is assumed there was an error, so the "bad" packet is resent until it is ACK'd. The chance of the CRC checksums calculated by the transmitter and receiver matching despite an error is virtually zero. This ensures that all packet messages are error-free, unlike some other modes (such as PSK31) where errors are common (and acceptable).

The AX.25 error detection function depends on both TNCs knowing that a packet was just sent, and in which order the packets must be reassembled. This is done by establishing a "connection" (establishing an exclusive session) with another TNC in order to transfer data. To start a packet session—whether with a network node (eventually traversing the network to some other station), directly with a local user, or with an automated server (such as a PBBS or Chat node)—you must first establish a connection to it. Think of a connection kind of like a telephone call: You dial a number, and you are connected to only one other "station."

Establishing a connection is as simple as issuing a connect command to your TNC, followed by the "address" (usually the callsign) of the station to which you want to connect. When the other station "hears" your connect request, it responds with an ACK and you're connected. Then all data sent to the TNC is transferred over the air to the other TNC. It might take some time—1200 baud can be slow, especially if there are a lot of retried packets—but either it gets there, or the connection fails. Once you're done, issue a disconnect command and move on to the next contact. If the radio path is good, and neither station discon-

nects, they will remain in a connected state forever.

A packet "address" is usually a callsign followed by a number between 0 and 15, such as N2IRZ-3. The number is called a Secondary Station Identifier, or SSID. Since network nodes usually have multiple ports, and each port must have a unique address, SSIDs are used so one callsign can be used up to 16 times. Having the callsign as part of the

address meets the FCC requirements for station identification.

Parameters

Although the TNC takes care of the details of the AX.25 protocol, the user can make some adjustments to the packet length and some timing settings to better adapt the protocol to the specific radio link he or she trying to use.

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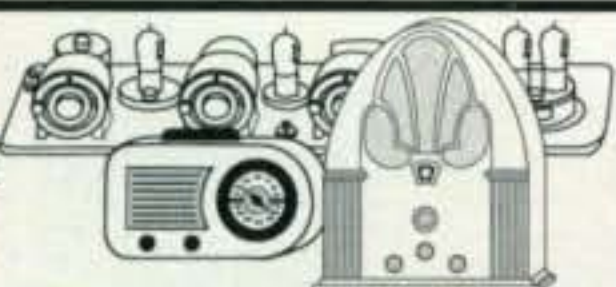
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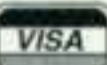



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For example, PACLEN (Packet Length) can be varied from 1 to 256 bytes. When the radio path is good and noise-free, a setting of 256 transfers the most data in the least amount of time. Remember, the AX.25 protocol (like nearly any data protocol) adds bytes to each frame for address, CRC Checksum, and the like (this is called "protocol overhead"), so to send those overhead bytes with only a single data byte is somewhat inefficient. On the other hand, sending a 256-byte packet (which takes about 2 seconds at 1200 baud) can be inefficient if the radio channel has a noise burst every second, on average, since virtually every packet will contain an error (due to the noise burst) and need to be retransmitted. In a case like that, a PACLEN of 100 might allow most packets to "sneak between" the noise bursts.

Other settings, such as how many seconds the transmitting TNC will wait for an ACK, or how many packets can be strung together for a longer transmission, if applied intelligently and with understanding, can greatly enhance or diminish the data performance of the connection. In older networks the parameters were set by the System Operators (Sysops). Configured correctly, the network performed well; configured poorly resulted in poor network perfor-



Photo 2— The WA2SNA packet network "node stack" circa 1996. Note the pile of TNCs, radios, and computers which ran this relatively large network site. The site has since been converted to FlexNet.

mance. Unfortunately, many Sysops did not understand the finer points of configuration, or the radio channel conditions changed, and the network performance was awful. In modern networks, such as FlexNet, the parameters are adjusted automatically based on actual measurements of the radio channel quality. Remove the uninformed or lazy Sysop from the equation, and you get optimum performance at all times.

What Can I Do on Packet?

In the early days of packet, the most popular activity was sending and receiving e-mail. Both general-interest bulletins and messages sent to a specific amateur were common. Remember, this was in the days before the internet

became popular, and the only alternative was a paid dial-up Bulletin Board System (BBS) such as CompuServe. Even then, you could only send mail to other CompuServe users. Packet was free and reached anyone in the world with a TNC and local packet BBS. Every town had a local PBBS, and some had a few. Even some of the OSCAR satellites have a PBBS on board. Despite the relatively slow 1200-baud data rates that were typical, it was far better than anything else out there, despite delivery times measured in days.

Today, APRS (Automatic Position Reporting System), developed by (and a trademark of) Bob Bruninga, WB4APR, is a very popular use for packet. Found primarily on 144.39 MHz, APRS is a way of tracking mobile sta-

tions using GPS, and transferring simple data messages (such as weather info), which is especially useful as a tactical tool. For example, you can track firefighter teams battling a forest fire or runners in a marathon. Home users can report real-time weather data to the local National Weather Service office, greatly helping NWS monitor and track storms and other weather. APRS makes use of AX.25's special Unconnected Information (UI) mode, in which there is no error detection.

Packet has many other uses, limited only by the imagination. As an error-free mode, packet is very useful for remote operations, such as telemetry and remote control. DX enthusiasts use packet for the real-time distribution of DX spots, especially in contests. Since most packet systems are configured to also handle TCP/IP traffic, internet applications can be used over the air. Of course, you can have a keyboard-to-keyboard QSO, but these days it would be somewhat rare to find another keyboarder on the air. A few months ago, I wrote about PacLink, which allows anyone to use their regular e-mail program (such as MS Outlook or Eudora) to send and receive e-mail via the WinLink 2000

system. Just about any application in which it would be useful to be able to transfer data over the air is what you can do with packet.

My personal favorite packet activity is network surfing. No, it's not like surfing the internet. Instead, you connect from one network site (photo 2) to the next, looking at the configuration, performance statistics, and the like. You learn exactly what the network looks like (try doing that on the internet or the telephone network!) and in the process learn how a network works. It becomes easy to build a map of the network, learn its capabilities, and even test those capabilities. I can state with certainty that everything I learned about networking—including TCP/IP, the internet, and even CAN Bus networking—I learned on packet. Kind of geeky, maybe, but that's what I like so much about packet.

Getting Started

Getting started is easy. Find a used TNC at a local hamfest, ask at a club meeting (someone might loan you one), or look on eBay. Even less expensive is a sound-card TNC; to find one just search with Google. Read the docs, make up a

TNC-to-Radio cable, and be sure to adjust your TX Audio carefully. Start by listening on 144.39 (the APRS frequency) to hear what packet sounds like, and then look around 145.01 MHz, up and down in 20-kHz channels (144.99, 145.03, etc.) for some local activity. Listen first, look at what's happening on the channel, and when you see a strong station, try to connect! Remember that some channels are dedicated to network links, and it's bad form to intrude. However, usually trying a connect to a network station will earn you a brief message with the user port frequency (which is what you want) and a disconnect.

If you want to learn more before you try packet, there are a few sources of information. Try asking someone at a club meeting, or on the local repeater. Visit the TAPR website (tapr.org) and read the beginner articles. CQ has an award-winning videotape, "Getting Started in Packet Radio," which I found very helpful when I was starting out. Search the web for other resources, such as packetradio.org. You also may write to me with your questions. It might take a few days for a reply, but I'd enjoy hearing from you. Until next time . . .

73, Don, N2IRZ

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Coming Up To Speed

As we discussed in previous columns and as many of our readers surely will agree, QRP is one of the hottest, fastest growing areas of special interest in amateur radio today. Indeed, almost every day folks of all ages and backgrounds are discovering the fun and exhilaration of communicating over long distances with low power. Newcomers also continue to ask for more "inside views" and getting-started-in-QRP guidance—information such as what rigs, accessories, and clubs are popular and where to look for more details. Your interest is admirable and we want to help. We thus will include more helpful notes for newcomers and "how they are doing" updates on previously reviewed gear and kits, along with the usual "what's new" details in both this month's column and future QRP columns. If we overlook a particular rig, project, or activity you feel should be highlighted, don't panic! Just drop me a brief note with the pertinent details and a couple of 35-mm photographs for inclusion in future columns. Together we can get plenty of well-deserved recognition going in the right direction.

Now let's focus on life in the QRP lane!

Getting Started

The greatest attraction of QRP continues to be its economical cost and elegant simplicity. That's not rocket science, friends, just fact. All you need to join the action is a low-power transceiver, a rea-

*4941 Scenic View Drive, Birmingham, AL 35210
e-mail: <k4twj@cq-amateur-radio.com>



Photo A— Homebrewing and kit building are an integral part of the QRP experience, and the variety of projects is both captivating and endless. The "stairstep samples" shown here include an antenna SWR/resonant frequency tester from the Four States QRP group, my own mini-transceiver in a mini-Altoids tin, and a surface-mount Micronaut transmitter in a micro Altoids tin.

| Band (meters) | CW (MHz) | SSB (MHz) |
|---------------|----------|-----------|
| 160 | 1.810 | 1.910 |
| 80 | 3.560 | 3.985 |
| 40 | 7.040 | 7/285 |
| 30 | 10.106 | — |
| 20 | 14.060 | 14.285 |
| 15 | 21.060 | 21.385 |
| 12 | 24.906 | 24.950 |
| 10 | 28.060 | 28.885 |

Table I— Popular HF gathering spots for on-the-air QRP activities. Frequencies get a real workout during weekends and contests.

sonably effective antenna, and plenty of enthusiasm for pursuing something beyond the usual. If you wish to really do it in style, join a couple of clubs, such as QRP Club International (www.qrparci.org) and the new American QRP Club (www.AmQRP.org). Enter a few club-affiliated contests, build two or three club-offered kits (the variety is fantastic, and they all are winners [see photo A]), and you will be hooked on QRP right from day one.

Would you like to test the QRP waters right now? Assuming you have a 100-watt HF rig and a reasonably good antenna (so you are not presently radiating an "unrealized QRP" signal), just drop your output power to 5 watts and give it a go.

Want an idea of how your QRP signal sounds "strength wise" on the air? Try this simple test right in your own shack. First, look back through your log at 100 watts output and notice the usual RST or S-level report. Then tune in a signal around that level (which probably will be between S7 and S9). Activate your rig's AIP, IPO, or Attenuator button to reduce the incoming signal by 10 or 15 dB (check your rig's manual for exact specs here), and watch your rig's S-meter to confirm the drop. Perform the test a few more times with different signals, but do not look at the S-meter. Were you surprised to learn the change was barely noticeable? It is a reassuring experience for sure.

For maximum first-time success, operate close to the familiar QRP frequencies listed in Table I. Also strive to join some of the weekend contest activity on 20 meters (QRPers habitually listen more carefully for other QRPers). Contact a station over 5000 miles away while running 5 watts, or over 2000 miles away while running 2 watts (a nice cross-country QSO), and you immediately qualify for the QRP ARCI's famous 1000 Mile-Per-Watt award (photo B). That's a real kick-start in QRP fun! More getting started guidance, incidentally, is included in my book *QRP Now*, delivered directly from my house to yours (\$16 plus \$3.85 Priority Mail, or \$2.50 book rate, from Dave Ingram, K4TWJ, 4941 Scenic View Drive, Birmingham, AL 35210).

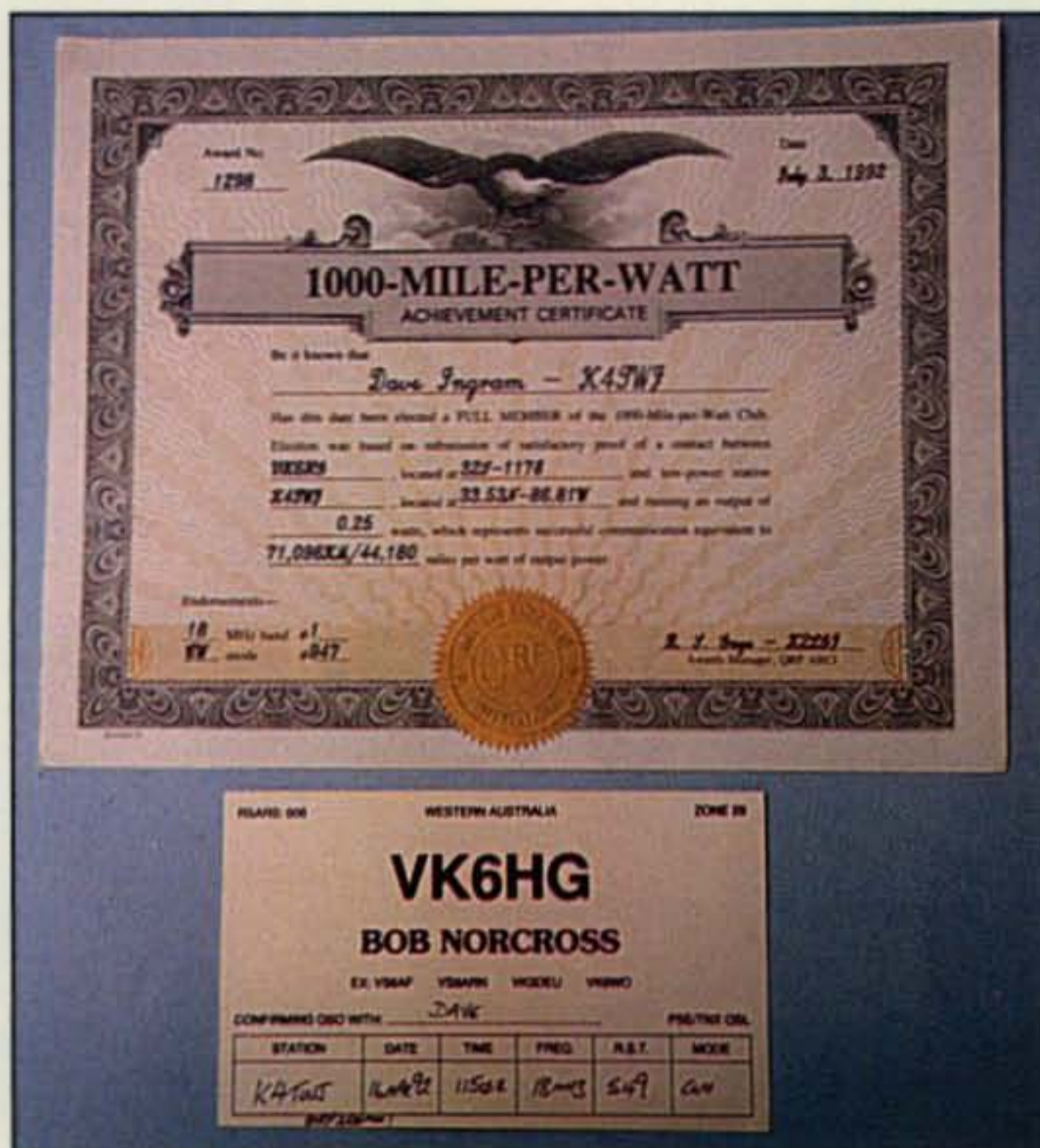


Photo B— Like to jump start (or restart) your QRP interest on a really positive note? This 1000 Mile-Per-Watt award is available from the QRP Club International. Details are available at <www.qrparci.org> or from the award manager via <wi8w@arrl.net>.

Photo C— Yaesu's FT-817 is today's smallest all-band, all-mode, fully self-contained HF/VHF/UHF QRP transceiver, and it continues gracing the airwaves in ever-increasing numbers.



You might continue using your big rig for QRP, but it is ho-hum overkill, it is not battery-efficient for in-field use (a big attraction of QRP), and folks may also accuse you of "QRP fudge" (running over 5 watts) when working DX. That dilemma is eliminated when running a dedicated QRP rig; it is small, lightweight, and no one can question if you really are running low power.

Dedicated QRP transceivers generally fall into two categories: commercially manufactured units and "build it yourself" kit rigs. Commercially made rigs include ICOM's new IC-703 (reviewed in December 2003 CQ), Ten-Tec's Argonaut V (March 2003 CQ), SGC's 2020 (June 1999 CQ), and Yaesu's FT-817 (reviewed in late 2001 and revised in this month's column). Kit rigs are numerous and include Elecraft's popular K2, K1, and new KX-1 (featured in our February 2004 column); Ten-Tec, Oak Hills, and MFJ monoband transceivers; and more. They all are

excellent choices for QRP fun. Now let's revisit the FT-817.

