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# Amateur Radio

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**Former U.S. Senator  
Barry Goldwater, K7UGA**  
Amateur Radio's Elder Statesman



THE RADIO AMATEUR'S JOURNAL



# KENWOOD

...pacesetter in Amateur Radio

All New  
Compact HF!

## “DX-citing!”

### TS-440S Compact high performance HF transceiver with general coverage receiver

Kenwood's advanced digital know-how brings Amateurs world-wide “big-rig” performance in a compact package. We call it “Digital DX-citement”—that special feeling you get every time you turn the power on!

• **Covers All Amateur bands**

General coverage receiver tunes from 100 kHz—30 MHz. Easily modified for HF MARS operation.

• **Direct keyboard entry of frequency**

• **All modes built-in**  
USB, LSB, CW, AM, FM, and AFSK. Mode selection is verified in Morse Code.

• **Built-in automatic antenna tuner (optional)**  
Covers 80-10 meters.

• **VS-1 voice synthesizer (optional)**

• **Superior receiver dynamic range**

Kenwood DynaMix™ high sensitivity direct mixing system ensures true 102 dB receiver dynamic range. (500 Hz bandwidth on 20 m)

• **100% duty cycle transmitter**

Super efficient cooling permits continuous key-down for periods exceeding one hour. RF input power is rated at 200 W PEP on SSB, 200 W DC on CW, AFSK, FM, and 110 W DC AM. (The PS-50 power supply is needed for continuous duty.)

• **Adjustable dial torque**

• **100 memory channels**

Frequency and mode may be stored in 10 groups of 10 channels each. Split frequencies may be stored in 10 channels for repeater operation.

• **TU-8 CTCSS unit (optional)**

• **Superb interference reduction**

IF shift, tuneable notch filter, noise blanker, all-mode squelch, RF attenuator, RIT/XIT, and optional filters fight QRM.

• **MC-43S UP/DOWN mic. included**

• **Computer interface port**

• **5 IF filter functions**

• **Dual SSB IF filtering**

A built-in SSB filter is standard. When an optional SSB filter (YK-88S or YK-88SN) is installed, **dual** filtering is provided.

• **VOX, full or semi break-in CW**

• **AMTOR compatible**



**Optional accessories:**

- AT-440 internal auto. antenna tuner (80 m—10 m)
- AT-250 external auto. tuner (160 m—10 m)
- AT-130 compact mobile antenna tuner (160 m—10 m)
- IF-232C/IC-10 level translator and modem IC kit
- PS-50 heavy duty power supply
- PS-430/PS-30 DC power supply
- SP-430 external speaker
- MB-430 mobile mounting bracket
- YK-88C/88CN 500 Hz/270 Hz CW filters
- YK-88S/88SN 2.4 kHz/1.8 kHz SSB filters
- MC-60A/80/85 desk microphones
- MC-55 (8P) mobile microphone
- HS-5/6/7 headphones
- SP-40/50B mobile speakers
- MA-5/VP-1 HF 5 band mobile helical antenna and bumper mount
- TL-922A 2 kw PEP linear amplifier
- SM-220 station monitor
- VS-1 voice synthesizer
- SW-100A/200A/2000 SWR/power meters
- TU-8 CTCSS tone unit
- PG-2S extra DC cable.

### Kenwood takes you from HF to OSCAR!



Complete service manuals are available for all Kenwood transceivers and most accessories. Specifications and prices are subject to change without notice or obligation.

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2201E. Dominguez St., Long Beach, CA 90810  
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TH-55AT  
1200 MHz  
Here Now!

## Compact Breakthrough!



### TH-25AT/45AT New Pocket Portable Transceivers

The all-new TH-25 Series of pocket transceivers is here! Wide-band frequency coverage, LCD display, 5 watt option, plus...

- Frequency coverage: **TH-25AT:** 141-163 MHz (Rx); 144-148 MHz (Tx). (Modifiable for MARS/CAP. Permits required.)  
**TH-45AT:** 438-450 MHz.
- Automatic Power Control (APC) circuit for reliable RF output and final protection.
- 14 memories; two for **any** "odd split" (5 kHz steps).
- Automatic offset selection (TH-25AT).
- 5 Watts from 12 VDC or PB-8 battery pack.
- Large multi-function LCD display.
- Rotary dial selects memory, frequency, CTCSS and scan direction.
- T-ALERT for quiet monitoring. Tone Alert beeps when squelch is opened.
- Band scan and memory scan.
- Automatic "power off" circuit.
- Water resistant.
- CTCSS encoder / decoder optional (TSU-6).
- **Supplied accessories:** StubbyDuk, PB-6 battery pack for 2.5 watts output, wall charger, belt hook, wrist strap, water resistant dust caps.



#### Optional accessories:

- PB-5 7.2 V, 200 mAh NiCd pack for 2.5 W output • PB-6 7.2 V, 600 mAh NiCd pack • PB-7 7.2 V, 1100 mAh NiCd pack
- PB-8 12 V, 600 mAh NiCd for 5 W output • PB-9 7.2 V, 600 mAh NiCd with built-in charger • BC-10 Compact charger
- BC-11 Rapid charger • BT-6 AAA battery case • DC-1/PG-2V DC adapter • HMC-2 Headset with VOX and PTT • SC-14, 15, 16 Soft cases • SMC-30/31 Speaker mics. • TSU-6 CTCSS decode unit • WR-1 Water resistant bag

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All-mode  
tri-bander!

## Warp Drive!



## TS-790A Satellite Transceiver

The new Kenwood TS-790A VHF/UHF all-mode tri-band transceiver is designed for the VHF/UHF and satellite "power user." The new TS-790A is an all-mode 144/450/1200 MHz transceiver with many special enhancements such as Doppler shift compensation. Other features include dual receive, automatic mode selection, automatic repeater offset selection for FM repeater use, VFO or quick step channel tuning, direct keyboard frequency entry, 59 memory channels (10 channels for separate receive and transmit frequency storage), multiple scanning and multiple scan stop modes. The Automatic Lock Tuning (ALT) on 1200 MHz eliminates frequency drift. Power output is 45 watts on 144 MHz, 40 watts on 450 MHz, and 10 watts on 1200 MHz. (The 1200 MHz section is an optional module.)

- **High stability VFO.** The dual digital VFOs feature rock-stable TCXO (temperature compensated crystal oscillator) circuitry, with frequency stability of  $\pm 3$  ppm.

- **Operates on 13.8 VDC.** Perfect for mountain-top DXpeditions!

- **The mode switches confirm USB, LSB, CW, or FM selection with Morse Code.**

- **Dual Watch allows reception of two bands at the same time.**

- **Automatic mode and automatic repeater offset selection.**

- **Direct keyboard frequency entry.**

- **59 multi-function memory channels.** Store frequency, mode, tone information, offset, and quick step function. Ten memory channels for "odd split."

- **CTCSS encoder built-in.** Optional TSU-5 enables sub-tone decode.

- **Memory scroll function.** This feature allows you to check memory contents without changing the VFO frequency.

- **Multiple scanning functions.** Memory channel lock-out is also provided.

- **ALT—Automatic Lock Tuning—on 1200 MHz eliminates drift!**

- **500 Hz CW filter built-in.**

- **Packet radio terminal.**

- **Interference reduction controls:** 10 dB RF attenuator on 2m, noise blanker, IF shift, selectable AGC, all mode squelch.

- **Other useful controls:** RF power output control, speech processor, dual muting, frequency lock switch, RIT.

- **Voice synthesizer option.**

- **Computer control option.**

**Optional Accessories:**

- **PS-31** Power supply • **SP-31** External speaker
- **UT-10** 1200 MHz module • **VS-2** Voice synthesizer unit • **TSU-5** Programmable CTCSS decoder
- **IF-232C** Computer interface • **MC-60A/MC-80/MC-85** Desk mics • **HS-5/HS-6** Headphones
- **MC-43S** Hand mic • **PG-2S** Extra DC cable



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# The Radio Amateur's Journal



**ON THE COVER:** With his retirement from the U.S. Senate, Barry Goldwater, K7UGA, finds more time available for his life-long hobby of Amateur Radio from his home QTH in Scottsdale, Arizona.