FT-817 Update

Yaesu's portable 5-watt FT-817 (photo C) has now been on the market for slightly more than two years, and it is proving to be a very popular QRP transceiver for both home and travel. Indeed, we hear so many FT-817s on the air that it seems every low-power enthusiast has one. That makes sense. The FT-817 is reasonably priced, loaded with fancy "big rig" features (keyer, noise blanker, VOX, 200 memories, etc.), and it is also the most accessory-laden rig in amateur radio today. Typically, folks complement it with a small MFJ-4103 power supply, an LDG Z100 Automatic Antenna Tuner, a PowerPort carry pouch, ten kinds of keys, and a pile of goodies from W4RT Electronics (www.w4rt.com). In fact, finding a bare FT-817 is a rarity, and every discussion

of the little gem always brings about yet more new treats for it. A couple are included in this month's column.

Early reviews of the FT-817 suggested an optional 500-Hz filter was more of a necessity than an accessory for

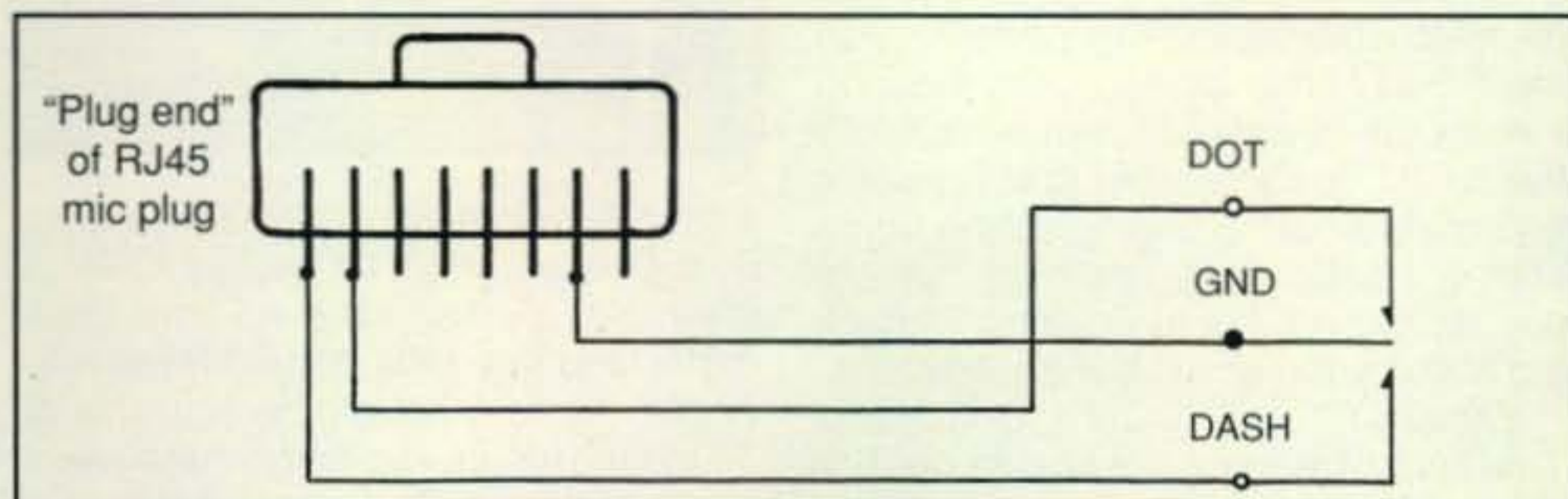


Fig. 1— Want to homebrew your own key-to-mic socket adapter for an FT-817? Here is the outline.

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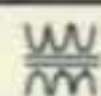
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Photo D— The popular Yaesu FT-817 surrounded by some accessories from W4RT Electronics. Items include One Touch Tune module for connecting Z100 tuner, internal DSP, Collins filters, mic-installed speech compressor, battery pack, charger, quick-reference book, paddle-to-mic-socket adapter, and clip-on stand. More details at <www.w4rt.com>.

serious CW work, and without it the rig copied both sidebands like an old Hallicrafters S-38. I have enjoyed using an FT-817 without an optional filter for two years and can truthfully say that statement is a bit of an exaggeration. The FT-817's CW reception is right on par with a TS-50, IC-718, or similar economy-grade transceiver without their optional filter—no better, no worse. If you have difficulty ignoring adjacent-frequency QRM with the FT-817's 2.4-kHz SSB/CW bandwidth, however, the dual Collins mechanical filter mod from W4RT Electronics can't be beat.

Some folks also assume the FT-817 can only operate at 2.5 watts output when powered from internal batteries, but that too is a misconception. The transceiver is easily menu-reset to 5 watts output, but just like old-style 2-meter FM talkies, resultant energy demands of 2 amps on transmit drain regular NiCd cells rather quickly. Heavy-duty NiMH cells are definitely preferred here.

Interestingly, the FT-817's smallest front-panel control, its "Function" button, gets the most use during operation. You punch it when checking SWR,

changing power levels or keyer speed, when activating the VOX and the battery charger, when varying receiver sensitivity, and, well, almost continuously. Fortunately, the little button takes a whamming and keeps on hamming.

Some of the latest FT-817 supporting goodies from W4RT Electronics are shown in photo D. First is the new extra-high-current (2.2-amp) NiMH battery pack, which delivers more FT-817 operating time (even at 5 watts output) than any other internal/AA-cell pack today. It is awesome. Next is the trim RJ45 mic plug to CW paddle mini-socket adapter that, with a quick menu change, lets you plug a CW paddle into the mic socket (perfect when operating portable with the FT-817 in a zip-top carry pouch). Finally, the new clip-on stand snaps into the FT-817's carry-strap bracket holes and really beats propping up the rig on sliding books. It is the best "simple accessory" yet. For more details, check out all the goodies at <www.w4rt.com>.

Yaesu's FT-817, ICOM's IC-703, and Ten-Tec's Argonaut V seem to be running neck-and-neck for first place in the commercially made transceiver category. The FT-817 has a built-in battery



Photo E— Nostalgic QRP still romps! Bud Bearce, K5JGU, works QRP in style with the homebrew 5-watt transmitter and five-tube superhet receiver shown here. A classic Hallicrafters S-38 is used for backup and general short-wave listening. Bud answered one of my CQs and I never realized he was QRP until receiving his QSL and rig info.

compartment, but no antenna tuner or DSP like the IC-703 (both, however, are available as aftermarket add-ons). The IC-703 has an automatic antenna tuner and DSP, but lacks a battery compartment (although one slips into the optional carry/backpack). Ten-Tec's Argonaut V lacks both an internal battery and antenna tuner, but has the best break-in operation, plus adjustable IF bandwidth. It's a toss-up, but don't dismay. Any one you choose is a blow-out winner!

Try 30 for QRP!

Are you enjoying a favorably high number of replies to your QRP calls? Are you working your fair share of intercontinental DX with QRP? If your answer to either question is less than a resounding "yes indeed," I heartily suggest giving 30 meters a good old college try. Why? It is the only HF band with a 200-watt limit (QRP always stands a better chance among barefoot rigs than kilowatts), the QRM is noticeably less than on 40 or 20 meters, and many 30-meter operators are sharp as tacks. Also, 30 meters is open to more areas of the world and for more hours each day than 40 meters, and 40 is often overrun with foreign broadcasts. If you make a 40 meter QRP QSO outside of a contest, it is a feat. Conversely, working into Indian Ocean areas such as 3B8 or South Pacific areas such as FO8 with QRP on 30 happens with surprising frequency!

There are a couple of stipulations to success on 30 meters, however. They include using a good 30-meter-resonant antenna and not assuming the band is "dead" due to light activity. You can make some (QRP) contacts using a multiband doublet, G5RV, or random wire, but an Extended Double Zepp, a full-wave Delta Loop, or even a dipole specifically cut for 30 meters has a definite advantage. Spend a couple of hours putting up a good antenna and call CQ when the band seems open but deserted, and you will find 30 meters is an all-around terrific band for QRP.

What frequencies to check? Any clear spot between 10.100 and 10.125 kHz is fine. Evenings between 6 and 10 PM your local time and mornings between 6 and 8 AM are prime times for DXing. Midday is good for in-country QSOs, and long path to Australia, etc., occasionally occurs at around 3 PM. Go for it!

On that note of encouragement, we must again bow out (and quickly!) for yet another month. Thanks to all of our terrific friends and fans for your continued support and on-the-air encouragement. Knowing you appreciate my efforts is the ultimate reward
73, Dave, K4TWJ

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What Happened to the Chase?

The Super Bowl is history and our Carolina Panthers lost "by a nose" at the end. Well, they gave a valiant effort in one of the best Super Bowl games I've ever seen. The New England Patriots played an outstanding game and I congratulate them.

Now what does that have to do with DXing? Competition! The Super Bowl is a competition and so is DXing. If you're chasing DX, you are competing with others and maybe even with yourself. How long did it take you to work that first 100 countries (forgive me, but I'll never get used to calling them "entities")? How much longer did it take you to get the cards to finally get that coveted DXCC certificate? Follow that with the next 50, 100, 150, 200, and on and on until you finally got to the ultimate goal. . . . You worked them all!

Oh. You haven't worked them all? Well, take it easy, because you certainly aren't alone. Not everyone chasing DX has worked them all. I haven't and I've been at it for 50 years now. Ah, but then I haven't spent every waking moment on the air either. Gee, there was a marriage and then I moved. In those days, if you moved too far you had to start over working them. Well, then a few years later I moved again. It was tough to get too inspired back then when I was on the move every few years. Lo and behold, then they changed the rules. Now everything that I had worked from all over the U.S. counted toward the same award. Hallelujah! After it all was counted up, I think I had something like 250 or so on the same DXCC wallpaper.

Well, by then there were two sons who needed a father, a job that took more time, a new house that needed a lot of "finishing touches," and the list goes on. Time for DXing just never seemed to be available.

Finally, years and years later, the kids were gone, another house had been "finished," a couple of towers managed to "grow" on the five-acre hilltop, and the hamshack developed into something more than just a radio on a table in the basement. By this time my count had gone up to over 300 and there was a glimmer of light in the distance. One by one the count increased. In the process of chasing countries, a 5 Band DXCC plaque found its way onto the hamshack wall, along with the 5 Band Worked All States. A handful of contest certificates collected dust in a drawer, while a few of the newer ones hung on the wall. A Phone DXCC certificate and a CW DXCC certificate joined the Mixed award above the radio. I was still working away from home every day, and I missed a few of those "rare" ones who didn't know about operating on the weekends. Not all of us could take a day off to work a new country, especially when we didn't know if that station would even be there that day.

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



4U1UN, UN Headquarters in New York City. On January 30th, Bernie, W3UR, his 14-year-old daughter Christa, KB3JIU, and Steve, KU9C, spent the day operating the station and touring the facility. It's been some time since a YL was on the air from 4U1UN, and Christa did an excellent job of handling the pile-ups she encountered. Dad Bernie was there to help her over the rough spots, but he didn't have much to do—hi. They very much enjoyed the tour provided by the station manager, Mohamed, KA2RTD. (Photo courtesy of Steve, KU9C)



T32WW, Christmas Island, this was a most appropriate callsign for this group's entry in the CQ WW CW Contest last fall. The team from Colorado spent a couple of weeks on, as Cheryl, N0WBV, put it, "Right Island, Wrong Holiday" during the Thanksgiving timeframe. Here, after the contest, we see (left to right) Paul, N00T/T32N; Tim, N0ZM/T32ZM; Cheryl, N0WBV/T32YL; John, KT0F/T32TF; Larry, N2WW/T32WW; Bill, K0MP, T32MP; Barry, K0KV/T32KV; and Greg, W0ZA/T32ZA. (Photo courtesy of Cheryl, N0WBV)

5 Band WAZ

As of January 15, 2004, 640 stations have attained the 200 zone level and 1363 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 meters):

| | |
|-------------------------|----------------------|
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| W4LI, 199 (26) | UU5JR, 199 (4) |
| K7UR, 199 (34) | W8GF, 199 (22) |
| W8PGI, 199 (26) | N4NX, 199 (26) |
| W2YY, 199 (26) | OE2BZL, 199 (1) |
| VE7AHA, 199 (34) | N4MM, 199 (26) |
| IK8BQE, 199 (31) | EA5BCX, 198 (27, 39) |
| JA2IVK, 199 (34 on 40m) | G3KDB, 198 (1, 12) |
| NN7X, 199 (34) | KG9N, 198 (18, 22) |
| IK1AOD, 199 (1) | JA1DM, 198 (2, 40) |
| DF3CB, 199 (1) | 9A5I, 198 (1, 16) |
| GM3YOR, 199 (31) | K5PC, 198 (18, 23) |
| VO1FB, 199 (19) | K4CN, 198 (23, 26) |
| KZ4V, 199 (26) | KF2O, 198 (24, 26) |
| W6DN, 199 (17) | G3KMQ, 198 (1, 27) |
| W6SR, 199 (37) | N2QT, 198 (23, 24) |
| W3NO, 199 (26) | OK1DWC, 198 (6, 31) |
| K4UTE, 199 (18) | U4UM, 198 (18, 23) |
| HB9DDZ, 199 (31) | US7MM, 198 (2, 6) |
| RU3FM, 199 (1) | K2TK, 198 (23, 24) |
| HB9BGV, 199 (31) | K3JGJ, 198 (24, 26) |
| N3UN, 199 (18) | W4DC, 198 (24, 26) |
| OH2VZ, 199 (31) | N4XR, 198 (22, 27) |
| K5MC, 199 (22) | N4PQX, 198 (24, 26) |
| W1JZ, 199 (24) | RU3DX, 198 (1, 6) |
| K2UU, 199 (26) | UT5JAJ, 198 (12, 30) |
| W1WAL, 199 (24) | N6HR/7, 198 (34, 37) |
| W1FZ, 199 (26) | OE2LCM, 198 (1, 31) |
| SM7BIP, 199 (31) | EA7GF, 198 (1, 27) |
| PY5EG, 199 (23) | W7SX, 198 (18, 23) |
| SP5DVP, 199 (31 on 40) | UT3UA, 198 (1, 6) |
| W8AEF, 199 (40) | HA1RW, 198 (1, 31) |

The following have qualified for the basic 5 Band WAZ Award:

| | |
|--------------------|--------------------|
| W4TMM (154 zones) | RA1AOB (190 zones) |
| KQ4EE (165 zones) | F5YJ (154 zones) |
| IN3ASW (189 zones) | HA1RW (198 zones) |
| JABJCR (166 zones) | |

Endorsements:

| | |
|------------------|-------------------|
| K4YT (200 zones) | K4UEE (200 zones) |
|------------------|-------------------|

****Please note: Cost of the 5 Band WAZ Plaque is \$80 (\$100 if airmail shipping is requested).**

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>.

being ridiculous, with QSL Managers, IRCs, green stamps, etc., etc. Some folks, it is rumored, even tried to finance their DXpeditions by "charging" for QSL cards (bear in mind I said *rumored*); charging for QSL cards is strictly frowned upon in DX circles. The QSL Bureaus are still active, but most of what they handle these days are contest cards, although some DXpeditions do use the bureaus to send cards.

We have become so "commercial" in our DX chasing, it's almost like what has happened to Christmas. We seem to have forgotten the reason for the sea-

The WAZ Program

6 Meters

| | |
|---------------|---------------|
| 63.....K3XA | 65.....JH7IPR |
| 64.....KB4CRT | |

10 Meter SSB

| | |
|---------------|----------------|
| 557.....K4DLI | 558.....JA2GHP |
|---------------|----------------|

15 Meter SSB

| | |
|----------------|----------------|
| 603.....IK8OER | 605.....HL1OYF |
| 604.....K4DLI | 606.....DS2QEI |

20 Meter SSB

| | |
|----------------|----------------|
| 1119.....K4DLI | 1121.....AE5PL |
| 1120.....VO1CV | 1122.....AA4P |

10 Meter CW

| | |
|---------------|--------------|
| 184.....W7QDM | 185.....W1MK |
|---------------|--------------|

15 Meter CW

| |
|-------------------|
| 316.....HK7/SM5HV |
|-------------------|

20 Meter CW

| |
|---------------|
| 540.....W7QDM |
|---------------|

80 Meter CW

| |
|--------------|
| 59.....K4UEE |
|--------------|

All Band WAZ SSB

| | |
|----------------|-----------------|
| 4893.....K0THN | 4897.....EA5KE |
| 4894.....KN6KI | 4898.....S57AT |
| 4895.....AG3V | 4899.....JR4OFU |
| 4896.....K2CBI | 4900.....KP4WN |

Mixed

| | |
|-----------------|-----------------|
| 8274.....DS4BGR | 8281.....WB2J |
| 8275.....DS1JFY | 8282.....WB9WZN |
| 8276.....YT1WG | 8283.....UY5EG |
| 8277.....JS3OSI | 8284.....RW3SU |
| 8278.....NR9J | 8285.....DS5FNE |
| 8279.....K5CZD | 8286.....CT3EE |
| 8280.....N9BX | |

All CW

| | |
|----------------|----------------|
| 396.....K0THN | 403.....DS1CCU |
| 397.....N5PA | 404.....S57AT |
| 398..... | 405.....K5FXB |
| 399.....W4GMY | 406.....K4TP |
| 400.....YT1VM | 407.....SP7XK |
| 401.....YU1JF | 408.....ON4CD |
| 402.....SM3VAC | |

RTTY

| |
|--------------|
| 143.....SQ7B |
|--------------|

Satellite

| |
|-------------------------|
| 20.....N1HOQ (25 zones) |
|-------------------------|

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>.

son at Christmas, and we seem to have forgotten the purpose of DXing. Amateur radio, including DXing, is supposed to be fun and educational and provide a training ground for communication skills. I suppose one could say that the evolution to computer-controlled radios, etc., is educational. I suppose, too, some would consider it fun to use the internet to "pick off" new ones as soon as they come on the air. Then there are those who would argue that

CQ DX Awards Program

SSB

| | |
|----------------|----------------|
| 2424.....ER1VS | 2425.....W8CCX |
|----------------|----------------|

CW

| | |
|---------------|---------------|
| 1055.....N15F | 1056.....N5ZM |
|---------------|---------------|

SSB Endorsements

| | |
|-------------------|-------------------|
| 320.....K1UO/335 | 300.....KK4TR/303 |
| 320.....W8AXI/334 | 200.....W8CCX/217 |
| 320.....KW7J/330 | |

CW Endorsements

| | |
|-----------------------|------------------|
| 320.....HK7/SM5HV/326 | 320.....N5ZM/323 |
|-----------------------|------------------|

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 335 active countries. Please make all checks payable to the award manager.



Rick, NE8Z, was in Ecuador recently. He says it was tough to squeeze in radio time with all of the family events that were planned. His father-in-law turned 80 on January 24th and there was a huge party for him. Here's the hamshack Rick has when he is "at home" in Quito. (Photo courtesy of Rick, NE8Z)

chasing DX is training in communication skills. After listening to some of the pile-ups on DXpeditions, I would dispute that claim, however. There isn't much communication skill in yelling "Up Up Up" or "Split Split Split." Plus, the vulgar language sometimes encountered would make a sailor blush.

Am I guilty of the commercialization of DXing? I hate to admit that I have used many of the aforementioned "gimmicks" just to keep up with many of the rest of the DXers of the world. Have I spent more money than I should have? Probably. Do I have more equipment than I need? Probably. Could I have worked as much DX or worked as many

THE WPX HONOR ROLL

The WPX Honor Roll is based on the current confirmed prefixes which are submitted by separate application in strict conformance with the CQ Master Prefix list. Scores are based on the current prefix total, regardless of an operator's all-time count. Honor Roll must be updated annually by addition to, or confirmation of, present total. If no up-date, files will be made inactive.

MIXED

| | | | | | | | | |
|----------------|----------------|-----------------|-----------------|----------------|----------------|----------------|---------------|----------------|
| 5155.....9A2AA | 3808.....N6JV | 3237..WB2YQH | 2944.....IT9QDS | 2510.....K9UQN | 2203.....W4UW | 1772.....VE9FX | 1521.....NG9L | 1090.....W2OO |
| 4695.....W2FXA | 3768.....YU1AB | 3175.....K0DEQ | 2924.....W2ME | 2454.....K2XF | 2126..WB3DNA | 1765.....K0KG | 1502.....KX1A | 933.....SM7GXR |
| 4257.....W1CU | 3668.....N4MM | 3166.....K9BG | 2772..YU7GMN | 2399.....W6OUL | 2070.....I2EAY | 1724.....W7CB | 1487.....WT3W | 865.....N5DD |
| 4149.....EA2IA | 3548.....N9AF | 3140.....I2EOW | 2701..WA1JMP | 2390.....W8UMR | 2018.....HA9PP | 1697.....Z35M | 1472..OK1DWC | 803.....VE3NQQ |
| 4111.....F2YT | 3489..SM3EVR | 3121..PA0SNG | 2650.....9A4W | 2369..JN3SAC | 2005.....VE6BF | 1674.....YB0AI | 1369..KW5USA | 738.....AK6I |
| 4014.....9A2NA | 3465.....N5JR | 3082.....IK2ILH | 2642.....W9IL | 2340.....K5UR | 1976.....DJ1YH | 1587.....W2EZ | 1226..EA2BNU | 735.....K5IC |
| 3960.....N4NO | 3323..I2MQP | 3011.....W2WC | 2550.....W7OM | 2287..OZ1ACB | 1958..CT1EEB | 1561.....N1KC | 1220..K6UXO | 710.....K0CF |
| 3822..VE3XN | 3291.....KF2O | 2987.....HA0IT | 2531.....W9OP | 2212..PY2DBU | 1837.....AA1KS | 1535.....A16Z | 1130..PY1NEW | 697.....KL7FAP |
| 3816.....I2PJA | 3281.....S53EO | | | | | | | |

SSB

| | | | | | | | | |
|----------------|----------------|----------------|-----------------|----------------|-----------------|----------------|---------------|---------------|
| 4509.....I0ZV | 3221.....OZ5EV | 2782.....KF2O | 2350.....IN3QCI | 1969..CT1EEB | 1806.....K3IXD | 1538.....VE9FX | 1218.....WT3W | 990.....HA9PP |
| 4027.....ZL3NS | 3211.....9A2NA | 2741..PA0SNG | 2325.....CX6BZ | 1954..CT1EEN | 1721..DK5WO | 1533.....KI7AO | 1194.....N1KC | 903.....N9DI |
| 4018.....VE1YX | 3145.....I2MQP | 2734.....4X6DK | 2289.....HA0IT | 1942.....W7OM | 1704.....IT9SVJ | 1520.....DF7HX | 1190.....K4CN | 903.....LX1A |
| 3793.....I2PJA | 3101.....N4NO | 2646..LU8ESU | 2259.....K5RPC | 1937.....I8LEL | 1698.....W6OUL | 1460.....NG9L | 1162..EA5DCL | 822.....K1BYE |
| 3649.....F6DZU | 3049.....F2VX | 2594.....I8KCI | 2143.....W2WC | 1933.....W9IL | 1670.....K8MDU | 1385..JN3SAC | 1148.....AG4W | 812.....KU6J |
| 3353..EA8AKN | 3000.....I4CSP | 2516.....EA1JG | 2094.....LU5DK | 1893.....NQ3A | 1669.....W2FKF | 1384..LU3HBO | 1082..VE7SMP | 793.....KU4BP |
| 3260.....CT4NH | 2990..CT1AHU | 2513.....KF7RU | 2021.....N6FX | 1864.....K2XF | 1562.....W2ME | 1259.....I2EAY | 1078..EA3KB | 776.....YB0AI |
| 3234.....N4MM | 2885.....N5JR | 2509.....EA5AT | 1994.....W4UW | 1862.....EA7TV | 1562..SV3QOR | 1238.....LU4DA | 1048..EA3EQT | 733.....AK6I |
| 3226.....EA2IA | 2817.....I2EOW | 2388..OE2EGL | 1988.....K5UR | 1839.....I3ZSX | | | | |

CW

| | | | | | | | | |
|----------------|----------------|----------------|----------------|----------------|----------------|---------------|----------------|---------------|
| 4297..WA2HZR | 2948.....LZ1XL | 2362.....KA7T | 2040..JN3SAC | 1867.....VE6BF | 1718.....I2EAY | 1430..EA2CIN | 1203.....K6UXO | 953.....PY4WS |
| 3532.....N4NO | 2831.....9A2NA | 2260.....I7PXV | 1898.....K5UR | 1847..IK3GER | 1662..I2MQP | 1342.....WO3Z | 1158.....YU1TR | 898.....WT3W |
| 3476.....K9QVB | 2476.....W2WC | 2149.....K9UQN | 1893.....EA5YU | 1841.....W6OUL | 1531..I2EOW | 1337.....AC5K | 1106..WA2VQV | 767.....VE9FX |
| 3361.....VE7DP | 2386..EA7AZA | 2146.....N6FX | 1882.....W7OM | 1834.....W9IL | 1520..4X6DK | 1235.....A16Z | 998.....T94GB | 642.....PP6CW |
| 3229.....EA2IA | 2380.....KF2O | 2112.....OZ5UR | | | | | | |

new ones in the last five years without the "gimmicks"? Probably not.

What's my point? I just wonder what kind of role models we are presenting to potential DXers. Who was your role

model (Elmer) when you started DXing? You DXers who have been around for 30 or more years, think about what you saw and heard and were told by DXers back then. Have things changed so

much that today we can't relate to the principles we were taught back then? Are we becoming so much like the "NOW" generation that we disregard what we learned and should be pass-

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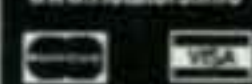
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ing on to the current generation of DXers? What will they pass on to the generations to follow?

Do we want future DXers to be "John Waynes," or would you want them to be like what we see and hear on some of the cable TV channels, or even the Super Bowl half-time show? I believe we need more John Waynes.

Reminders . . .

There has been a change in the position of CQ's Worked All Zones Award Manager. Floyd Gerald, N5FG, became the WAZ Award Manager effective January 1, 2004. As of February 1, 2004, applications/cards should be sent to Floyd at 17 Green Hollow Rd., Wiggins, MS 39577-8318 (e-mail: n5fg@cq-amateur-radio.com).

The International DX Convention will be held April 23-25 at the Holiday Inn and Conference Center in Visalia, California. This will be the 55th year for this event, this year sponsored by the Southern California DX Club, along with the support of the San Diego and Western Arizona DX Clubs. For details, go to <http://www.scdxc.org/visalia/>.

Also, don't forget the Dayton Ham-



William, N2WB, enjoyed a cool one while Bill, W4WX, did the operating from San Andres Island (HK0) last fall. (Photo courtesy of William, N2WB)

vention® is coming up May 14-16. I will not be there this year. After nine straight years I'm taking a break.

Hopefully, by next time we'll have some DXpedition reports from a number of operations that are scheduled to take place in February, March, and April. Until then, enjoy the chase and have fun!
 73, Carl, N4AA

QSL Information

| | | |
|----------------------|----------------------|-----------------------|
| 0A/HK3JJH via HK3JJH | 5R8O via G3SWH | 9H5VJ via DL8YR |
| 0M/HK3JJH via HK3JJH | 5T5AFF via JA1AFF | 9K2EP via SM5DJZ |
| 3B8/N6ZZ via N6ZZ | 5T5BC via K4PHE | 9K2GS via W6YJ |
| 3C0BC via K4PHE | 5T5CPS via JA1CPS | 9M0C via G3SWH |
| 3C1BC via K4PHE | 5T5GDR via JR1GDR | 9M0SEA via E21EIC |
| 3C1YL via N4NX | 5T5HC via JA0HC | 9M2/JI1ETU via JI1ETU |
| 3C5A via N6ZZ | 5T5MH via N4NX | 9M6PWT via G3SWH |
| 3C5Z via N6ZZ | 5T5PBV via JA1PBV | 9N1BFI via VK6NE |
| 3D2AD via YT1AD | 5T5SA via IK2GES | 9N1BV via JA1PBV |
| 3D2RK via W7TSQ | 5T5TY via JA1TY | 9N1NE via VK6NE |
| 3D2SQ via W7TSQ | 5T5XX via DL8YR | 9V0A via 9V1DX |
| 3D2YU via YZ1AU | 5X/WB4ZNH via K4PHE | 9Y4/LA4LN via LA4LN |
| 3W2FM via UA0FM | 5Z4LI via G3SWH | 9Y4/N4ZDL via N4ZDL |
| 3W5FM via UA0FM | 5Z4WI via G3SWH | A22FV via IN3ZNR |
| 3XY1L/P via UY5XE | 6K0HG via DS2CYI | A22NR via IN3ZNR |
| 3Z2D via SP2DNI | 6K17HG via DS2CYI | A25FV via IN3ZNR |
| 4L1UN via RW6HS | 6Y0/AA4V via AA4V | A35RE via HA8IB |
| 4S7/N6ZZ via N6ZZ | 6Y5/AA4V via AA4V | A35RK via W7TSQ |
| 4S7WHG via G3SWH | 6Y5/WB4SJJG via AA4V | A35SQ via W7TSQ |
| 4S7WHG/A via G3SWH | 7P8NR via IN3ZNR | A4/K3LP via W3UR |
| 4W2AQ via OM2AQ | 7Q7RS via IW9BBX | A4/KE3Q via W3UR |
| 4W3M via DL8YR | 7Q7TT via N6ZZ | A4XJO via W3UR |
| 5B4/F6BEE via F6BEE | 7X2ARA via DF4SA | A52CQ via S57DX |
| 5B4/F6FTN via F6BEE | 8P6JV via W9VA | A52PRO via W4PRO |
| 5H1/G3SWH via G3SWH | 8P9AP via K2WE | A7/G0MKT via NM7H |
| 5H3/G3SWH via G3SWH | 8P9CR via LA4LN | AH6PN/HR6 via W7TSQ |
| 5H3AA via EK6DO | 8P9CS via LA4LN | AP2ARS via JA1PBV |
| 5H3RK via W3/VK4VB | 8Q7TV via F6BEE | AX3ITU via VK3ER |
| 5H3WCY via SM5DJZ | 8Q7WH via G3SWH | B4RF via BA4RF |
| 5H9KR via KF9TC | 8Q7ZZ via G3SWH | BW4/UA3VCS via UA3VCS |
| 5R8FL via G3SWH | 9E41TA via N4NX | BY1QH/G3SWH via G3SWH |
| 5R8FT via G3SWH | 9ER1TB via K4PHE | |
| 5R8FU via SM5DJZ | 9G5ZZ via DL1CW | |
| 5R8FV via G3SWH | 9H3CL via DJ5CL | |
| 5R8GO via G3SWH | 9H3RR via DJ5CL | |
| 5R8GZ via G3SWH | 9H3VE via DL2DVE | |
| 5R8HA via G3SWH | 9H3VJ via DL8YR | |
| 5R8HA/P via G3SWH | 9H3YA via DJ5CL | |

(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.)

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Soldiers, Lighthouses, and Counties

This month we begin the column with a biographical sketch from Thierry, F6CUK, USA-CA All Counties #1083, November 18, 2003. Thierry also has earned CQ's 5 Band Worked All Zones and the ARRL's 5 Band Worked All States awards.



Thierry Mazel, F6CUK, USA-CA All Counties #1083, November 18, 2003.

Thierry Mazel, F6CUK USA-CA All Counties #1083

I am 46 years old, married with three children. I got my French license in 1973 when I was 16. In 1977 and '78 I was, with some friends, FG0DXS/FS from Saint Barthelemy. In 1979 I was FK8KAA from New Caledonia. Since then I have activated some special call-signs from France.

As with many hams, I have used several stations, but today my transceiver is a Ten-Tec Omni VI with a KT34A antenna at 20 meters. I live in the country with nothing 360° around. In addition, for some contests I also use a two-element beam antenna for the 40-meter band. For 80 meters I have a dipole. I also have a two-element delta loop at 30 meters that has helped me to contact my last zones or U.S. states.

After having completed my 5BWAZ and 5BWAS awards, my friend Max, F6AXP, said, "Now you have to hunt for the USA-CA diploma!" Then the adventure started. . . .

At first I thought that with the hundreds of U.S. QSLs I had I could already be in possession of about 2000 counties! But I was surprised to only have reached less than 500 of them. I rapidly found that the U.S. Mobile Net was on 14336, and my first QSO on that net took place on February 25, 1998. More than five years were necessary to get all 3077 counties confirmed.

My last counties were contacted on August 9 and 10, 2003 with W0GXQ/M from Mercer and McIntosh counties in North Dakota, and on September 17 and 20, 2003 with KD8HA/M from Banner and Franklin in Nebraska. The final one, on September 26, was with WG6X/M, who drove from Florida to Tennessee to allow me to contact Cannon County. Many thanks, Ray; that was super!