FEBRUARY 1989

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# Zero Bias

## AN EDITORIAL

**W**hat appears to be the world's biggest amateur radio exam session took place this past August in Thailand. Using the facilities of Ramkhamhaeng University, 15,732 prospective amateurs signed up to take the written exam for Thailand's no-code VHF license. From the looks of a callbook-type periodical stapled into the August issue of Thailand's *CQ* (no relation) *Magazine*, it would seem that 9513 applicants passed the exam and joined the ranks of over 3500 other Thai amateurs who have held their Novice or Basic licenses since the beginning of 1988.

What is remarkable in these times is that while the rest of the world is actively seeking to increase their base population of amateurs by infusing new blood, many American amateurs are gathering the wagons in a circle to fend off the perceived attack from the "no-coders." Years ago when the no-code concept of a VHF license was beaten down in this country, others saw the wisdom of such a license and worked toward implementing it in their own lands. Canada is the latest entree into the world's expansion of amateur radio. In the interim we in this country have drawn all sorts of inferences and satisfaction from shuffling virtually the same population through various forms of amateur radio licenses without any significant growth. Perhaps we are stuck in that puritanical ethic whereby we find more virtue in falling in love with the process than in the practice of amateur radio.

The last time a no-code license was brought up in this country the talk was of populating 220 MHz with this new class of license. Obviously, 220 MHz was populated at the time, but certainly not by that many amateurs. The hardcore and occasional users of 220 MHz are not a significant percentage of the total amateur population. Recently when part of that band was taken away for commercial use, the uproar that ensued pointed admirably to our ability to rally around a cause, or a sense of possession. Collectively we have spent more time talking *about* 220 MHz than talking *on* 220 MHz. When the dust settles and all the legal fees are added up, we also might find that we spent more on trying to defend and protect this amateur radio outpost than we did for all of our amateur radio recruitment efforts. There's something fundamentally wrong with that concept.

The 220 MHz band, and any other amateur radio band, needs to be saved from the threat of erosion. But we also have to ask the question, "Saved for whom?" Obviously, we'd all like it saved for us and for our use, but in the long run that's not a good enough reason. It must be saved for the future and for future amateurs. In spite of what some of us may think, amateur radio is not strictly our private playground, whereby once we're gone it doesn't matter what happens to it. It does matter, it has mattered, and even more important it matters for the future.

In January the median age of amateur operator in this country jumped a year to 51. I really don't foresee too many median-age amateurs running off to engineering school or looking to create a wonderful career in the sciences. Most of us are already doing the things we planned on doing when we "grew up." For most of us, amateur radio is not planting the seeds for tomorrow's harvest, but rather it is enjoying the fruits of yesterday's labor.

The rest of the world obviously sees something beneficial in building an amateur radio population. They see a growth in their own technology, a growth in education, and a definite growth in their own industrial potential. The results so far have all been positive. The emotional, physical, and financial efforts we've expended to maintain and follow a system that has seen its better day are not worth it and are not working.

We've lost the world's race to lead and we're really not going to follow without a fight, so where does that leave us now? It's sort of like that fabled "mid-life crisis." It's time to take stock of where we've been, where we are now, and where we're going if we don't change. I'm not talking about running off to become a cowboy or a fireman, but I am talking about the threatening changes taking place within amateur radio.

The changes in amateur radio during the last few years have been phenomenal yet threatening. Even today there are many amateurs who feel threatened by computers, packet radio, and any form of digital communications. To them it's not ham radio. It's not what they knew or grew up with. I'm sure the dulcet tones of an AM signal would still bring a tear to an Old Timer's eye, but not too many of them would give up their Super-Zowie microprocessor-controlled transceiver with all 22 million memories. The gear that amateurs use today and take for granted was also yesterday's threat. Oh, the technology passed the average amateur (or should I say most amateurs) a long time ago. If you don't really understand how it works, how can you fix it? On the other hand, we've all become well versed in understanding the contractual definitions of guarantee, warranty, and limited warranty. We don't fix, we ship.

It's okay to maintain this technocratic illusion of amateur radio as long as it makes you happy and doesn't hurt anyone or the hobby. In case you haven't noticed, almost all of us are involved with communicating and not R&D. And it's these communicating skills which have saved lives and property in times of emergency and gotten us all of that good PR of which we're so proud. When a fellow amateur responds in someone's time of need, it doesn't matter to the individual what class of license the amateur holds or what the amateur's code proficiency is. The important thing is that there is an amateur there who is able and willing to help.

We need new people and especially young people to populate our bands. If that takes a code-free license, then so be it. Morse code is not our *raison d'être* anymore than spark or AM was. It's a tie to the past and will remain with us for some time to come, but it is not our sole identifying quality. We are obviously and measurably involved with activities that do not require Morse code. However, and most important, no one is advocating that Morse code be abolished as a criteria for the traditional HF licenses. What we must face is the fact that we need a future, and that future most certainly will be different from our present. We cannot afford the luxury of letting our illusion turn into the delusion of denial saying that everything's okay when it isn't.

If you don't see anything wrong with the situation of our median age tracking the calendar, increasing year for year, then you must see the eventuality. In the not too distant future there will be no amateur radio, and we like the dinosaur will be extinct. Sixteen countries in the world have begun heading off that situation and improving their technological position with a code-free entry-level license. As you would imagine, their amateur ranks are growing dramatically. They didn't invent the idea, but they did see the wisdom in it. While it may be too late for us to lead, there is nothing wrong with following a good idea, especially when everyone benefits.

Speaking of benefits, there is a segment of the amateur radio population that believes that any and all changes made to the hobby are manipulated strictly for money and that anyone in the amateur radio business will do anything to increase his profits. It's a convenient fantasy that clouds the real issues. If the argument is true, then everyone who ever was in the amateur radio business would still be in it and would be thriving. Since we are in one of the wealthiest countries in the world, with probably more disposable income than most, then by all rights we should have the most prime equipment manufacturers and the greatest number of retail establishments. If everything was done out of greed to get us where we are now, then we should have far more dealers and manufacturers today than, say, since the advent of the Novice license. I think if you check you'll find considerably fewer people in the business today than there were during those times. Think about how far you had to go the last time you wanted to actually see a new piece of gear.

This is a year for opportunity—the opportunity to turn things around. The last time a code-free license came up, its fate was decided by about 1% of us in our letters. Almost every single one of us did nothing one way or the other in spite of how we felt. This time, when it comes up again, we have to decide whether we will be part of the future or a victim of it. We're about to decide someone's inheritance. Let's not waste such a rich legacy. 73, Alan, K2EEK



Others May Try to Imitate, But...

Only One Can Be The Best



Morse Code - Baudot - ASCII - AMTOR - Packet - Facsimile - Navtex

Amateur Net Price \$319.95

It's a lesson you learn very early in life. Many can be good, some may be better, but only one can be the best. The PK-232 is the best multi-mode data controller you can buy.

## 1 Versatility

The PK-232 should be listed in the amateur radio dictionary under the word Versatile. One data controller that can transmit and receive in six digital modes, and can be used with almost every computer or data terminal. You can even monitor Navtex, the new marine weather and navigational system. Don't forget two radio ports for both VHF and HF, and a no compromise VHF/HF/CW internal modem with an eight pole bandpass filter followed by a limiter discriminator with automatic threshold control.

The internal decoding program (SIAM<sup>tm</sup>) feature can even identify different types of signals for you, including some simple types of RTTY encryption. The only software your computer needs is a terminal program.



Facsimile Screen Display

## 2 Software Support

While you can use most modem or communications programs with the PK-232, AEA has two very special packages available exclusively for the PK-232...PC Pakratt with Fax for IBM PC and compatible computers, and Com Pakratt with Fax for the Commodore 64 and 128.

Each package includes a terminal program with split screen display, QSO buffer, disk storage of received data, and printer operation, and a second program for transmission/reception and screen display of facsimile signals. The IBM programs are on 5-1/4" disk and the Commodore programs are plug-in ROM cartridges.



PC Pakratt Packet TX/RX Display

## 3 Proven Winner

No matter what computer or terminal you plan to use, the PK-232 is the best choice for a multi-mode data controller. Over 20,000 amateurs around the world have on-air tested the PK-232 for you. They, along with most major U.S. amateur magazines, have reviewed the PK-232 and found it to be a good value and excellent addition to the ham station.

No other multi-mode controller offers the features and performance of the PK-232. Don't be fooled by imitations. Ask your friends, or call the local amateur radio store. We're confident the PK-232 reputation will convince you that it's time to order your very own PK-232.

Call an authorized AEA dealer today. You deserve the best you can buy, you deserve the PK-232.

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**AEA** Brings you the Breakthrough!



# Announcing

• **Southeastern Virginia Amateur Radio Exam Schedule** - Each month throughout 1989 amateur radio exams will be given, W5YI and ARRL varying months. For a complete schedule and requirements, contact Art Thiemens, AA4AT, Asst. Director ARRL, 2836 Greenwood Road, Chesapeake, VA 23321 (804-484-2857).

• **Punxsutawney, Pennsylvania** - Punxsutawney PARC will operate K3HWJ Feb. 2 starting at 1400Z to celebrate Groundhog Day. Suggested frequencies 28.450 and on lower part of General 40 meter band; on Sunday, Feb. 5 on lower part of General 20, 40, and 80 meter bands. For certificate send SASE to John N. Burkett, KA3SWZ, RD#6 Box 436, Punxsutawney, PA 15767.

• **Adamsville, Ohio** - Special event station KA8YCX will operate at the Adamsville Junior High School in Adamsville, Ohio on February 3. Operations will be on the lower General phone bands of 40 and 20 meters as well as the Novice portion of 10 meters and will run from 9:00 AM until 3:30 PM EST. Certificates are available for a large SASE with your QSL.

• **Loveland, Colorado** - The Loveland Repeater Association will sponsor Valentines For Friends from 1500 to 0500 UTC February 11-12, with some activity on February 14 from 2300-0500 UTC. Send an SASE for 8 1/2" x 11" certificate to KA0VFF, Michael H. Walker, 3816 Ash Avenue, Loveland, CO 80538.

• **Amateur Radio Day** - On February 25 hams will call all nations from the Official Center of the World. WAGBEZ will be set up for one day on 25 February at the Center of the World and manned by licensed volunteers from the Yuma Amateur Radio Emergency Service, who will contact the world. Frequencies: 10 meter USB 28.418 MHz, 15 meter SSB 21.318 MHz, and 40 meter SSB 7.328 MHz. Visitors call in on 146.74 repeater. American and foreign respondents who send a QSL card, a 9" x 12" SASE, and \$1.00 to the Yuma ARES, c/o Post Office, Felicity, CA 92283,

will receive a glossy certificate confirming communication with the Official Center of the World. For further information contact KC0KV Yuma ARES.

• **Wellesley, Massachusetts** - The Wellesley ARS will sponsor an FCC exam session on February 25 at 10 AM. The site will be the Wellesley, MA Red Cross Building. All classes of exams will be given. Contact Vern Valero, ND1Z, at 508-533-6822 to book a spot. Space is limited!

• **The following hamfests, etc., will take place during February:**

Feb. 4, **Niagara Peninsula ARC Hamfest and Dinner Dance**, CAW Hall, St. Catharines, Ontario, Canada. Contact NPAR, Inc., P.O. Box 692, St. Catharines, Ontario L2R 6Y3 (416-937-0590).

Feb. 5, **LIMARC Hamfest**, Electricians Hall, Melville, Long Island, NY. Contact Mark Nadel, NK2T, 22 Springtime Lane East, Levittown, NY 11756 (516-796-2366).

Feb. 11, **Cherryland ARC Swap-N-Shop**, East Bay Elementary School, Traverse City, MI. Contact Mike Hubbard, N8JXY, 5772 Vance Rd., Interlochen, MI 49643 (616-276-9143).

Feb. 11, **Cave City Ham Radio and Computer Fest**, Cave City Convention Center, Cave City, KY. Contact SAMI Hamfest, P.O. Box 791, Glasgow, KY 42141 (502-678-3660).

Feb. 12, **Mansfield Midwinter Hamfest/Computer Show**, Richland County Fairgrounds, Mansfield, OH. Contact Dean Wrasse, KB8MG, KB8MG, 1094 Beal Rd., Mansfield, OH 44905 (SASE) or call 419-589-2415 after 4 PM EST.

Feb. 18, **Algonquin ARC Hamfest/Fleamarket**, Marlboro Middle School, Marlboro, MA. Contact Dan, KB1WW, 617-481-1587, or write to AARC, Box 258, Marlboro, MA 01752.

Feb. 18, **Oregon Hamfair**, Polk County Fairgrounds,

Salem, OR. Contact Salem Repeater Assn., P.O. Box 784, Salem, OR 97308.

Feb. 18-19, **Sarasota Hamfest and Computer Show**, Sarasota, FL. Contact Sarasota Hamfest, 1817 Buccaneer Terrace, Sarasota, FL 34231.

Feb. 19, **Aurora Repeater Assn. Swapfest**, Jefferson County Fairgrounds, Golden, CO. Contact WD0HNP, 303-460-1413, or write to KA7TYU, P.O. Box 39666, Denver, CO 80239.

Feb. 25, **Charleston ARS Hamfest**, National Guard Armory, Charleston, SC. Contact E.L. Sikes, N4LS, 16 Trumbo St., Charleston, SC 29401.

Feb. 25, **Orange ARC Hamfest/Fleamarket**, National Guard Armory, Orange, TX. (No contact given.)

Feb. 25, **Hernando County ARA Hamfest**, Hernando County Fairgrounds Auditorium, South of Brooksville, FL. Contact WB4EXA, 904-796-4840 (after 6 PM EST).

Feb. 25-26, **Cincinnati ARRL Ohio Section Convention**, Cincinnati Gardens Exhibition Center, Cincinnati OH. Contact Stan Cohen, WD8QDQ, 2301 Royal Oaks Ct., Cincinnati, OH 45237 (513-531-1011).

Feb. 26, **Cuyahoga Falls ARC Hamfest**, Akron North High School, Cuyahoga Falls, OH. Contact Bill Sovinsky, K8JSL, 2305 24th St., Cuyahoga Falls, OH 44223 (216-923-3830).

Feb. 26, **Vienna Wireless Society Winterfest**, Vienna Community Center, Vienna, VA. Contact Harry Kaklikian, W4ACN, 4941 Andrea Ave., Annandale, VA 22003.

Feb. 26, **LaPorte ARC Hamfest**, LaPorte Civic Auditorium, LaPorte, IN. Contact LPARC, P.O. Box 30, LaPorte, IN 46350 (SASE).

Feb. 26, **Livonia ARC Swap-N-Shop**, Dearborn Civic Center, Dearborn, MI. Contact Neil Coffin, WA8GWL, Livonia ARC, P.O. Box 2111, Livonia, MI 48151 (SASE).

Prepare early for the **1989 Dayton Hamvention**, April 28-30. For info contact Dayton Hamvention, Box 2205, Dayton, OH 45401, and see display ad in this issue.

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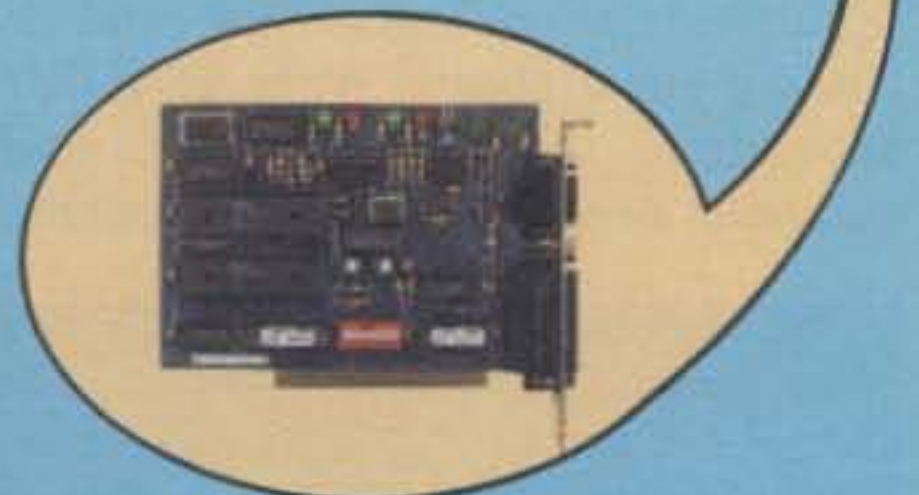
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uge pileups, big city QRN, no spare parts, and a long way to anywhere. You probably couldn't find a better test of the new SB-1400 All-Mode Transceiver than Heath's expedition to Taipei in the Republic of China.