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

USA-CA Special Honor Roll

Brian J. Reid, KG4CRJ
USA-CA All Counties #1086
January 16, 2004

USA-CA Honor Roll

| 500 | 1500 | 2500 |
|----------------|----------------|----------------|
| OK1AU.....3284 | KB8UUZ...1379 | AF3X.....1196 |
| K7ZYV.....3285 | KG4CRJ...1380 | AA4UT.....1197 |
| KG4CRJ...3286 | | KG4CRJ...1198 |
| | 2000 | 3000 |
| 1000 | AF3X.....1276 | KG4CRJ...1107 |
| KG4CRJ...1650 | AA4UT.....1277 | |
| | KG4CRJ...1278 | |

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.

I had a lot of fun contacting all those mobile stations on the net. I found there is a rare friendship that is for me the real "Ham Spirit." I would like to express my thanks to everybody who helped me reach my goal. Thanks to my friends from Puy-de-Dome for their help and advice; to my family, who was very patient when I was late for meals; and to my XYL, who had to wait for me in the evenings or put off visits because of some skeds! A thought also of KF4BY, who during all those years mailed my U.S. QSL, sent me the Post Office Directory, the road atlas, and so on. . . . Stan, your help was very precious.

Thanks too to all the mobile stations and the net controls. How do I express my gratitude to those who drove several hundreds of miles only for my pleasure? For most of the French stations working Montana, Idaho, North Dakota is real DX. Then what to say when you have to work all the counties of those states? That was only possible with the help of those mobile stations. A big thanks also to net controls KZ2P, AD1C, and the others who regularly activate the net to allow the foreign countries to make the QSOs. Everybody, your work is super! A big thanks to all of you.
—73, Thierry, F6CUK

Short Term Award

The 2004 International Marconi Day Certificate once again will be made available for the 24-hour period beginning at 0000Z April 24th, Marconi's birth date. The award requires that you contact at least 15 different commemorative stations, HF only, using all modes. During this period there are usually several dozen high-profile authorized stations representing former Marconi operating locations. The certificates are of a very high quality and are well worth obtaining to display on the wall of any shack. They are based on an original Marconi stock certificate circa 1901. A signed log accompanied by

an award fee of \$US10, 4 Euros, or 12 IRCs should be sent to: IMD Awards Manager, Cornish Amateur Radio Club, P.O. Box 100, Truro, Cornwall, TR1 1XP England. The official website—which contains full details of planned operations, valid callsigns, and other interesting Marconi information—is <<http://www.gb4imd.co.uk/imdaward.htm>>.

DX Awards

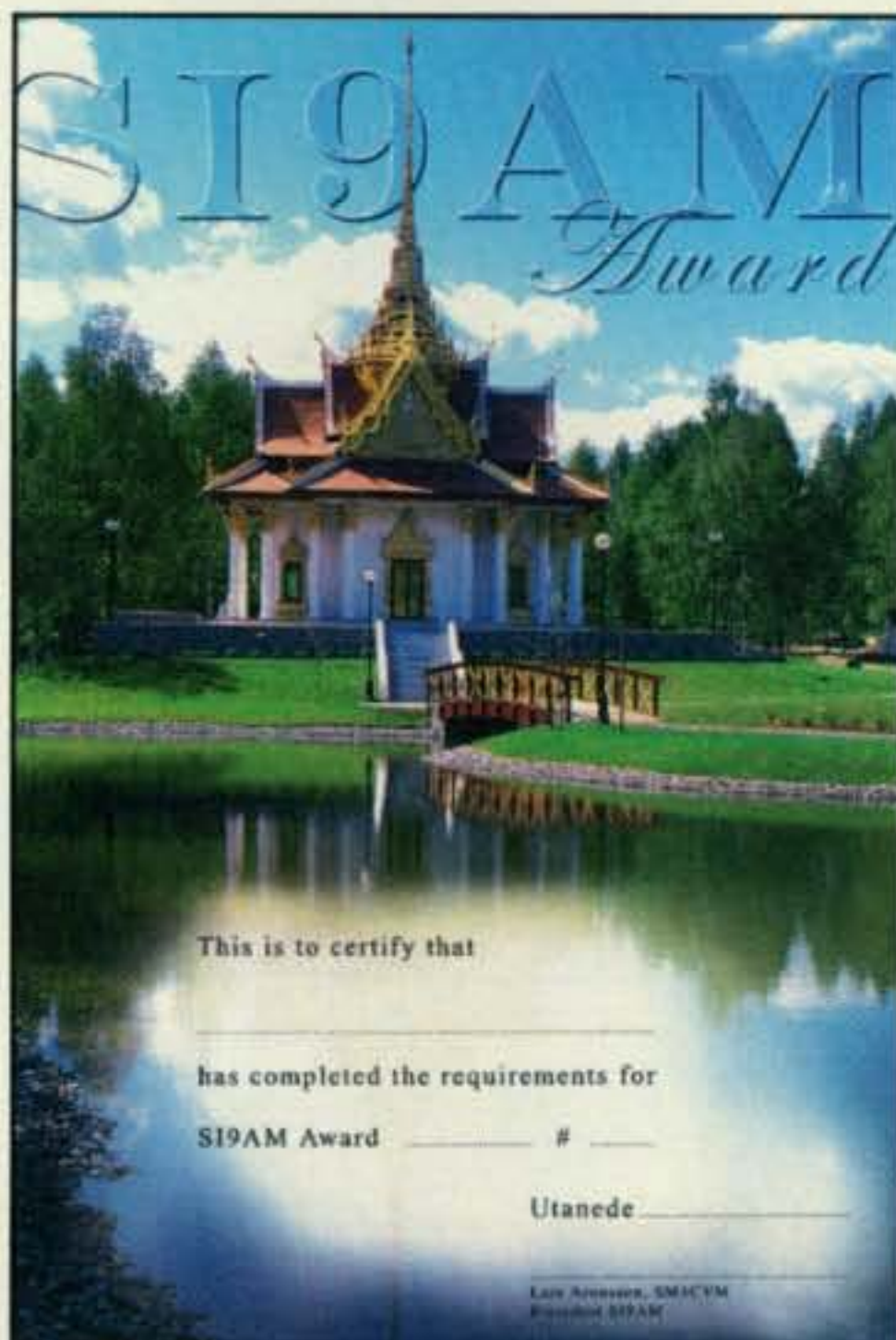
Austrian Military Radio Society (AMRS) Award. The AMRS award is a handsome certificate complete with representations of a wax seal, a multi-colored ribbon, and antique lettering, all on paper stock that imitates old parchment. In other words, it's a beauty!



The Austrian Military Radio Society Award is issued for contacting members of the society. Most members are either active or retired military personnel.

Austrians need to earn 30 points (all others 20) by contacting members of the AMRS on or after 1 January 1961. Most of the members are either active or retired military personnel. Each member may be worked only once, but if the member is worked in a different location, then each contact will be worth one or more points, depending on the location. Point values are as follows:

- Each member contact = 1 point.
- Each AMRS club station = 2 points. (These have an "X," such as in OE1XRC).
- AMRS stations abroad either on military duty in 5B4, YK, YU8, or even on vacation = 3 points. (For example,



Sweden's SI9AM Award. Contacts with SI9AM on at least two different bands and modes on or after 19 July 2000 count for this award.

OE8HFL at home in Austria = 1 point, but OE8HFL/5B4 = 3 points).

SWL okay. All bands and modes may be used. The award can be endorsed

for single or mixed modes. The sponsor reserves the right to request one or more cards. Send GCR list and fee of 8 Euros or \$US8 (no IRCs accepted) to Karl Seemann OE011-0367, Gussriegelstrasse 45, A-1100 Vienna, Austria (website: <<http://www.amrs.at>>).

Sweden's SI9AM Award. The "SI" prefix belongs to Sweden, yet this Swedish award has a beautiful full color picture of a Siamese temple surrounded by a northern European forest. You may read all about the connection between Sweden and the Thai King Chulalongkorn Memorial Amateur Radio Society at the SI9AM website: <<http://www.qsl.net/si9am>>.

Contacts with SI9AM on at least two different bands and modes on or after 19 July 2000 count for the award. Use of repeaters is okay. SWL okay. Classes of the award are as follows:

Mixed—EU stations need five contacts (at least two CW and two SSB); others need three contacts (at least one CW and one SSB).

CW—EU five contacts; others three contacts.

SSB—EU five contacts; others three.

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Work any five Chesapeake Bay lighthouses to earn the Chesapeake Bay Lighthouse Award sponsored by The Chesapeake Chapter of the Amateur Radio Lighthouse Society (ARLHS).

Send GCR list and fee of 10 Euros or equivalent in \$US to: Award Manager SI9AM, Lars Aronsson, SM3CVM, Lillfjällsvagen 62, S-831 71 Ostersund, Sweden.

U.S. Awards

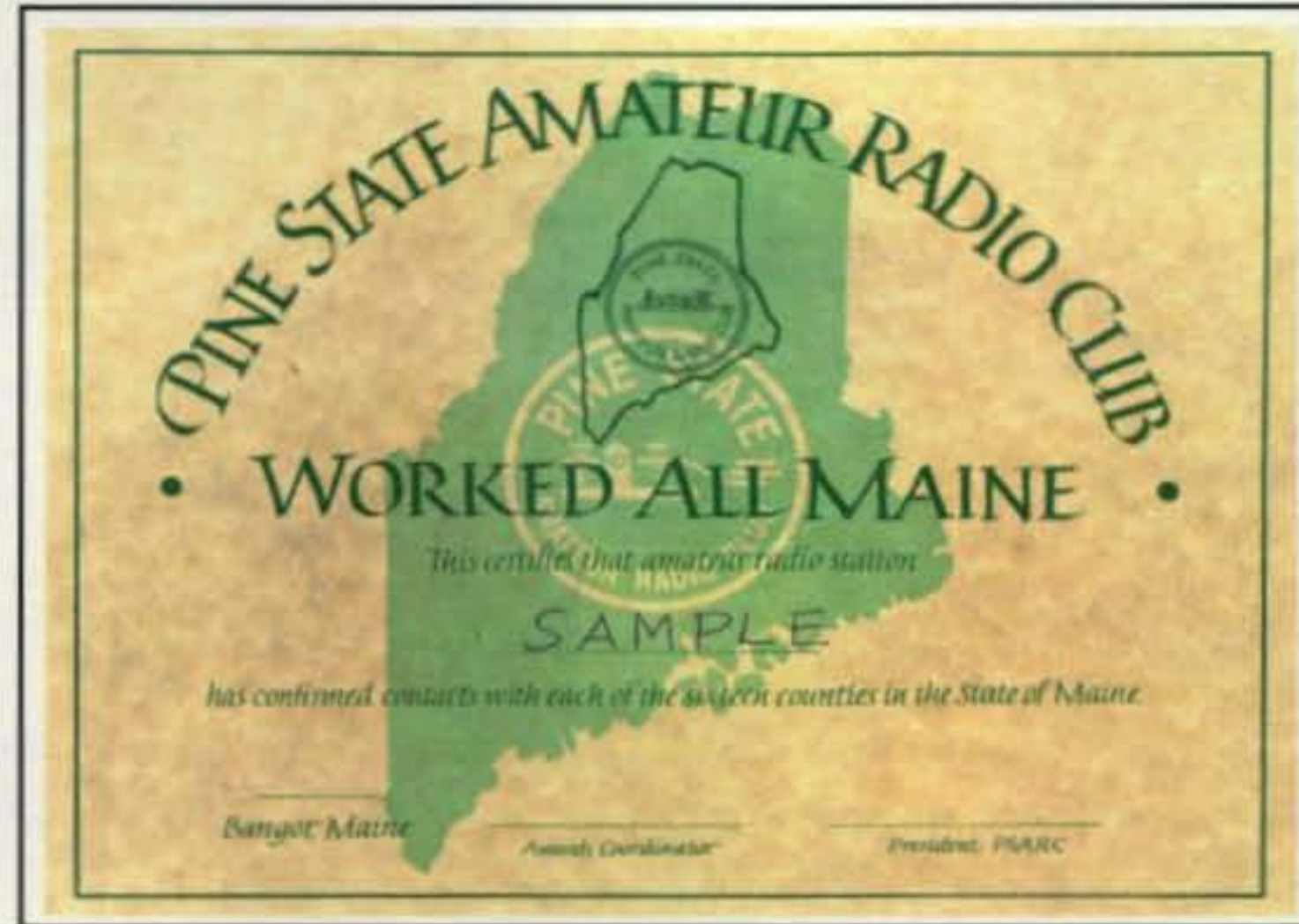
Chesapeake Bay Lighthouse Award. Chesapeake Bay has been an important link to the Atlantic Ocean from the earliest colonization of the United States to the present. Lighthouses were established in the bay to assist in safe navigation for much of that time. The Chesapeake Chapter of the Amateur Radio Lighthouse Society (ARLHS) sponsors this award. Work any five Chesapeake Bay Lighthouses. Submit log (QSLs not needed), including call and location of the lighthouse or lightship worked, the official ARLHS registration number (such as ARLHS USA-455), along with date and time of QSO.

The award is available for amateurs and SWLs, all bands and modes. The operating station may be counted if it is located within visual sight of the lighthouse. It does *not* have to be physically located on the lighthouse property. To count as a Chesapeake Bay lighthouse, stations may be located aboard vessels anchored in the vicinity of the lighthouse or lightship.

Fee for the certificate is \$US2 (free for stations outside of the U.S.). Send log and SASE (9 × 12 for flat certificate) to Jim Weidner, K2JXW, P.O. Box 2178, Riverton, NJ 08077. The list of eligible lighthouses is available for an SASE or on the internet at <<http://arlhs.com/cb-award.html>>.

Worked All Maine Award. Maine has 16 counties, the largest number of counties in any of the New England states. It's a popular vacation spot, and the counties are often put on the air during the summer months. The March New England QSO Party is also a good time to look for Maine counties.

Sponsored by the Pine State ARC, the award is available to any amateur who works all 16 Maine counties on or after 1 January 1993. No use of repeaters. An official application is required and is available either on the club's website or directly from the sponsor for an SASE. Band or mode endorsements are available upon request. Send GCR list and fee of \$US5 to: Pine State Amateur Radio Club, WAM Awards Manager, 14 Bomarc Road, Bangor, Maine 04401; <<http://www.qsl.net/n1me/wam.htm>>.



Sponsored by the Pine State ARC, this award is available to any amateur who works all 16 Maine counties.



Submit proof of working all 77 Oklahoma counties to earn the Worked All Oklahoma certificate.

Worked All Oklahoma Certificate. Oklahoma contains a few more counties than Maine—about 61 more, to be exact. This will be a challenge, since there are many counties that do not have Interstate roads passing through them. The Oklahoma DX Association sponsors this one, and single-digit certificate numbers are still available.

Submit proof of working all 77 Oklahoma counties. No use of repeaters, satellites, or relays of any type. All bands okay. Unless otherwise indicated, the QTH printed on the card will determine county identity. You may mail all 77 cards or mail a GCR list to the sponsor (a single signature of any certified ARRL card checker or Section Manager will be accepted). Fee for the award is \$US5 (no IRCs). Apply to: Bruce Burnette, K5PX, 7 Spring Creek Lane, Broken Arrow, OK 74014.

URL of the Month

The Radio Club of Argentina offers a large selection of awards, including its own versions of DXCC and WAC. The website is located at <<http://www.lu4aa.org/>>. The text is in Spanish, but is easily translated by Google or other internet translation services.