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## Our Readers Say

### Atlas Radio, No Connection

Editor, CQ:

I was the founder and chief designer of Atlas Radio, Inc., located in Oceanside, California. This company was liquidated in late 1979.

Within the past year or so an unfortunate situation has come about which reflects on my former company. An individual located on Long Island, New York has begun using the name Atlas Radio with an exact copy of our former logo and type style. Statements have been made by this individual, both verbally and in print, implying that there is a connection between his operation and my former company. *There is no such connection!* By this letter I disclaim any relationship, past or present, with this imposter. Legal action is in process.

There are currently two qualified service organizations that I know of for original, genuine Atlas Radio equipment. They are R.F. Parts, 1320 Grand Ave., San Marcos, CA 92069 (phone 619-744-0728); and Clint Call, W6OFT, who was service manager at Atlas for several years and who also services Swan equipment at 2248 Jefferson, Carlsbad, CA 92008 (phone 619-753-0099).

Herb Johnson, W6QKI  
Cardiff, CA

### Out of Band on Phone

Editor, CQ:

I would like to comment on the recent CQ WW DX Phone Contest. I enjoyed the contest very much and the propagation was almost ideal; many new countries were worked on 10 meters. Ten meters was the band to be on, no question.

However, there was one unpleasant side to operating on 10 meters, which was the many Americans working out of band, below 28.300 MHz on phone. On more than one occasion when I was well below 28.300 I was called by a station in the U.S. Sometimes some would tell me I was out of band, while others would attempt to work me. To those who thought I was out of band, I would like to say thank you for your concern. To those who tried to work me, sorry for not giving you any report, but you were violating your laws and the rules of the contest by calling me.

In Canada the 10 meter phone band starts at 28.100 MHz and goes to 29.700 MHz, regardless of the mode (AM, SSB, FM) or class of amateur certificate. Canadians do not violate any Canadian law by operating phone or CW in this part of the band. As to causing interference to the many beacons in the lower portion of the band, I always ask if the frequency is in use, if I can't hear any stations or beacons. I have yet to hear a beacon reply "yes."

This unfortunate situation is not restricted to just contests, however. When operating phone as low as 28.205 I have been called by U.S. stations on phone. Some request me to QSY up to the American phone band, which I do, while others appear to be surprised when I tell them the frequency.

In the future, please don't be surprised to hear a lot of VEs, VO's, and VY's in this part of the band as conditions improve.

Allen Linville, VE6BEQ  
Edmonton, Alberta, Canada



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**Thirteen Canadian and Soviet skiers completed the first successful foot crossing of the Arctic in June of last year. Here is what they faced, with amateur radio their only means of communication with the outside world.**

## Polar Bridge Expedition

BY WADE LUCE\*, N7KQU

On March 3, 1988 thirteen skiers began the adventure of a lifetime—an historical 1,240 mile trek on foot across the North Pole from Cape Arktichesky in the Severnaya Zemla Archipelago, Russia, to Cape Columbia, Ellesmere Island, Canada. Challenged by physical as well as political obstacles, nine Soviet and four Canadian skiers bridged the gap between east and west, completing the first successful foot crossing of the frozen Arctic on June 1, 1988, approximately 90 days later.

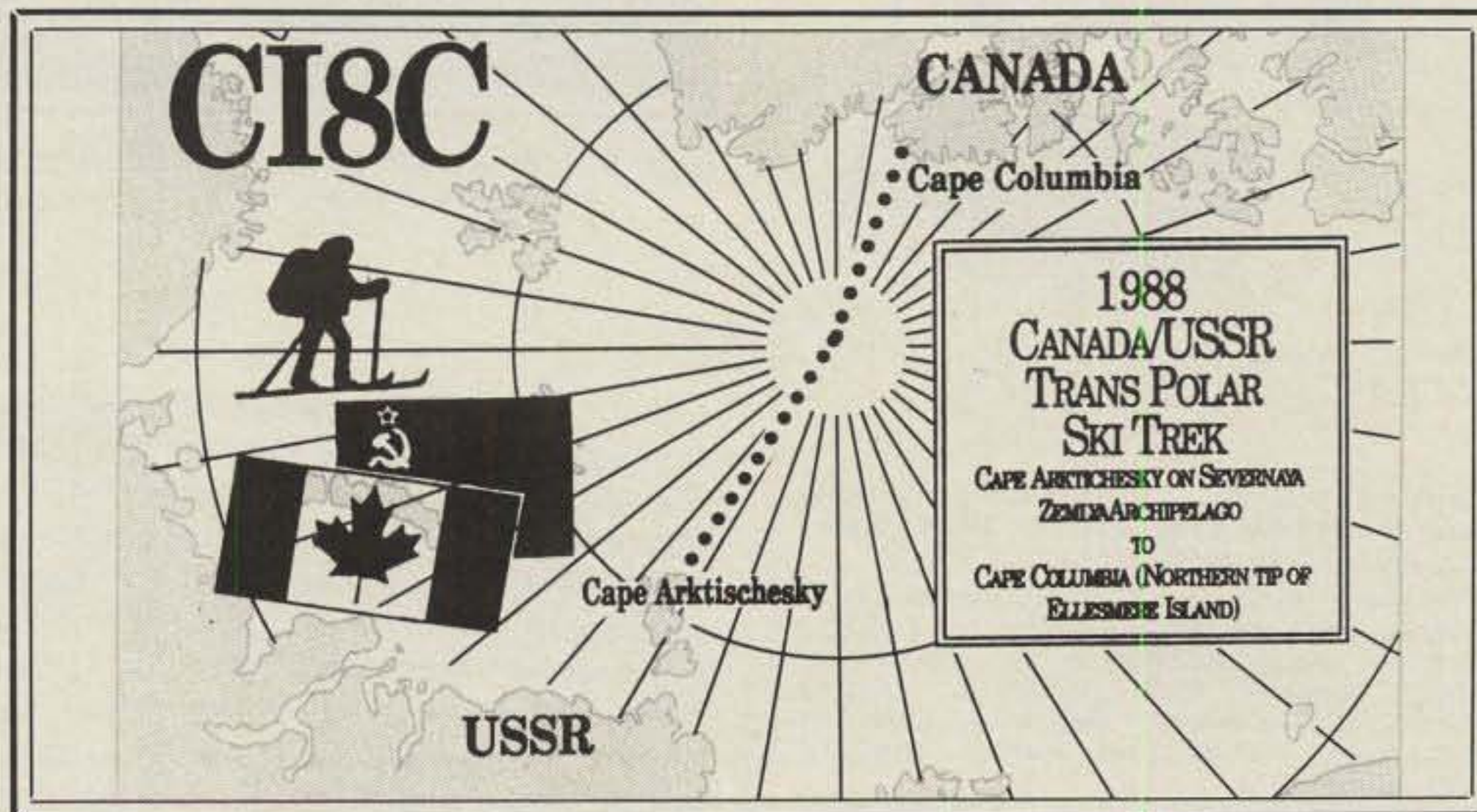
International collaboration was the object of the trek, according to Thomas Atkins, president of the Canadian Radio Relay League and the expedition's Canadian Communications Coordinator, and the project was a significant step in Canadian-USSR relations. The challenge was for the participants to cooperate with and depend on each other while coming from totally different ideological backgrounds.

Throughout the 90-day journey the skiers kept in contact with the outside world by amateur radio, the sole means of communications on the trek. Using ICOM-IC-u2AT handhelds monitoring 145.825 MHz, the skiers tracked their position every 100 minutes via the amateur radio satellite UoSAT-Oscar 11. Oscar 11 uses a "talking" computer to relay navigational information to search-and-rescue parties in the Arctic.

The project required volunteer amateur operators to maintain constant communications with the skiers to chart their path and take supply orders for the bi-weekly air drops. To do this an amateur radio reciprocal operating agreement had to be signed between Canada and the USSR, a first involving the Soviet Union.

In an environment with demanding requirements, plus obstacles such as  $-58^{\circ}$  Fahrenheit temperature, reliable communications equipment was essential. With this goal in mind, VE3CDM se-

\*c/o CQ magazine: Wade is Advertising Assistant of ICOM America, Inc.



The C18C QSL card used by the expedition.

lected ICOM America, Inc., as the official communications equipment supplier for the trans-polar ski bridge expedition.

As the skiers began their journey at Cape Arctic, USSR, communications were handled by a custom-designed So-

viet base station located at Sridny Island. The transceiver was a crystal-controlled 10 watt sideband transceiver which worked on two selected frequencies in the 20, 40, and 80 meter amateur bands. The station was jointly manned by Leonid



The skiers' daily routine included 8 to 12 hours of hiking carrying gear packed in backpacks weighing nearly 90 pounds each.



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The 1989 Callbook Supplement is a new idea in Callbook updates, listing the activity in both the North American and International Callbooks. Published June 1, 1989, this combined Supplement will include thousands of new licenses, address changes, and call sign changes for the preceding 6 months.

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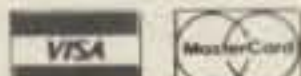
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Nights in tents such as this proved to be damp and uncomfortable, so some of the skiers built igloos to sleep in.

Labutin, UA3CR, a veteran of Soviet expeditions, and Rick Burke, VO1SA/UAØ. The presence of Burke, a Canadian, marks the first time anyone from the west has ever been to the Soviet air base, according to Atkins.

As well as being an effort to bring Canada and the Soviet Union closer together, the trek was a scientific expedition to make geomagnetic, glacial, and meteorological observations. The "Moving Group," as the skiers were called, conducted experiments in physiology and biochemistry to determine the limits of human endurance and social isolation. A purpose of the trek according to expedition leader Dr. Dmitri Shparo was "... to join two continents with a ski track. It is a walking trip ... to show that we are very close neighbors."

The skiers' daily routine consisted of an 8- to 12-hour hike carrying tents, sleeping bags, inflatable rubber rafts, heaters, stoves, scientific equipment, and navigation and communications gear packed in backpacks weighing nearly 90 pounds each. At night the skiers set up their single tent, ate together, and spent a few minutes on amateur radio before turning in for a night's rest. Skiers Richard Weber and Chris Holloway, however, found nights in the tent to be damp and uncomfortable, so after a little observation and coaching from the Soviets, they built igloos and slept comfortably outside.

The trek was not without hardships. Starting in March, the skiers set out in the blackness of the long Arctic nights during the coldest period of the year. In addition,



During March the skiers trekked through the coldest period of the year, while in April and May the sun never set.





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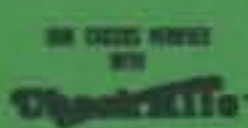
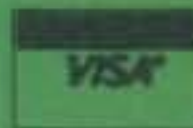
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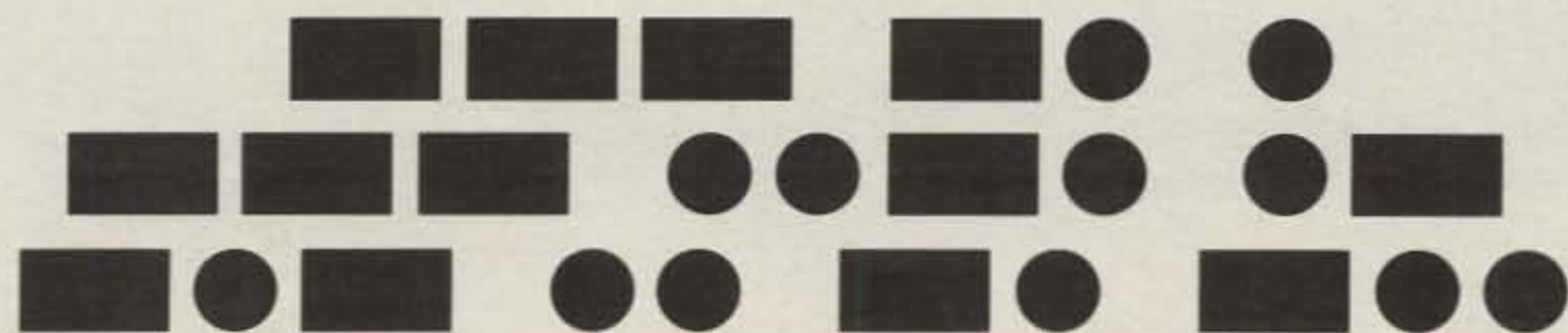
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**DX ready.** The 747 packs a full 100-watt RF punch on 160 to 10 meters, with continuous receive from 100 kHz to 30 MHz.

And its control panel is refreshingly simple. So you can hop around the band *fast* to nail those DX stations. While other guys are warming up their amplifiers, you can be working the DX!

**Multimode versatility.** The FT-747GX is ready to go on LSB, USB, CW, and AM. With provision for the FM-747 FM unit—great for watching 10-meter repeaters.

You get 20 memories to store frequency and mode. Dual VFOs with split frequency operation for DX-pedition work. And manual band scan plus auto-resume memory scan via the microphone up/down buttons.

**Great receiver.** Utilizing a directly-driven mixer, the FT-747GX receiver features superb overload protection. You also get factory-installed narrow CW and AM filters. A one-touch noise blanker. All-mode squelch. RIT. And a 20-dB attenuator for local QSOs.

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# YAESU

CIRCLE 71 ON READER SERVICE CARD

## Fill your logbook. Without emptying your pocketbook.





in April and May the sun never sets at such high latitudes, and the constant presence of light was potentially psychologically draining and disorienting.

When the expedition reached the North Pole, control passed to North Pole 28, a floating Soviet science station manned by Canadian Chief Operator Barry Garratt, VE3CDX, using an ICOM IC-761 HF transceiver. Earlier Garratt and Atkins became the first Canadian amateurs to operate from Russia under the newly signed reciprocal operating agreement.

At the North Pole the group was greeted by almost 200 Soviet and Canadian government officials and members of the media. Garratt and Mike, G0/PA0BHF, the U0SAT technician from the University of Surrey, UK, were besieged with amateur calls for their first and only QSO with the North Pole. The team printed their own official QSLs, provided courtesy of Fred Hammond, VE3HC, which were mailed to thousands of amateurs around the world confirming radio contact with the North Pole.

As soon as they reached the North Pole, the skiers travelled toward the sun, the ice glare contributing to their wind-burned faces. With the extremely low temperatures, the team faced severe frostbite and was forced to eat slabs of fat for dinner to maintain body temperature. They also could not take showers for three months!

As the skiers entered the final leg of their journey, communications switched to CI8C, the main Canadian base station, located at Resolute Bay, Canada. But before Garratt left the frigid North Pole for Resolute Bay, the ice island that supported the Soviet station cracked, splitting the airstrip in two, sending valuable supplies plunging to the bottom of the Arctic Ocean.

Despite it all, the group walked into Cape Columbia on June 1, 1988 in good health, side by side so that no one should be first, symbolizing the teamwork and cooperation necessary for success in such a dangerous mission. News of their arrival was relayed by amateur radio to the Canadian base station at Resolute Bay, which relayed their arrival to Ottawa and Moscow. The skiers were then treated to official receptions by both the Government of Canada and the Soviet ambassador in Ottawa. All of the Soviet radio amateurs who participated in the event were flown to Canada for the festivities.

To the credit of the skiers and the communications equipment, Atkins stated, "The project was an outstanding success from the amateur radio standpoint because of its magnitude. This is the first time amateur radio has been used to this extent internationally."


QSL manager David Adams com-

mented, "No such prolonged expedition ever had communications that functioned as smoothly around the clock, or did more to keep up the morale of the skiers through every kind of hardship."

During the journey, amateur operators from all over the world listened on 2 meter handhelds tuned to 145.825 MHz to the digiwalker on board OSCAR II providing the skiers with satellite information. And with no modifications to the radios, they were able to operate at sub-zero temperatures and stay on frequency despite adverse conditions.