I'm still looking for new and interesting awards sponsored by clubs. CQ magazine can provide excellent publicity for your wallpaper. 73, Ted, K1BV



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| SS-25 | 20 | 25 | 2 1/4 x 7 x 9 1/2 | 4.2 |
| SS-30 | 25 | 30 | 3 1/2 x 7 x 9 1/2 | 5.0 |



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| MODEL | CONT. (Amps) | ICS | SIZE (inches) | Wt.(lbs.) |
|---------|--------------|-----|-------------------|-----------|
| SS-25M* | 20 | 25 | 2 1/4 x 7 x 9 1/2 | 4.2 |
| SS-30M* | 25 | 30 | 3 1/2 x 7 x 9 1/2 | 5.0 |



MODEL SRM-30

RACKMOUNT SWITCHING POWER SUPPLIES

| MODEL | CONT. (Amps) | ICS | SIZE (inches) | Wt.(lbs.) |
|--------|--------------|-----|--------------------|-----------|
| SRM-25 | 20 | 25 | 3 1/2 x 19 x 9 1/2 | 6.5 |
| SRM-30 | 25 | 30 | 3 1/2 x 19 x 9 1/2 | 7.0 |

WITH SEPARATE VOLT & AMP METERS

| MODEL | CONT. (Amps) | ICS | SIZE (inches) | Wt.(lbs.) |
|---------|--------------|-----|--------------------|-----------|
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| SRM-25-2 | 20 | 25 | 3 1/2 x 19 x 9 1/2 | 10.5 |
| SRM-30-2 | 25 | 30 | 3 1/2 x 19 x 9 1/2 | 11.0 |

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| MODEL | CONT. (Amps) | ICS | SIZE (inches) | Wt.(lbs.) |
|-----------|--------------|-----|--------------------|-----------|
| SRM-25M-2 | 20 | 25 | 3 1/2 x 19 x 9 1/2 | 10.5 |
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- KENWOOD TK760H, 762H
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- SS-18GX
- SS-12EFJ
- SS-18EFJ
- SS-10-EFJ-98, SS-12-EFJ-98, SS-18-EFJ-98
- SS-12MC
- SS-10MG, SS-12MG
- SS-101F, SS-121F
- SS-10TK
- SS-12TK OR SS-18TK
- SS-10SM/GTX
- SS-10SM/GTX, SS-12SM/GTX, SS-18SM/GTX
- SS-10RA
- SS-12RA
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- SS-10V, SS-12V, SS-18V

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Breaking Contest News and An Old Favorite

April's Contest Tip

Remember that the "S" in S&P stands for Search, not Stay. Pounce ("P") when you know it's fresh meat. Otherwise, keep searching. Your rate depends on your ability to find stations you can work, not on your ability to force other stations to identify. If the lack of an identifying call sign bothers you, remember to worry about how well *you* operate, not the other guy. Remember, too, that the game is won by those who can focus, focus, focus! (TNX Kelly, VE4XT).

This month we feature some breaking news that will affect all contest operators. As you probably know, various concerns have been raised about the impact of ham radio on our health. For the first time, it appears that some genuine evidence finally has been revealed in the following press release:

NIH Warns of New Mental Health Concern

Sun Spot Affective Disorder [SSAD]

Affects Amateur Radio Operators Worldwide

Bethesda, MD, April 1, 2004: On the heels of the second consecutive day in which no sunspots were observed on the sun, the National Institutes of Health, located here in Bethesda, MD, today issued a Level 2 mental health warning.

"Sun Spot Affective Disorder, or SSAD, is again on the rise in the U.S. and throughout the world," said Sunny Black, director of astro-emotional policy for NIH. "Every eleven years or so, this thing really gets out of control. We're hearing some pretty disturbing reports right now. As a result, we've decided to post this Level 2 warning."

SSAD is an Axis 1 Mood Disorder under DSM-IV, the system used by psychiatric professionals to identify and classify mental health conditions. Driven by actual sunspot numbers, the disorder manifests itself in the form of dramatic mood shifts and associated changes in behavior. Low sunspot numbers frequently are associated with increases in depression, anxiety, and aggressive behaviors, while high sunspot numbers are often accompanied by feelings of euphoria and elation.

Most susceptible to SSAD are those whose daily lives are influenced by sunspot activity. Among them are members of the Amateur Radio Service—ham radio operators. While the average ham may feel mild effects of SSAD, it appears that one particular group of radio operators is much more susceptible to the condition. Amateur radio contesters, those who compete in national and worldwide competitive events, are at a high risk for SSAD.

"Just two months ago, we were seeing SSN [sunspot numbers] around 60 or 70, and the effects were incredible. I could generate a pile-up anywhere

*2 Mitchell Pond Road, Windham, NH 03087
e-mail: <K1AR@contesting.com>

Calendar of Events

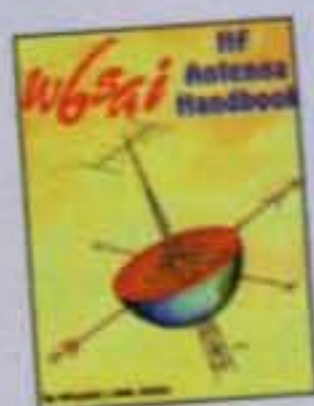
| | |
|------------|---------------------------------|
| Mar. 27–28 | CQ WW SSB WPX Contest |
| Mar. 27–28 | Oklahoma QSO Party |
| Apr. 3–4 | SP DX Contest |
| Apr. 3–4 | EA RTTY Contest |
| Apr. 3–4 | Missouri QSO Party |
| Apr. 10–11 | Japan Int'l DX Contest |
| Apr. 10–11 | Georgia QSO Party |
| Apr. 17 | Holyland DX Contest |
| Apr. 17–18 | GACW CW DX Contest |
| Apr. 17–18 | YU DX Contest |
| Apr. 17–18 | Michigan QSO Party |
| Apr. 17–18 | Ontario QSO Party |
| Apr. 24–25 | SP RTTY DX Contest |
| Apr. 24–25 | Helvetia Contest |
| Apr. 24–25 | Florida QSO Party |
| May 1–2 | MARAC County Hunters CW Contest |
| May 1–2 | Indiana QSO Party |
| May 1–2 | ARI Int'l DX Contest |
| May 1–2 | New England QSO Party |
| May 8–9 | CQ-M Int'l DX Contest |
| May 29–30 | Great Lakes QSO Party |
| May 29–30 | CQ WW CW WPX Contest |

I tuned the dial. Ten meters was awesome," said one contester who wished to remain anonymous. "However, conditions today are much different. With the MUF [maximum usable frequency] at 7.5 MHz, I'm having serious problems keeping my ± 2 -kHz frequency slot clear on 40 meters. I thought I had asked the guys to QSY politely, but just this evening I received four e-mail messages from other contesters threatening my life!"

A renowned contester and frequent commenter, said, "While today's Zero-Count is having its effects on the world's contesting population, we definitely have not seen the worst yet. CW Sprint participants, for example, should not expose themselves to 20 meters unless specifically asked to move there by others. Longer term, I'm really worried about what will happen in the months ahead. It is now only 82 days, 13 hours, and 19 minutes until the Florida QSO Party [FQP]. Imagine the frequency fights that will break out if this turns into a 160-meter-only event!"

Contesters and contest sponsors should prepare for the possibility of a widespread SSAD outbreak. Participants in the May running of the CQ WW WPX Contest, a warm-up event for the 2005 FQP, will be subjecting themselves to strong SSAD stimuli. Participants in all categories should take steps to counteract SSAD before it happens. Investments in large arrays for 40, 80, and 160 meters are advised. Single-band entrants considering 15 or 10 meters should include a licensed mental-health professional on their support teams. With the expectation that multiplier counts may drop to all-time lows, sponsors will be deploying expanded security forces to monitor for overly aggressive pile-up behavior. Amateur radio attorney Fred Hopen-garten, K1VR, will soon announce that the person-

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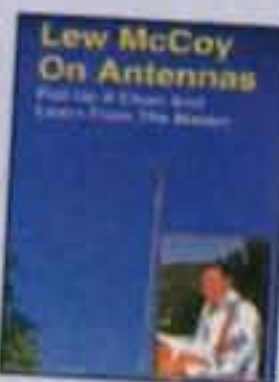


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al-injury side of his practice will be expanded to include resolution of disputes emanating from contest events.

In a related story, the Cabrillo standard log format is being modified to require a new field—Operator Heart Rate. Ken Wolff, K1EA, inventor of the personal computer and primary user of the internet, commented, "This is not a problem for CT. Heart Rate is a hidden feature already supported in the software. We had to do that for some of the more stressful multi-op environments. We're compatible with all the current EKG machines. We want to do whatever we can to help fight SSAD."

Further information on SSAD is available at SSAD.org, and current sunspot activity can be monitored at <http://sidc.oma.be/index.php3>.

Founded in 1887, today the National Institutes of Health is one of the world's foremost medical research centers, and the federal focal point for medical research in the United States. The NIH, comprising 27 separate institutes and centers, is one of eight health agencies of the Public Health Service, which, in turn, is part of the U.S. Department of Health and Human Services.

Announcing:

The 50th Annual Poisson d'Avril Contest 0000-1954Z April 1, 2004

One of contesting's most beloved operating events is back, the Poisson d'Avril Contest. "After taking a backseat in recent years to the Florida QSO Party held later in the month, the opportunity to celebrate the 50th anniversary of this high-profile contest was just too hard to ignore," said perennial winner, Doug Grant, K1DG. For the small number of you who are not familiar with the rules, I've been given permission by the staff at CQ to print them in their entirety—rules that the contest committee views more as broad guidelines for how to run your life and other important matters. In any event, be sure to pay careful attention to the details, as they are prone to some modifications from year to year as they reflect the latest innovations in contesting.

I. Objective: For amateurs around the world to have fun trying to contact other amateurs, fishing vessels on 40 SSB, and truck drivers on the low end of 10 meters around the world and elsewhere.

II. Bands/Modes: All bands, all modes. HF, VHF, UHF, WARC, 60 meters ("channel 3" only), 11 meters, light, telepathy. Work it if you got it. If you don't see a band or mode you like, go ahead and use it anyway; we're flexible.

III. Type of Competition (choose at least one):

Single Operator Categories: Single band, all band, or The Band. High, medium, low, QRP, or no power categories (actually, you can run as much power as you want, since we have no way of checking). Single Operator stations are those where one person performs all of the operating, logging, spotting, station-building, cooking, cleaning, and sanitation functions. The use of DX alerting assistance of all kinds is encouraged. Self-spotting is permitted, but the operator must use a fake callsign or bogus IP address when spotting himself. For examples of this technique, refer to all other recent major contests.

Multi-Operator Categories (all band operation only):

1. Single Transmitter (MS): Only one transmitter and one band permitted. Single. One. Uno. No 10-minute rule. No exceptions. No kidding. One transmitter, several ops take turns. Multi-single stations found to possess a second transmitter on-site will forfeit that transmitter to the Poisson d'Avril Contest Committee.

2. Three Transmitter (M3): Three shall be the counting of the transmitters in this category, and the counting of the transmitters in this category shall be three. Neither shalt thou count

two, unless it is followed by three. All three transmitters may work any and all stations, except each other. Duh.

3. Multi-Transmitter (MM): No limit to transmitters, amplifiers, antennas, whatever. If you've got it, flaunt it. Show the world what kind of ham you are, big spender!

Rover Category (new this year!): The growing popularity of the Rover category in the VHF/UHF events, and mobile operations in state QSO parties, has motivated us to try it in this all-band contest. Rover stations are allowed to change location and start over again from the new location, which must be at least six furlongs and a Smoot from the previous location. All locations must be verified with a GPS receiver, which must be submitted with your entry. The committee has always wanted to get one of those. Also, we expect Rovers to work lots of different stations, not just the same stations over and over. No captive rovers allowed here. QSOs with the Mars Rovers count for credit.

IV. Exchange: None of this 599001 stuff for us. No sirree. In an effort to increase the literacy level of amateurs, the exchange for each station's first QSO will be a randomly chosen line from any well-known poem. The next QSO will include the next line of the poem from the previously received exchange, and so on. Limericks are only permitted if they are clean. The FCC is listening and so is poet James Whitcomb Riley (or is it Riley Hollingsworth? We can never keep that one straight).

V. Multipliers: Think about that word for a moment . . . "multi," meaning "many," and "pliers," a type of tool. Make sure you submit your multi-pliers to the committee with your log, since we have lost ours. One minute they were on the workbench, then—poof—gone! The committee prefers Vise-Grip™ brand locking pliers, in a range of sizes.

VI. Points:

1. Contacts between licensed stations are worth pi (3.14159) points.

2. Contacts between licensed and unlicensed stations count e (2.71828) points.

3. Contacts between unlicensed stations have no points.

VII. Scoring: All stations—the final score is the result of the total QSO points multiplied by the multipliers. Since you have a log, you must compute your score by adding the logs of the QSO points and multipliers. A slide rule will automate the process. It's a lost skill, but something we must preserve for future generations, like sending CW with a bug.

VIII. Awards: First-place certificates will be e-mailed to entrants in each category listed under Sec. III in every participating country and species. Make sure you include your e-mail address with your entry so we can sell it to Nigerian spammers. We can get you a great deal on various medications for this and that (if you know what we mean). Now there's an award.

IX. Trophies and Plaques: Check eBay for the latest listing of available trophies and plaques. There's lots of 'em. Pick one you like, and happy bidding.

XI. Log Instructions: You may submit your score electronically in various ways: e-mail, SMS, web. Yes, you can submit your log and claimed score to the 3830 web page. *Please do not use the Cabrillo format for your log!* It makes life too easy for the committee when all logs arrive in a consistent format. Make us work for the glory (and overtime pay). Also, please name your file something like PDA2004.log, since nobody else would think to use the same file name. Paper logs are not permitted. Save a tree. *Bad QSO penalty:* Three (3) additional contacts removed unless they are with a committee member.

XII. Disqualification: Violation of amateur radio regulations in the country of the contestant, or the rules of the con-

test; unsportsmanlike conduct; taking credit for excessive unverifiable QSOs or unverifiable multipliers; or irritating the committee in any way whatsoever will be deemed sufficient cause for disqualification. An entrant whose log is deemed by the Contest Committee to contain a large number of discrepancies may be disqualified from eligibility for an award, both as a participant operator or station, for one year and will go to bed with no dinner. If an operator is disqualified a second time within five years, he/she will be ineligible for any CQ contest awards for three years and be banned from the Dayton Contest Dinner. The use by an entrant of any non-amateur means such as telephones, telegrams, internet, or the use of packet to solicit contacts during the contest is, well, part of the game these days, and even though we don't like it, that's life. Go ahead. Let it rip. Everybody does it. Actions and decisions of the Contest Committee are arbitrary and inauspicious.

XIII. Deadline:

1. All entries must be time-stamped *no later* than the day before you read this.

2. An extension of up to one month may be given if requested by e-mail or mental telepathy. The granted extension must be for a legitimate reason, the request must be received before the mailing deadline, and the committee must think it is funny. Logs must be sent to <dash.dot@dotdash.com>.

Final Comments

Sometimes a contest column needs to provide advice on operating techniques or commentary on the latest controversy. This month there was just too much real news that affects us all and simply could not be ignored.

Until next month... 73, John, K1AR

2002 CQ WW WPX SSB Contest Errata

The following are additions/corrections to the 2002 CQ WW WPX SSB Contest Results published in the January issue of CQ:

KE1LI (All Band, High Power) should have been listed as KE1LI (W1EQ op.).

W1NT was omitted from the results: All Band, 1,046,892 points, 952 QSOs, 484 prefixes. He was 4th in the W1 call area and 10th in the Tribander/Single Element class.

K4ZA (All Band, High Power) should have been listed as KZ4AA (K4ZA op.).

W6AFA was listed in the All Band category. He actually operated on 21 MHz and finished #1 in W6 and #4 in the U.S. on 21.

VE3DZ and VE3NE were listed in the wrong category (Canada, 1.8 MHz, Low Power). They should have been listed in the All Band, Low Power category.

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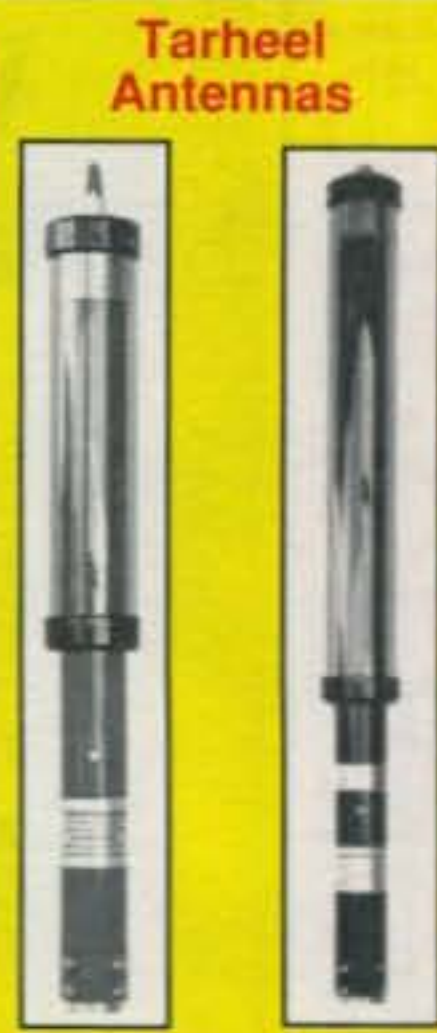


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Will April Showers Bring DX?