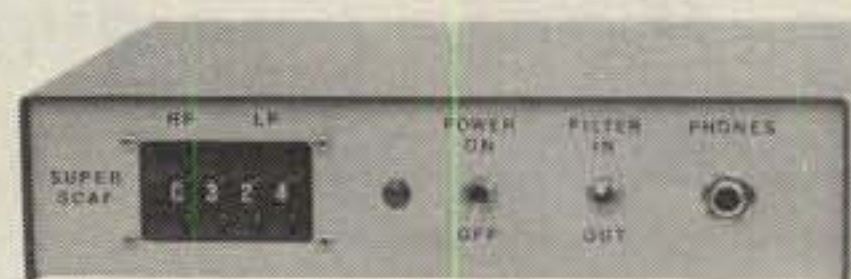
The Soviet stations used Soviet-made equipment. The Canadian stations used ICOM equipment, specifically a high-frequency transceiver, 500 watt solid-state linear amplifier, 2 meter base station transceiver, airband handheld, and 2 meter handheld. An ICOM high-frequency transceiver was also supplied for the Soviets' use.

Atkins commented, "The best thing about the project is that it ended ahead of schedule with everyone in very, very good physical condition."

What next? With the completion of the first successful foot crossing of the Arctic only hours old, expedition leader Dmitri Shparo hinted at the possibility of an Antarctic expedition now that the USSR-Canada ski trek has laid the foundation for further east-west cooperation. 

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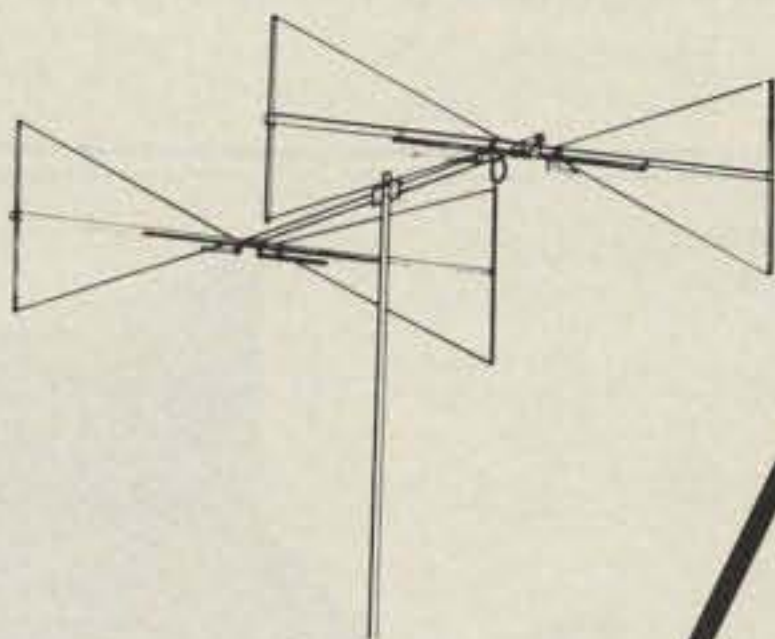
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## Build A Coax Antenna Switch For Your Station

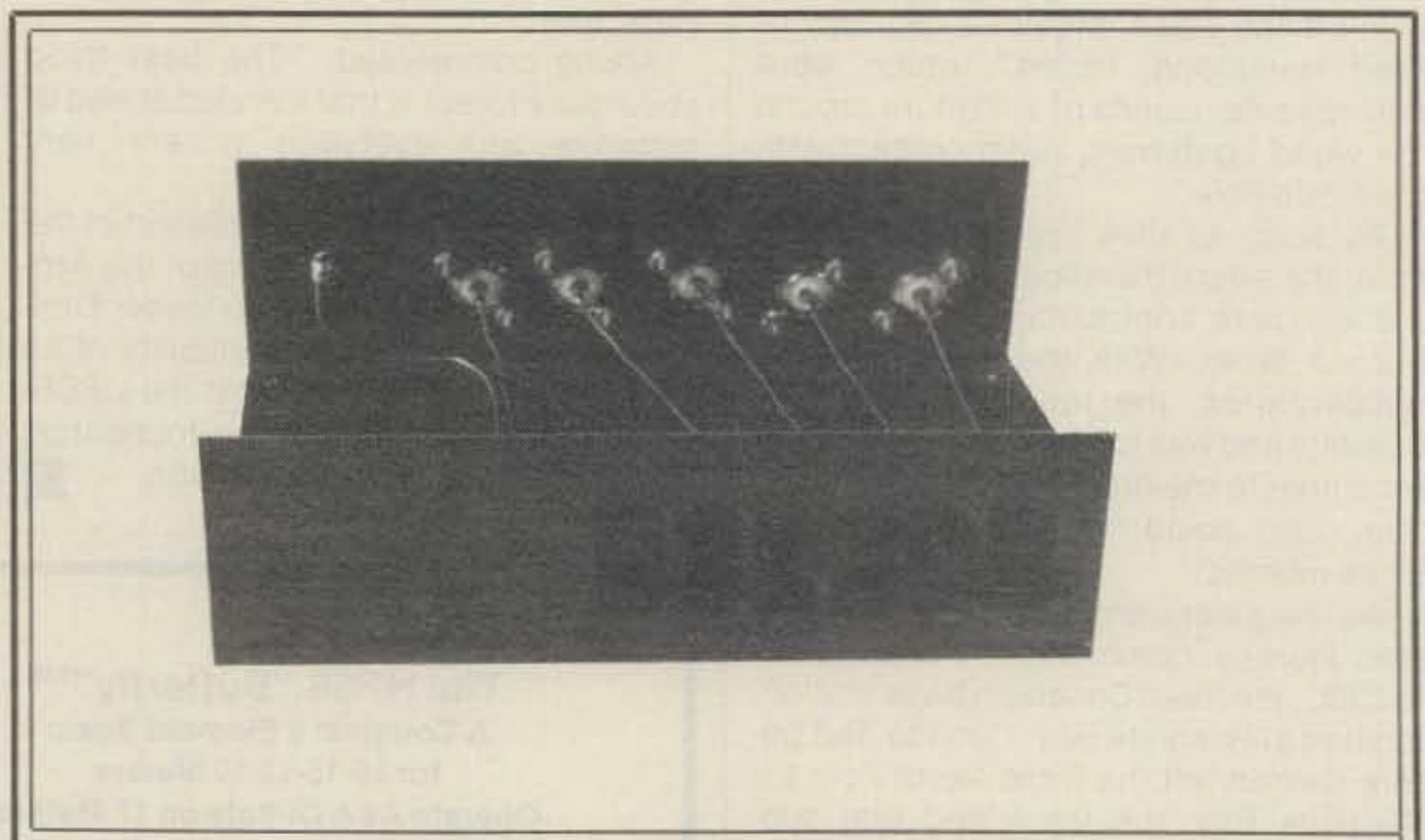
BY LEW McCOY\*, W1ICP

**T**his is a simple one-evening construction project that could prove to be very worthwhile in your station. It is a coaxial switch for transferring antennas, and if desired it can be used as an output indicator.

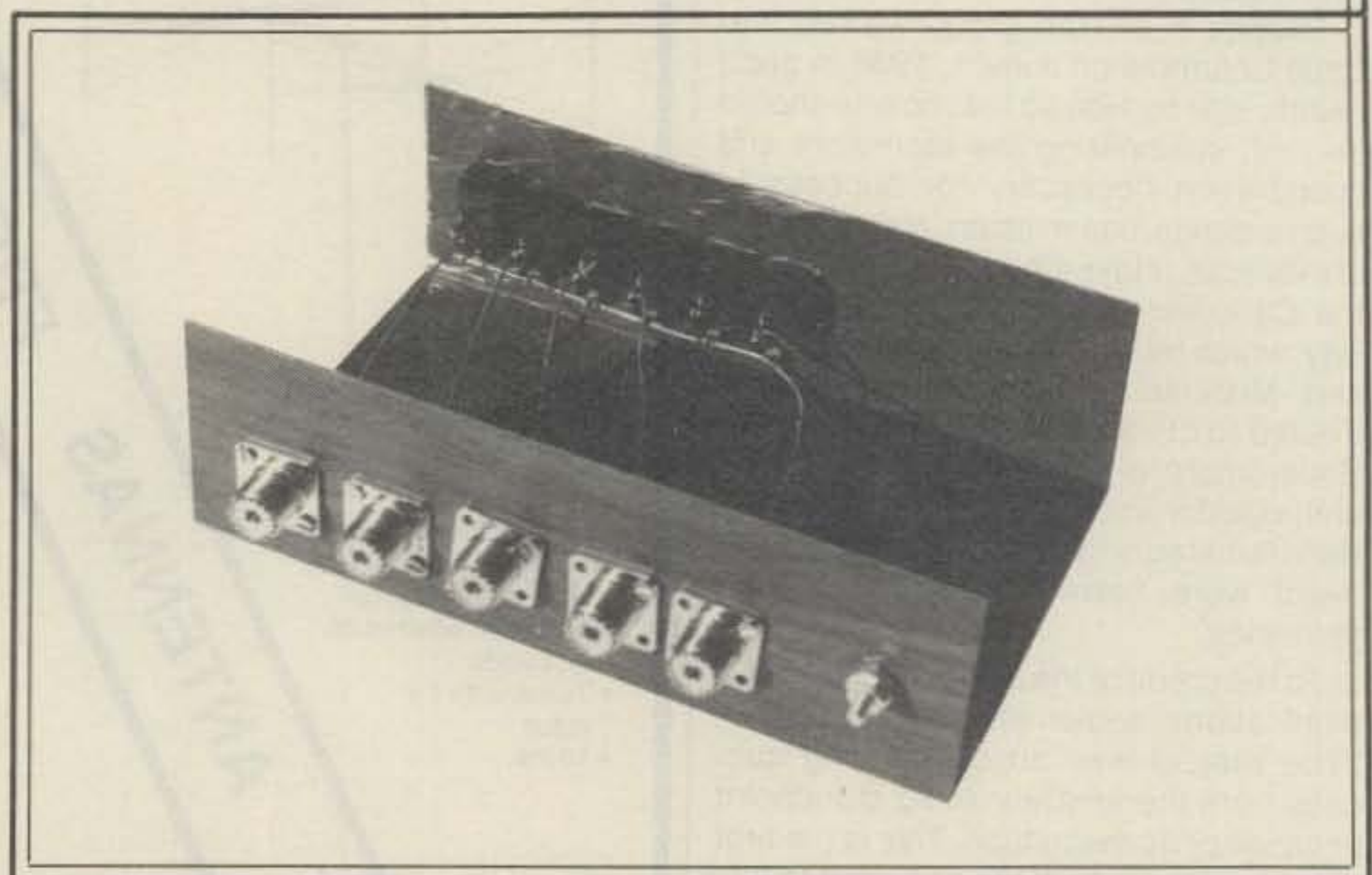
I have built many coax switches in the past and always used a wafer-type switch. Unfortunately, wafer switches are getting harder to find. In searching for another way, I found that All Electronics (P.O. Box 567, Van Nuys, CA 91408) listed many types of rocker switches in their surplus catalog. Some of these switches have more than adequate ratings, and they only cost \$1.00. They looked like a good bet, so I ordered half a dozen plus some SO-239 chassis mount coax connectors, also at \$1.00 each. This brings the cost to \$11.00, plus you'll have to add a small metal box. This means your coax switch is going to cost a lot less than commercial units (and it is just as good).

It only took a short time to mount the switches and connectors in a box and set up a test procedure. I wanted to see if the switches would take power and not burn or blow up. I went from 160 through 10 meters, checking first at 150 watts out and then 1500 watts. I could detect no heating or problems of any kind using the switches. I might add that I was concerned about an impedance "bump" in the line caused by the switch lines to the fittings. Checking the SWR with the switch both in and out of line showed no perceptible difference in the SWR. If it had, I was prepared to make up short lengths of 50 ohm coax to go between each switch and fitting. However, that wasn't necessary, which makes the work of building the unit that much simpler.

Some words of caution are in order here. The switches I used were made of an insulating material that was black



*This is a front view of the coax switch. There is one extra unused switch (see text).*



*From the back, five coax inputs provide switching for four antennas. The lug at the right is for an external ground connection. I recommend a good earth ground connection here.*

\*Technical Editor, CQ, 200 Idaho St., Silver City, NM 88061



NOTE:

CR1 = 1N34A or similar  
S1-S5 = Rocker switch, see text

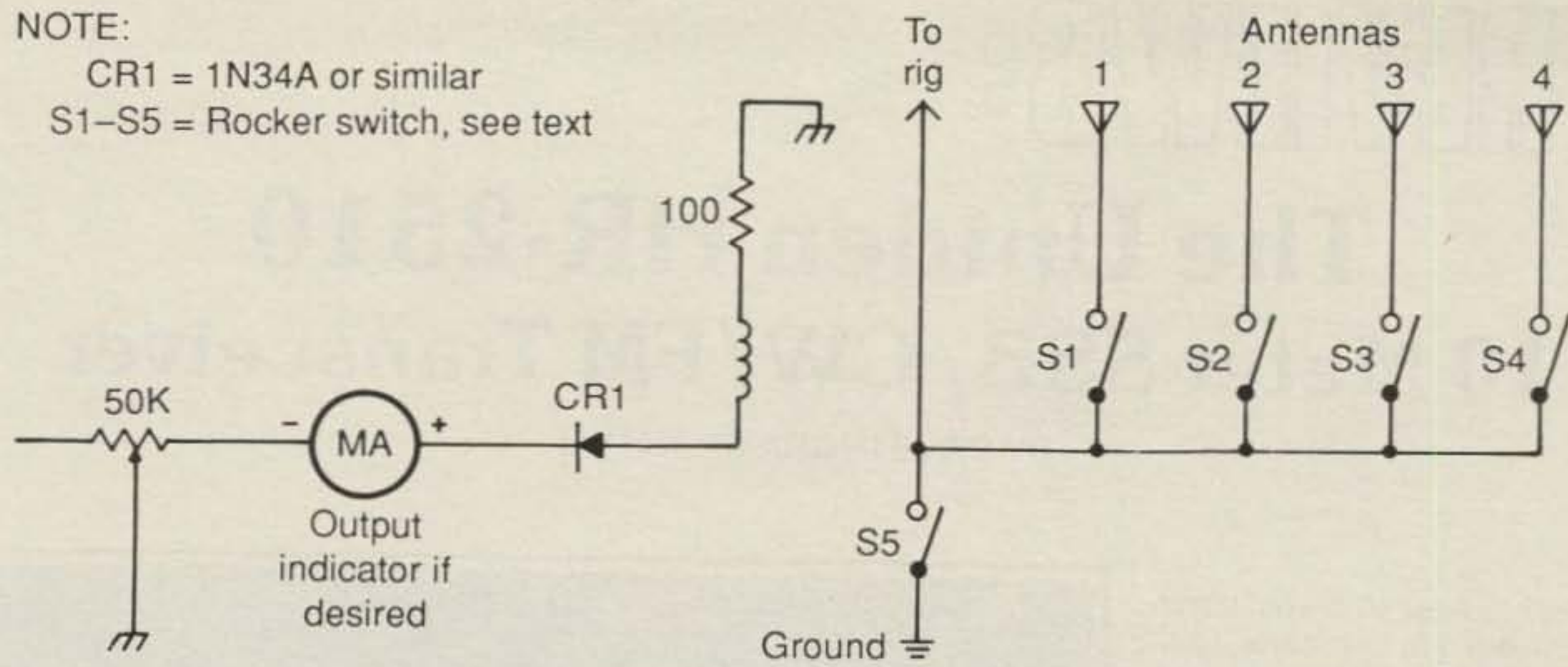


Fig. 1—Circuit of the unit (see text for details).

and could be plastic. Carbon is a popular material in making such plastic, and of course carbon is a conductor. The switches I got from All Electronics are rated at 15 amps at 115 volts AC. Bear in mind that 115 VAC is a rating at 60 cycles (excuse me, 60 Hertz). They are not rated at high frequencies, such as 10 meters. As I said, I carefully tested these switches at full legal power from 160 through 10 meters. I didn't test them at any higher frequencies, and I am inclined to believe that one would get heating at 2 meters and higher. However, they perform excellently at the bands I specified.