A Quick Look at Current Cycle 23 Conditions

(Data is rounded to nearest whole number)

Sunspots

Observed Monthly, January 2004: 37
Twelve-month smoothed, July 2003: 62

10.7 cm Flux

Observed Monthly, January 2004: 114
Twelve-month smoothed, July 2003: 130

Ap Index

Observed Monthly, January 2004: 20
Twelve-month smoothed, July 2003: 22

As we move into spring in the Northern Hemisphere, we experience great DX openings from around the world on HF. This is because the Sun is mostly overhead above the equator, creating equal day and night periods in both hemispheres. The Vernal Equinox on March 20, 2004 marks the day when the hours of daylight and darkness are about equal around the world. This creates an ionosphere of similar characteristics throughout more of the world than is possible during other times when it is summer in one hemisphere and winter in the other and there are extreme differences in the ionosphere. This equalization of the ionospheric, which takes place during the equinoctial periods (autumn and spring), is responsible for optimum DX conditions and starts late in February and lasts through late April. The improvement in propagation is most noticeable on long circuits between the Northern and Southern Hemispheres. During this season conditions are also optimum for long-path as well as short-path openings, and during gray-line twilight periods.

Spring is also the season of aurora. Will we see a lot of aurora this month? As you might remember from past columns, each solar cycle tends to have two peak periods of geomagnetic activity in its 11-year span. The second peak is always a stronger, more intense period where we witness frequent coronal holes, coronal mass ejections (CMEs), and strong flare activity. We are well into the declining phase of solar Cycle 23 and may finally have passed the second geomagnetic activity peak of this cycle. However, I expect a moderate to high level of solar activity that may continue to keep the geomagnetic field at active to minor storm levels. If so, this will fuel a fair amount of aurora. For VHF weak-signal enthusiasts, this could be an active radio aurora season.

Geomagnetic storms that ignite auroras occur more often during the months around the equinoxes during early autumn and spring. This seasonal effect has been observed for more than 100 years. Scientists are still puzzled as to all of the reasons, but they have a wealth of research from which

LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for April 2004

| Propagation Index..... | Expected Signal Quality | | | |
|---|-------------------------|-----|-----|-----|
| | (4) | (3) | (2) | (1) |
| Above Normal: 3-5, 20, 30 | A | A | B | C |
| High Normal: 2, 6, 8-12, 15, 17-19, 21-23, 25-27, 29 | A | B | C | C-D |
| Low Normal: 1, 7, 24, 28 | B | C-B | C-D | D-E |
| Below Normal: 14, 16 | C | C-D | D-E | E |
| Disturbed: 13 | 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 on the following pages.
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 3 will be fair to good (C-B) on April 1st, good (B) on the 2nd, excellent (A) on the 3rd through the 5th, etc.

they've developed models to help understand the phenomenon.

What is the Aurora?

Aurora is a direct result of solar plasma interacting with gases in the upper atmosphere. It is common to see aurora during active to severe geomagnetic storms. Geomagnetic storms develop when strong gusts of solar wind or CMEs hit the Earth's magnetosphere in just the right way. The magnetosphere is filled with electrons and protons that normally are trapped by lines of magnetic force that prevent them from escaping to space or descending to the planet below. The impact of a CME breaks loose some of those trapped particles, causing them to rain down on the atmosphere. Gases in the atmosphere start to glow under the impact of these particles. Different gases give out various colors. Think of a neon sign and how the plasma inside the glass tube, when excited, glows with a bright color. These precipitating particles mostly follow the magnetic-field lines that run from Earth's magnetic poles, and are concentrated in circular regions around the magnetic poles called *auroral ovals*. These bands expand away from the poles during magnetic storms. The stronger the storm, the farther these ovals will expand. Sometimes they grow so large that people at middle latitudes, such as California, can see these "Northern Lights."

In the early 1970s scientists recognized a connection between the component of the interplanetary magnetic field (IMF) that lies along Earth's magnetic axis (known as "B sub z" [B_z]) and Earth's changing seasons: The average size of B_z is greatest each year in early spring and autumn. Thus, why do these storms increase in strength and number during spring and autumn?

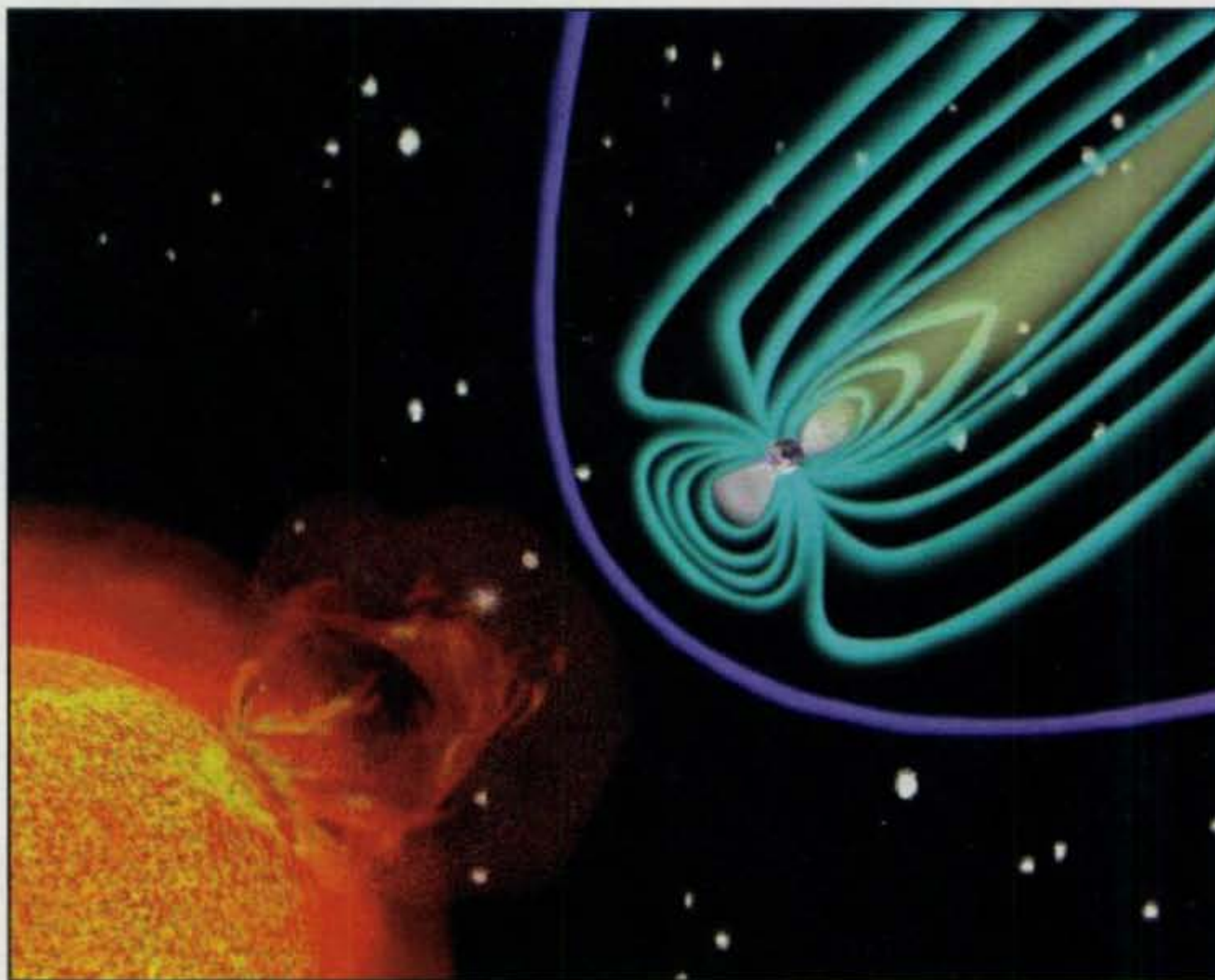
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As the Sun rotates (one full rotation occurs about every 27 days), the plasma spewing out from the Sun forms into a spiral shape known as the *Parker Spiral* (named after the scientist who first described it). This solar wind carries with it an interplanetary magnetic field which ever expands away from the Sun in this spiral. Think of one of those rotating lawn sprinklers with jets of water shooting away from the center. You can see a bending or curving of the water lines. As the Earth moves around the Sun, these spiraling solar winds sweep into Earth's magnetosphere. How the magnetic field lines (IMF lines) in the solar wind interact with the magnetic field lines of the magnetosphere is the key to geomagnetic storms and aurora.

At the magnetopause, the part of our planet's magnetosphere that fends off the solar wind, Earth's magnetic field points north. If the IMF tilts south (i.e., B_z becomes large and negative) it can partially cancel Earth's magnetic field at the point of contact. This causes the two magnetic fields (Earth's and the IMF) to link (think of how two magnets link with one magnet's south pole connecting with the other's north pole), creating a magnetic field line from Earth directly into the solar wind. A south-pointing B_z opens a window through which plasma from the solar wind and CME can reach Earth's inner magnetosphere, bombarding the gases of the upper atmosphere.

Earth's magnetic dipole axis is most closely aligned with the Parker spiral in April and October. As a result, southward (and northward) excursions of B_z are greatest then. This is why aurora is most likely and strongest during the equinoctial months. When you see the solar wind speed increase to over 500 kilometers per second, and the B_z remain mostly negative (the IMF is oriented mostly southward), expect an increase in geomagnetic activity, as revealed by the planetary K_p -index (K_p).

Look for aurora-mode propagation when the K_p rises above 4, and look for visual aurora after dark when the K_p rises above 5. The higher the K_p , the more likely you may see the visual lights. However, you don't have to see them to hear their influence on propagation. Listen for stations from over the poles that sound raspy or fluttery. Look for VHF DX. Sometimes it will enhance a path at certain frequencies, and other times it will degrade the signals. Sometimes signals will fade quickly, and then come back with great strength. The reason for this is that the radio signal is being refracted off the more highly ionized areas that are lit up. These ionized



A coronal mass ejection's plasma cloud comes toward Earth. (Courtesy NASA)

areas ebb and flow, so the ability to refract changes, and sometimes quickly. I've observed the effect of aurora and associated geomagnetic storminess even on lower HF frequencies.

Radio Aurora

If there are enough solar particles flowing down the Earth's magnetic field lines and colliding with atmospheric atoms and molecules, ionization occurs. This ionization may be sufficient enough to reflect VHF and lower UHF radio waves, generally between 25 and 500 MHz. This usually occurs in conjunction with visual aurora, but the mechanism is a bit different and it is possible to have one (visual or radio) without the other.

Using radio aurora, the chances of contacting stations over greater distances than would ordinarily be possible on the VHF frequencies increase. Like its visual counterpart, radio aurora is very unpredictable. The thrill of the chase draws many VHF weak-signal DXers to work auroral DX.

VHF auroral echoes, or reflections, are most effective when the angle of incidence of the signal from the transmitter, with the geomagnetic field line, equals the angle of reflection from the field line to the receiver. Radio aurora is observed almost exclusively in a sector centered on magnetic north. The strength of signals reflected from the

aurora is dependent on the wavelength when equivalent power levels are employed. Six-meter reflections can be expected to be much stronger than 2-meter reflections for the same transmitter output power. The polarization of the reflected signals is nearly the same as that of the transmitted signal.

The K -index is a good indicator of the expansion of the auroral oval and the possible intensity of the aurora. When the K -index is higher than 5, most readers in the northern states and in Canada can expect favorable aurora conditions. If the K -index reaches 8 or 9, it is highly possible for radio aurora to be worked by stations as far south as California and Florida. Your magnetic latitude can be found using the map at <<http://www.sec.noaa.gov/Aurora/globeNW.html>>.

I have a wealth of links at <<http://prop.hfradio.org/>> that provide up-to-the-minute aurora information and data. One of the most useful resources is <<http://aurora.n1bug.net/>>, the "Aurora Sentry." Also check out *CQ VHF* magazine for details regarding VHF propagation through the spring and summer.

Current Solar Cycle Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for January 2004 is 37, down from December's 47. The 12-month running smoothed sunspot num-

ber centered on July 2003 is 62, down from June's 65. The lowest daily sunspot value during January 2003 was recorded on January 27, with a count of zero. The highest daily sunspot count for January was 61 on both January 20 and 21. I expect to see an increase in the number of days with zero sunspots, now that we are well into the decline of the current solar cycle. A smoothed sunspot count of 38 is expected for April 2004.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 114 for January 2004, down only one point from December 2003. The 12-month smoothed 10.7-cm flux centered on July 2003 is 130, slightly down from June's 133. The predicted smoothed 10.7-cm solar flux for April 2004 is about 100, give or take about 17 points.

The observed monthly mean planetary A-index (*A_p*) for January 2004 is 20. The December 2003 figure has been adjusted from 17 to 18. The 12-month smoothed *A_p*-index centered on July 2003 is 22, just about the same as for June 2003. Expect the overall geomagnetic activity to be active to disturbed during April.

On the HF Bands

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 suffers during April and the summer months due to lower MUFs (Maximum Usable Frequencies) in the Northern Hemisphere. MUFs peak very late in the day during the summer. Summertime MUFs are lower due to solar heating, which causes the ionosphere to expand. An expanded ionosphere produces lower ion density, which results in lower MUFs. Short-path propagation between countries in the Northern Hemisphere will drop out entirely. Ten-meter propagation peaks in the fall. April and May are fall months in the Southern Hemisphere, making long-path DX possible. Short-path propagation to South America, the South Pacific, and other areas south of the equator will be strong and reliable when open. However, with the decline of the current solar cycle, solar activity is not supporting the higher HF band propagation, so don't expect a lot from 10, 12, and 15 meters.

From April to June, fair to good propagation occurs on both daytime and

HOW TO USE THE DX PROPAGATION CHARTS

1. Use chart appropriate to your transmitter location. The Eastern USA Chart can be used in the 1, 2, 3, 4, 8, KP4, KG4, and KV4 areas in the USA and adjacent call areas in Canada; the Central USA Chart in the 5, 9, and 0 areas; the Western USA Chart in the 6 and 7 areas; and with somewhat less accuracy in the KH6 and KL7 areas.

2. The predicted times of openings are found under the appropriate meter band column (10 through 80 meters) for a particular DX region, as shown in the left-hand column of the charts. An * indicates the best time to listen for 160 meter openings.

3. The propagation index is the number that appears in () after the time of each predicted opening. The index indicates the number of days during the month on which the opening is expected to take place as follows:

- (4) Opening should occur on more than 22 days
- (3) Opening should occur between 14 and 22 days
- (2) Opening should occur between 7 and 13 days
- (1) Opening should occur on less than 7 days

Refer to the "Last Minute Forecast" at the beginning of this column for the actual dates on which an opening with a specific propagation index is likely to occur, and the signal quality that can be expected.

4. Times shown in the charts are in the 24-hour system, where 00 is midnight; 12 is noon; 01 is 1 A.M.; 13 is 1 P.M., etc. Appropriate daylight time is used, not GMT. To convert to GMT, add to the times shown in the appropriate chart 7 hours in PDT Zone, 6 hours in MDT Zone, 5 hours in CDT Zone, and 4 hours in EDT Zone. For example, 14 hours in Washington, D.C. is 18 GMT. When it is 20 hours in Los Angeles, it is 03 GMT, etc.

5. The charts are based upon a transmitted power of 250 watts CW, or 1 kw, PEP on sideband, into a dipole antenna a quarter-wavelength above ground on 160 and 80 meters, and a half-wavelength above ground on 40 and 20 meters, and a wavelength above ground on 15 and 10 meters. For each 10 dB gain above these reference levels, the propagation index will increase by one level; for each 10 dB loss, it will lower by one level.

6. Propagation data contained in the charts has been prepared from basic data published by the Institute for Telecommunication Sciences of the U.S. Dept of Commerce, Boulder, Colorado 80302.

| Region | 10 Meters | 15 Meters | 20 Meters | 40/80 Meters |
|---|-------------------------------------|--|---|---|
| Central & South Asia | Nil | 17-19 (1) | 07-10 (1) 14-16 (1) 19-21 (1) | 05-07 (1) 19-21 (1) |
| Southeast Asia | Nil | Nil | 08-10 (1) 14-16 (1) 19-21 (1) | Nil |
| Far East | Nil | 17-20 (1) | 08-10 (1) 18-20 (1) 20-22 (2) 22-00 (1) | 04-06 (1) |
| South Pacific & New Zealand | 16-19 (1) | 09-11 (1) 15-18 (1) 18-20 (2) 20-21 (1) | 06-07 (1) 07-08 (2) 08-10 (3) 10-12 (2) 12-16 (1) 16-18 (2) 18-21 (1) 21-00 (2) 00-04 (1) | 02-03 (1) 03-06 (2) 06-07 (1) 02-06 (1)* |
| Australasia | Nil | 16-18 (1) 18-20 (2) 20-21 (1) | 07-08 (1) 08-10 (2) 10-11 (1) 15-16 (1) 16-18 (2) 18-22 (1) 22-00 (2) 00-02 (1) | 03-05 (1) 05-07 (2) 07-08 (1) 04-07 (1)* |
| North & Central America | 12-14 (1) 14-16 (2) 16-18 (1) | 10-12 (1) 12-13 (2) 13-14 (3) | 00-06 (1) 06-07 (2) 07-08 (3) 14-16 (4) 16-17 (3) 17-18 (2) 18-19 (1) | 19-20 (1) 20-21 (2) 21-04 (3) 04-06 (2) 06-07 (1) 21-02 (1)* 02-04 (2)* 04-06 (1)* |
| Peru, Bolivia, Paraguay, Brazil, Chile, Argentina & Uruguay | 12-15 (1) 15-17 (2) 17-18 (1) | 08-09 (1) 09-11 (2) 11-14 (1) | 06-07 (1) 07-09 (2) 09-10 (1) 14-15 (2) 15-16 (2) 16-18 (4) 18-19 (3) 19-20 (2) 20-21 (1) | 20-21 (1) 21-04 (2) 04-06 (1) 23-05 (1)* |
| McMurdo Sound, Antarctica | Nil | Nil | 07-09 (1) 16-20 (1) 20-23 (2) 23-00 (1) | 01-05 (1) |

April 15 - June 15, 2004 Time Zone: EDT (24-Hour Time) EASTERN USA To:

| Reception Area | 10 Meters | 15 Meters | 20 Meters | 40/80 Meters |
|---|-----------|---|---|---|
| Western & Central Europe & North Africa | Nil | 14-18 (1) | 05-07 (1) 09-10 (2) 10-11 (1) 11-13 (2) 13-15 (3) 15-17 (4) 17-18 (3) 18-19 (2) 19-20 (1) | 19-21 (1) 20-22 (2) 22-00 (3) 00-01 (2) 01-02 (1) 20-22 (1)* 22-00 (2)* 00-01 (1)* |
| Northern Europe & European CIS | Nil | 14-17 (1) | 06-07 (1) 07-09 (2) 09-13 (1) 13-14 (2) 14-16 (3) 16-18 (2) 18-22 (1) | 19-20 (1) 20-23 (2) 23-01 (1) 20-00 (1)* |
| Eastern Mediterranean & Middle East | Nil | 14-17 (1) | 12-15 (1) 15-17 (2) 17-19 (3) 19-20 (2) 20-22 (1) | 19-21 (1) 21-23 (2) 23-00 (1) 21-23 (1)* |
| Western & Central Africa | 14-16 (1) | 10-13 (1) 13-14 (2) 14-15 (3) 15-16 (2) 16-17 (1) | 13-16 (1) 16-17 (2) 17-19 (4) 19-20 (3) 20-21 (2) 21-23 (1) 07-09 (1) | 20-22 (1) 22-02 (2) 02-03 (1) 00-02 (1)* |
| East Africa | Nil | 10-13 (1) 13-16 (2) 16-17 (1) | 07-09 (1) 13-15 (1) 15-17 (2) 17-19 (3) 19-20 (2) 20-22 (1) | 21-01 (1) 21-00 (1)* |
| South Africa | Nil | 09-12 (1) 12-14 (2) 14-15 (1) | 14-16 (1) 16-18 (2) 18-19 (3) 19-21 (1) | 21-22 (1) 22-00 (2) 00-02 (1) |

Time Zones: CDT & MDT (24-Hour Time) CENTRAL USA To:

| Reception Area | 10 Meters | 15 Meters | 20 Meters | 40/80 Meters |
|---|-----------|-------------------------------------|---|---|
| Western & Central Europe & North Africa | Nil | 14-16 (1) | 06-08 (1) 08-10 (2) 10-13 (1) 13-15 (2) 15-16 (3) 16-18 (2) 18-20 (1) | 19-21 (1) 21-23 (2) 23-01 (1) 21-00 (1)* |
| Northern Europe & European CIS | Nil | Nil | 06-07 (1) 07-09 (2) 09-14 (1) 14-17 (2) 17-23 (1) | 20-00 (1) |
| Eastern Mediterranean & Middle East | Nil | Nil | 07-09 (1) 13-15 (1) 15-18 (2) 18-19 (1) 22-00 (1) | 20-00 (1) |
| West & Central Africa | Nil | 12-14 (1) 14-16 (2) 16-17 (1) | 07-09 (1) 12-15 (1) 15-17 (2) 17-20 (3) 20-21 (2) 21-23 (1) | 20-01 (1) |
| East Africa | Nil | 13-15 (1) | 07-09 (1) 13-16 (1) 16-19 (2) 19-20 (1) | 21-00 (1) |
| Southern Africa | Nil | 09-11 (1) 11-14 (2) 14-15 (1) | 14-16 (1) 16-19 (2) 19-22 (1) | 20-22 (1) 22-00 (2) 00-01 (1) |
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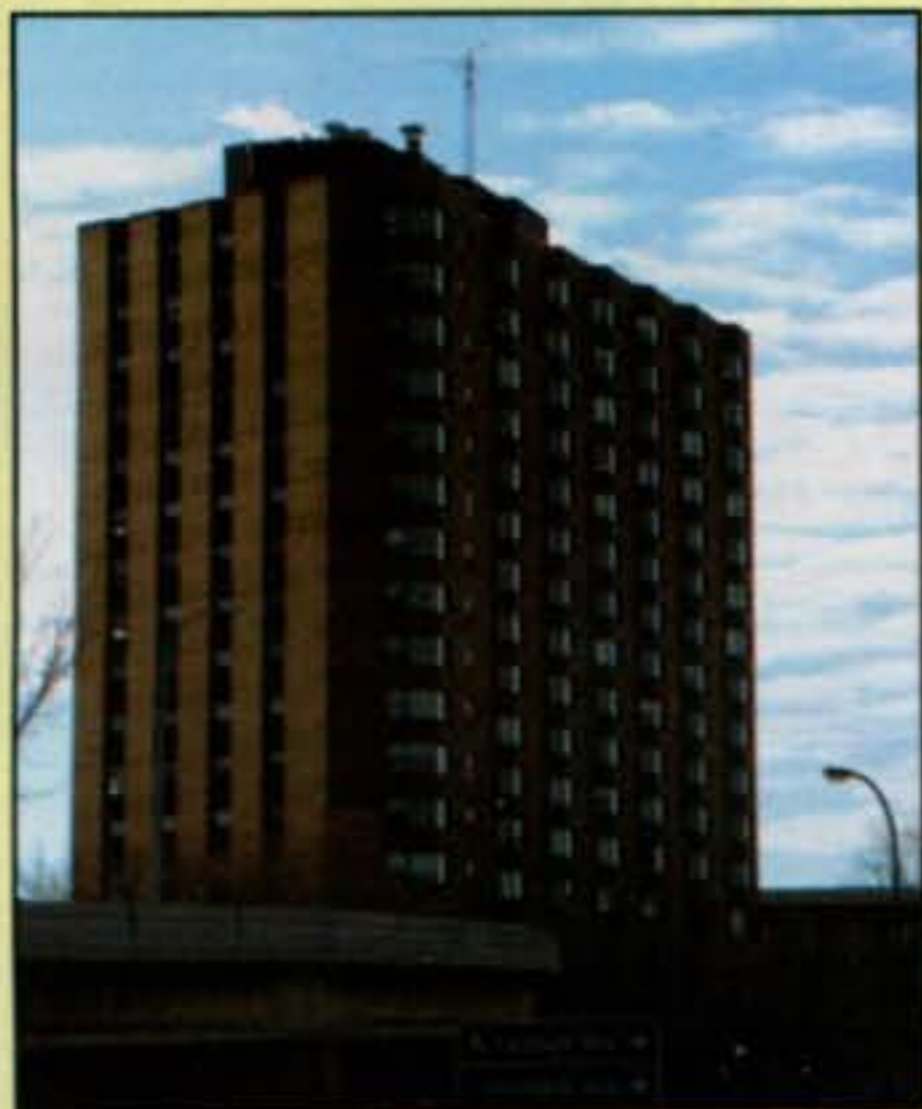
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On the Cover

Jules Freundlich, W2JGR, of Minneapolis, Minnesota, says he lives in an ideal ham radio location, on one of the highest spots in the Twin Cities area and on the 14th floor of a 15-story apartment building that towers over everything around it. Speaking of towers, Jules's 40-foot tower on the roof puts his Teledyne log periodic 10-20-meter antenna 190 feet above the ground, with a clear view in all directions—high enough, Jules says, to overcome the "RF black hole" effect for which the northern Midwest is famous! Inside, he runs a Ten-Tec Omni-6 Plus into an Ameritron AL-80A 500-watt amplifier.

Jules has lived in Minneapolis since 1991, when he moved there from Malvern (Long Island), New York to be closer to his family. Jules says he had no problem getting permission to install his antenna, noting that "the building manager knew all about ham radio, and he had no hesitation in letting me put it up." (He's very fortunate; see our article this month on dealing with antenna restrictions.—ed.)

Jules says he's primarily a DXer, operating mostly on 10 and 20 meters, almost exclusively on radioteletype (RTTY), on which he's worked and confirmed over 300 countries. "RTTY is my special interest," notes Jules, adding, "I've operated it almost as long as I have my license ... decades." That's coming up on seven decades; Jules has been licensed (and has held W2JGR) continuously since 1935. For the mathematically challenged among you, that's 69 years as a ham! As for RTTY, Jules says he enjoys it because "you can keep a hard copy of the contact, it saves your voice, and you don't have to be a CW expert!" Cover photos by Larry Mulvehill, WB2ZPI.

| | | | | |
|---|-------------------------------------|---|--|---|
| Southeast Asia | Nil | Nil | 07-10 (1) 19-22 (1) | 05-07 (1) |
| Far East | Nil | 18-21 (1) | 07-08 (1) 08-10 (2) 10-12 (1) 18-20 (1) 20-22 (2) 22-00 (1) | 03-07 (1) |
| South Pacific & New Zealand | 15-17 (1) | 11-15 (1) 15-17 (2) 17-19 (3) 19-21 (2) 21-22 (1) | 16-19 (1) 19-22 (2) 22-00 (3) 00-04 (2) 04-07 (1) 07-09 (3) 09-10 (2) 10-12 (1) | 00-02 (1) 02-06 (1) 06-07 (1) 02-06 (1)* |
| Austral-Asia | Nil | 16-18 (1) 18-21 (2) 21-22 (1) | 07-08 (2) 08-10 (3) 10-12 (2) 12-16 (1) 16-18 (2) 18-21 (1) 21-22 (2) 22-00 (3) 00-02 (2) 02-07 (1) | 02-04 (1) 04-06 (2) 06-07 (1) 04-06 (1)* |
| Northern & Central South America | 11-13 (1) 13-16 (2) 16-18 (1) | 09-11 (1) 11-12 (2) 12-14 (3) 14-16 (4) 16-17 (3) 17-18 (2) 18-20 (1) | 00-06 (2) 06-08 (2) 08-10 (4) 10-12 (3) 12-15 (2) 15-17 (3) 17-20 (4) 20-22 (3) 22-00 (2) | 19-21 (1) 21-22 (2) 22-03 (3) 03-05 (2) 05-07 (1) 21-23 (1)* 23-02 (2)* 02-06 (1)* |
| Peru, Bolivia, Paraguay, Brazil, Chile, Argentina & Uruguay | 12-15 (1) 15-17 (2) 17-18 (1) | 08-09 (1) 09-11 (2) 11-13 (1) | 07-09 (2) 09-10 (1) 14-16 (1) 16-18 (2) 18-19 (3) 19-21 (3) 19-20 (2) 20-21 (1) | 21-22 (1) 22-00 (2) 00-02 (1) 02-04 (2) 04-05 (1) 00-04 (1)* |
| McMurdo Sound, Antarctica | Nil | 15-18 (1) | 07-09 (1) 16-18 (1) 18-21 (2) 21-23 (1) | 00-06 (1) |

Time Zone: PDT (24-Hour Time) WESTERN USA To:

| Reception Area | 10 Meters | 15 Meters | 20 Meters | 40/80 Meters |
|-------------------------------------|-----------|-----------|--|---|
| Western Europe & North Africa | Nil | Nil | 06-08 (1) 08-10 (2) 10-13 (1) 13-16 (2) 16-19 (1) 22-00 (1) | 20-21 (1) 21-23 (2) 23-00 (1) 21-23 (1)* |
| Northern Europe & European CIS | Nil | Nil | 07-08 (1) 08-10 (2) 10-12 (1) 12-14 (2) 14-16 (1) 22-00 (1) | 20-23 (1) |
| Eastern Mediterranean & Middle East | Nil | Nil | 07-09 (1) 13-15 (1) 18-19 (1) 19-21 (2) 21-22 (1) | 20-23 (1) |
| West & Central Africa | Nil | 11-15 (1) | 06-08 (1) 12-15 (1) 15-16 (2) 16-17 (3) 17-19 (2) 19-21 (1) | 20-23 (1) |
| East Africa | Nil | 12-14 (1) | 07-09 (1) 12-14 (1) 14-16 (2) 16-18 (1) | 20-22 (1) |
| Southern Africa | Nil | 10-13 (1) | 06-08 (1) 13-14 (1) 14-16 (2) 16-17 (1) 22-00 (1) | 19-22 (1) 20-22 (1)* |
| Central & South Asia | Nil | 19-22 (1) | 07-08 (1) 08-10 (2) 10-12 (1) 17-19 (1) 19-21 (2) 21-23 (1) | 04-07 (1) |

| | | | | |
|---|-------------------------------------|---|---|--|
| Southeast Asia | Nil | 19-21 (1) | 07-08 (1) 08-10 (2) 10-11 (1) 22-23 (1) 23-00 (2) 00-02 (1) | 04-07 (1) |
| Far East | Nil | 20-22 (1) | 07-08 (1) 08-10 (2) 10-12 (1) 12-14 (1) 14-16 (2) 19-22 (1) 22-00 (2) 00-02 (1) | 02-03 (1) 03-06 (2) 06-08 (1) 03-07 (1)* |
| South Pacific & New Zealand | 14-16 (1) 16-19 (2) 19-20 (1) | 11-13 (1) 13-16 (2) 16-21 (3) 21-23 (1) 22-23 (2) | 04-08 (1) 08-11 (2) 11-17 (1) 17-20 (2) 20-21 (3) 21-00 (4) 00-01 (3) 01-04 (2) | 23-01 (1) 01-02 (2) 02-06 (3) 06-07 (2) 07-08 (1) 01-02 (1)* 02-05 (2)* 05-06 (1)* |
| Austral-Asia | 17-20 (1) | 13-16 (1) 16-18 (2) 18-20 (3) 20-22 (2) 22-23 (1) | 19-21 (1) 21-23 (2) 23-00 (3) 00-02 (4) 02-03 (3) 03-04 (2) 04-07 (1) 07-09 (2) 09-10 (1) | 01-02 (1) 02-04 (2) 04-06 (3) 06-08 (2) 02-03 (1)* 03-05 (2)* 05-06 (1)* |
| Northern & Central South America | 11-14 (1) 14-17 (1) | 09-10 (1) 10-12 (2) 12-14 (3) 14-16 (4) 16-17 (3) 17-18 (2) 18-19 (1) | 05-06 (2) 06-09 (1) 09-15 (2) 15-17 (3) 17-20 (4) 20-21 (3) 21-00 (2) 00-05 (1) | 19-20 (1) 20-21 (2) 21-02 (3) 02-04 (2) 04-06 (1) 04-06 (1) 21-03 (1)* 00-03 (2)* 03-05 (1)* |
| Peru, Bolivia, Paraguay, Brazil, Chile, Argentina & Uruguay | 13-15 (1) | 08-08 (1) 08-10 (2) 10-13 (1) 13-14 (2) 14-15 (3) 15-16 (4) 16-17 (3) 17-18 (2) 18-20 (1) | 07-08 (1) 08-09 (1) 08-09 (1) 13-15 (1) 15-17 (2) 17-18 (3) 18-21 (4) 18-21 (3) 21-22 (3) 22-00 (2) 00-02 (1) | 20-22 (1) 22-01 (2) 01-03 (1) 21-01 (1)* |
| McMurdo Sound, Antarctica | Nil | 16-19 (1) | 07-08 (1) 16-18 (1) 18-19 (2) 19-21 (3) 21-22 (2) 22-00 (1) | 03-06 (1) |

*Indicates best times to listen for 80 meter openings. Openings on 160 meters are also likely to occur during those times when 80 meter openings are shown with a propagation index of (2) or higher.
For 12 meter openings interpolate between 10 and 15 meter openings.
For 17 meter openings interpolate between 15 and 20 meter openings.
For 30 meter openings interpolate between 40 and 20 meter openings.

Propagation charts prepared by George Jacobs, W3ASK.

nighttime paths on the middle high-frequency bands. The strongest propagation occurs on paths that span areas of both day and night, following the MUF. During April, peaking in May, and still during June, 17 and 20 meters may offer occasional 24-hour DX to all parts of the world. If you hear a lot of echo on a signal, you might be beaming in the wrong direction. Try the opposite azimuth. Twenty meters is more stable as a nighttime band, with propagation following gray-line and nighttime paths.

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.

VHF Propagation

The April *Lyrids* meteor shower occurs from April 16–22, peaking on the UTC night of April 21, 2004 at about 2250 UTC. The hourly visual meteor rate is expected to be about 15, with average meteor velocities of about 48 kilometers per second with broad outbursts. While this shower peaks at about 10 to 15 visual meteors per hour (possibly up to 100), or about one per every five minutes on average, radio bursts occur more often from smaller meteors.

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.

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 (30 to 60 good-size meteors entering the Earth's atmosphere every hour), this should make possible meteor-scatter-type openings on the VHF bands. See <<http://www.meteorscatter.net/metshw.htm>> for a very useful resource covering meteor scatter and upcoming showers.

A seasonal increase in sporadic-E ionization usually begins during April and continues through the spring and summer months. Expect an increase in short-skip openings on both 15 and 10 meters during April, as well as a possible occasional opening on 6 meters. While sporadic-E openings may occur at any time, they tend to peak between 8 AM and noon, and again between 5 and 9 PM local time.

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 during periods of radio storminess on the HF bands. 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.

In Closing . . .

You may e-mail me, write me a letter, or catch me on the HF amateur bands. I also have an EchoLink node where you might catch me; look for node number 152783, NW7US-L. Please come and participate in my online propagation discussion forum at <<http://hfradio.org/forums/>>. I look forward to hearing from you. Happy DXing!

73, Tomas, NW7US/AAMØEWA

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ARRL Changes DXCC Rules, Ends Three Other Awards

The ARRL has redefined what constitutes a "country" for the purposes of its DXCC award program. In order to be considered a "political entity," a place must now either be a member state of the United Nations or have a callsign prefix block assigned to it by the International Telecommunications Union. Dropped from the list is existence by virtue of having your own ham society that's a member of the International Amateur Radio Union (IARU). The League says the change was made because "the rule ... has had unforeseen consequences in creating an incentive for the creation of proposed IARU societies that do not further the objectives of the IARU..." That provision had been added in 1998, and four "entities" had qualified for inclusion as "DXCC countries" under it. The ARRL says the change will not affect their status.

In a separate action, the ARRL has discontinued three of its awards, including what was for many hams the first piece of "wallpaper" they got to hang up in their shacks — the Rag Chewer's Club, or RCC, along with the Old Timer's Club and the Friendship Award. RCC was given for having a QSO of at least 30 minutes in length ... something many Novices qualified for in a simple exchange of basic QSO information in 5-word-per-minute Morse code, including numerous error corrections! ARRL Membership Services Manager Wayne Mills, N7NG, told the *ARRL Letter* that interest in the three awards had "slowed to a trickle" in recent years. Mills pointed out that the number of amateurs applying for awards in general has declined significantly, although the League's DXCC and Worked All States awards remain very popular.

Ham Radio Plays Role in ALCAN Rally

At least one team in last February's ALCAN Winter Rally used ham radio to keep track of its cars and keep team members in contact with each other. According to ICOM America, whose radios were used by the Subaru Challenge Team, the event is a 5000-mile road rally through Alaska and Canada, with its northernmost point some 250 miles above the Arctic Circle. The Subaru team planned to use APRS (Automatic Position Reporting System) on HF for vehicle tracking, but noted that using it so far north would test the limits of the system, and VHF handhelds for communication among team members. Official race communications is on a VHF land mobile frequency (151.625 MHz).

SSB Pioneer W6QYT Silent Key

The man who pioneered single sideband on the amateur bands has died at age 87. According to the *ARRL Letter*, Stanford University Professor Oswald G. "Mike" Villard, Jr., W6QYT, was among the first people to experiment with SSB in the late 1940s, and under his guidance, Stanford's ham station, W6YX, reportedly became the first amateur station to use SSB transmissions. Villard was also a pioneer in radar and meteor-scatter techniques, held a half-dozen patents, and wrote dozens of articles in amateur and scientific journals.

Among his non-amateur accomplishments were developing over-the-horizon radar to detect incoming missiles and military aircraft, demonstrating the feasibility of "stealth" aircraft, and designing a small HF receiving antenna that nulled out jamming signals aimed at western shortwave broadcasters during the Cold War.

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.

Zero Bias (from page 6)

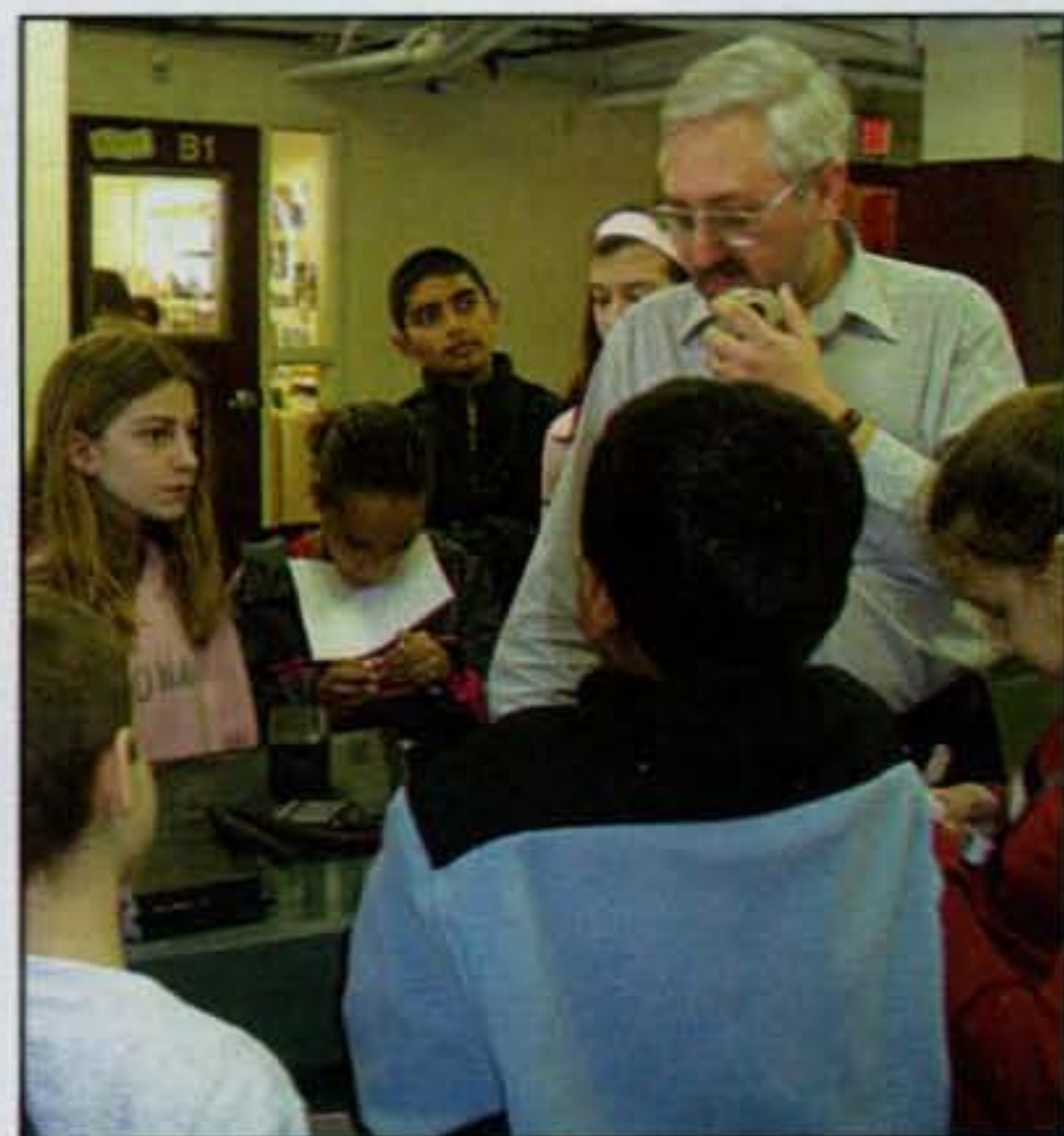
won't go into specifics here. It seems that one of the greatest points of controversy among those who have actually read it is the proposal to "grandfather" current Technicians into the General Class. There is some substance to the opposition here. As *CQ* Contributing Editor Gordon West, WB6NOA, points out, there is very little on the current Technician exam related to HF band limits, operating practices, etc. For example, how would a Tech being grandfathered to General know that the convention for phone operation on 160, 75, and 40 meters is *lower sideband*? Or the unique restrictions on operation in the new 60-meter band? Many hams, including Gordon, believe a test on HF rules and operating practices should be required before a General Class license is issued. Others, however, feel there are ways to get this information without taking a test and that new HF operators will want to "fit in" and will make the effort to learn the "rules of the road" before hitting the HF highway. Perhaps this would be a good initial assignment for the new mentoring program that the ARRL is trying to get started.

Here's a thought: How about setting aside the current Extra Class CW segments as *CW-only* preserves, thus protecting them from encroachment by digital signals currently permitted there and from future phone band expansions? It

would make a lot of sense, especially if a code test continues to be required for Extra Class, to make sure there are designated areas for operating code and nothing else.

Back to School

Once again this past January, I volunteered to lead an "enrichment cluster" on hobby radio in my town's elementary schools. This program brings together 5th and 6th graders from throughout the district to take one of about 15 "mini-courses" on a variety of topics, taught by people from the community. My course covered AM broadcast DXing, shortwave listening, scanning, and various forms of personal two-way communication, including (of course) ham radio. I also got crystal radio kits from MFJ for the kids to build. While the kids were moderately interested in listening to different stations, and in tangling up the wire for their kits, the idea of *talking back* continued to grab them. They had a great time with two little Family Radio Service handhelds I brought in. They were all excited about talking on the microphone of my ham rig to the two stations we contacted. But—once again—what got them most excited was ... code. I brought in the little QRPp transmitter in an Altoids™ tin that K4TWJ built for me, tuned my receiver to its output frequency, and transmitted while walking around the



Fifth- and sixth-grade students in the Hobby Radio "enrichment cluster" in Bloomfield, NJ listen in as W2VU makes a contact on HF. (Susan Moseson photo)

room. They all wanted to try it out (don't worry, I identified regularly and nobody else was on frequency at the time—and the receive antenna was outside the room, so I would have heard anyone who might have heard me). Conclusion—yet again—kids think code is cool. Kids think ham radio is cool. We just have to make sure they know it exists. —73, W2VU

The ID Rule

Editor, CQ:

I read with interest Wayne Yoshida's article in October's CQ magazine. In it he's talking about proper usage of a repeater's autopatch and the proper way to ID. Mr. Yoshida even cites FCC rule 97.119, which states "your station callsign must be announced at the end of each transmission." What Mr. Yoshida fails to point out is that this rule also states you must announce your callsign at 10-minute intervals as well as at the end of one's transmission. In the article Mr. Yoshida breaks the very rules he's trying to get hams to understand.

During his article one of the paragraphs states, "I continued to drive southbound on the freeway, and about 15 minutes later I again announced my presence on the machine: KH6WZ listening." The word *listening* is now, by definition, unidentified communication. The proper way to announce one's presence can be done with "this is [callsign]" or "I'm listening [callsign]." That way you will always have your callsign announced at the end of the conversation as part 97 requires.

Bob Werner, KC4URW

Bob — While it's important to remember to identify every 10 minutes during a conversation, even if one side of it is on the telephone (and I certainly hope people will keep autopatch calls to less than 10 minutes; many repeaters impose a 3-minute maximum on autopatch calls), I must point out that the FCC rules do not require you to identify at the end of every transmission. The relevant part of section 97.119 says that each station "must transmit its assigned call sign ... at the end of each communication, and at least every ten minutes during a communication, for the purpose of clearly making the source of the transmissions from the station known to those receiving the transmissions." So you must identify at the end of every contact (and every 10 minutes during a contact), not at the end of every transmission. Your second comment is splitting hairs to an unbelievable extreme. As noted above, the purpose of the ID rule is to let anyone listening, even an FCC inspector, find out who you are within 10 minutes of starting to listen. Saying a word or two after my call sign does not confuse the issue of who I am. There is nothing illegal about saying "W2VU clear" at the end of a contact, or even

"W2VU clear. 73, Bob." Likewise, there is nothing illegal about saying "W2VU listening" or "W2VU clear and listening" on a repeater. There is no question who is making the transmission. Let's not overinterpret the rules. W2VU clear.

IRLP—Is It a Godsend?

Editor, CQ:

During Hurricane Isabel I monitored a day's worth of hurricane traffic via one of the local IRLP connections here in Philadelphia ("Ham Radio News," November issue). At the CBS O&O television station I work at, I programmed several scanners so that members of our news and weather departments were able to do the same. It was a useful tool. I do not, however, agree it was that fantastic. In fact, as the storm approached the Outer Banks of North Carolina, reports from that area, along with many other areas in its path, simply disappeared. As power failed, so did the internet connections. In fact, I'm sure that many were without both (internet and power) for weeks after Isabel made landfall.

"Everything" is compromised during a hurricane, not just HF antennas, as the column reports. A "good ham" should be able to restore HF communications in minutes, using wire for the antenna and a car battery for power. Certainly, with a hurricane approaching every ham should be prepared to erect alternate antennas, on any band they're licensed to operate. That's part of the "deal."

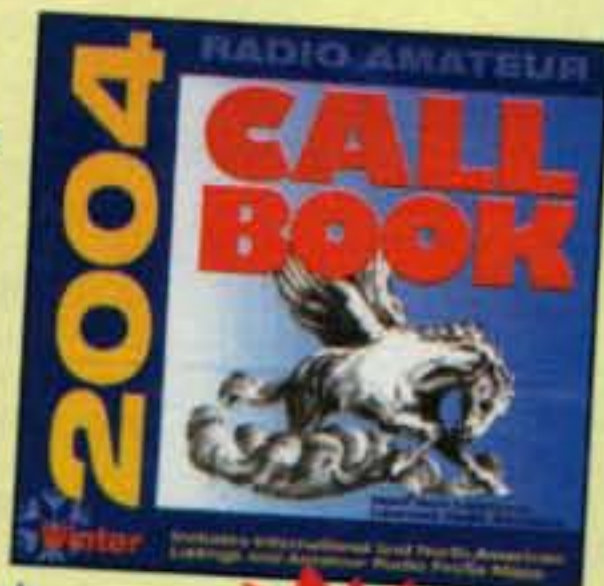
While the IRLP and Echolink systems provide alternate paths of communications, they cannot be considered "godsend" as a replacement for HF." That's just ridiculous.

Chris Brady, N3CB

Chris — As you should be aware from working in a newsroom, our job (in our news column) is to report on what people do and say, not to make judgments. The ham quoted in the news item was on the scene in NC, which neither of us was, and if he thinks IRLP was "a godsend," we're not going to dispute or debate him. We did, however, add a note at the end of that item that internet repeater linking is becoming "one of the many tools available to amateur radio emergency communicators." It is an addition to our toolkit, not a replacement for anything.—W2VU

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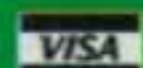
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