Also, as they are different from a wafer, I wouldn't suggest using them in a common switching arrangement using two different transceivers. I don't know how many amateurs use more than one receiver when set up in a switching arrangement, but unless you changed the design of my circuit, it would be possible to dump the output from one transmitter into the receiver of another if you fail to turn off a switch. I doubt that anyone would do this, but I felt I better warn the readers. Leaving another antenna connected is also possible, but this isn't serious (in fact, it may prove interesting!).

Fig. 1 is the circuit of the unit. I used four switches which are single-pole, single-throw each. This means it is possible to switch four different antennas. (There are five coax fittings, one for the common lead from the rig plus four for antennas.) The fifth switch is used to connect the transceiver to the various antennas, or to the main line to ground—a necessary lightning protection in most areas. I also installed the sixth switch but didn't use it, saving it for possible future use.

As usual, I couldn't find my nibbling tool, so it meant drilling holes and then filing out the switch hole for the square switch mounting. Be careful to do a good

job here because the switch is held in place by plastic tabs that must just clear the hole.

Naturally, I couldn't find my  $\frac{5}{8}$  inch drill either, so I also had to enlarge the coax fitting holes. I still completed the job in a few hours. I realized that the metal box I had was a little large for what was needed. Then I thought, what the heck. I can either build an SWR bridge or an output indicator if one were needed. However, most amateurs probably have SWR bridges and output indicators, so the builder can decide according to his or her desire.

When you build the unit, if you use a different box—and you no doubt will—you may encounter an impedance bump in the line caused by insertion of the switch. If it

is something you cannot live with, then run short lengths of coax between the switches and the fittings. I doubt that such will be necessary, however.

I have included a simple circuit for an output indicator. If you add the output indicator, you can use it for a tuning indicator (Tune For Max), and so on. The potentiometer can be set at any desired level. Any meter from 100 microamps to 1 milliamp is suitable, and there are plenty of those surplus or at fleamarkets for very little cost. L1 in the circuit is simply a piece of insulated wire that is run near the line from the transceiver input to the switch. You will have to adjust the wire for whatever output indication you desire. Have fun!



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CIRCLE 151 ON READER SERVICE CARD



# CQ REVIEWS:

## The Uniden HR-2510 10 Meter SSB / CW / FM Transceiver

BY DAVE INGRAM\*, K4TWJ

**W**hat's this? A new 10 meter transceiver that actually fits in today's compact cars and sports an attractive price tag to boot? Sure enough, and Uniden's new HR-2510 is sure to capture the hearts and interest of 10 meter devotees everywhere. It is a genuine fun rig you can mount in a car with its supplied bracket, slide into an open corner at home, or slip into a small tote bag for traveling.

This 25 watt output transceiver covers 28.000 to 29.700 MHz with SSB, CW, AM, and FM operations; built-in SWR bridge; semi-break-in CW; RIT; noise blanker; and more. The receiver's sensitivity of .25 uV is quite adequate, and when 10 is open as it has been recently, 25 watts can work plenty of DX. In fact, my first week's worth of QSOs while using the HR-2510 was all DX! With sunspots increasing every day, a little rig like the HR-2510 is loads of fun.

I'm sure that many amateurs will recognize Uniden's name from their popular Bearcat® scanners, cellular telephones, and other electronic items. The HR-2510 is their first serious entry into the amateur radio field. I would say they will watch its progress as a measure of consideration in producing additional amateur radio gear.

### General Overview

The compact HR-2510 is enclosed in a black and dark gray cabinet measuring 2½" H x 7¼" W x 11"D, and weighs roughly 4 pounds. The front LCD readout is amber color, with selectable bright or dim backlighting. Its left side includes bar-graph metering, and the right side indicates frequencies. A stout internal speaker is mounted on the bottom, and a healthy heat sink on the rear is flanked by connectors for antenna, power, and accessories. Rather than using regular ½ inch phone jacks, Uniden's 2510 has one nine-pin Molex socket for connecting a key, external speaker, and auto PA speaker. Switching from internal to external speaker and/or connecting a key thus



*Uniden's new HR-2510 is a compact, all-mode 10 meter transceiver with a sensitive receiver and 25 watt output transmitter.*

involves replacing one "accessory" plug with another (supplied) plug wired to your speaker and/or key.

The transceiver draws less than 1 amp of current during receive and only 4 to 5 amps during transmit. Those low-power consumption figures are appealing in several respects. You can enjoy some fairly long mobile operating stints while parked in a shopping-mall lot, for example, without totally draining a car's battery. An inexpensive and low-current AC supply also mates perfectly with the rig for home or portable use.

The receiver's overall sensitivity, selectivity, and audio quality strike me as surprisingly good, especially considering its low cost. Its "S" meter is a bit on the stingy side, but that's not serious—only truthful. The RIT control covers roughly a 6 kHz span, which is perfect, but new amateurs must remember to center-position the control for receiving and transmitting on the same frequency. An RIT

"off" switch is not included. I suggest placing a small drop of red fingernail polish on that knob's pointer as a "mental reminder." Additional HR-2510 details and specifications are shown in Table I.

Amateurs interested in self-contained portable operations can put together some clever systems using the HR-2510. Visualize, for example, home-fabricating a slip-in metal bracket for holding the transceiver and a 5 amp rechargeable VCR-type battery. Add a carrying handle and whip or ducky antenna plus a mike clip, and you have a "midsize handheld" that will literally work the world. Imagine using that setup on a mountaintop or while relaxing on a warm southern beach. Now that's living!

We also understand KA8PGJ in Dayton interconnected his HR-2510 and 2 meter transceiver for remote base operation on 10 meter FM. A simple one-transistor interface was used between each unit's squelch-voltage terminal and a basic

\*Eastwood Village No. 1201 So., Rt. 11, Box 499, Birmingham, AL 35210



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COR circuit. By now he has probably worked all continents on a handheld.

## A Front Panel Tour

A convenient means of familiarization with any new transceiver involves trekking through its front-panel controls and their operation in a step-by-step manner. Using that technique, let's start at the 2510's left top area and proceed to the right bottom while pausing for a few descriptions along the way.

First, several "behind the panel" aspects are noteworthy in the transceiver's mode switch. CW operations, for example, include a built-in sidetone that tracks with the rig's volume control. Its semi-break-in operation is quite smooth (no clattering relays at all!), and the preset delay time returns to receive mode after 1 second of "key-up." If desired, the front "TX" button can override that function for manual T/R switching.

A group of nine pushbuttons is mounted on the front panel's left side. One button steps through the meter's functions for selecting RF output, modulation, SWR, and calibration modes. An adjacent front control is used in conjunction with the SWR function for calibrating and measuring SWR in the usual manner. Another pushbutton adjusts the microphone gain—press it in for low or release it for high. That may initially seem a bit compromising, but it is actually quite convenient. Another interesting feature is the 2510's "Beep" button. When pressed, a brief tone is added at the end of each SSB transmission. You've probably noticed many operators using that toning method during contests. It's becoming quite popular, and it may be a real boon for Novices.

Frequency coverage is divided into four band segments which are step-selected by the 2510's "band" pushbutton (see Table I for frequency ranges). The main tuning knob is also lightly detented for easy and positive mobile use. It thus has the "feel" of a 2 meter FM rig rather than "free wheeling." Three tuning rates are step-selected via a front button—10 kHz, 1 kHz, and 100 Hz. A small cursor appears under that selected digit in the transceiver's LCD readout. I found the 1 kHz speed ideal for general band tuning and operating, and switched to the 100 Hz speed only for fine-tuning DX stations. I should also mention the 2510's front "memory channel" buttons and mike up/down switches likewise operate only in 10 kHz steps—not too good for SSB, but perfect for fast QSYS and operating 10 meter FM. The international calling frequency on 10 FM is 29.600 MHz, with other channels "stacking" up the band to 29.700 MHz in 10 kHz increments. Popular repeater outputs are every 20 kHz (29.620, 640, 660, etc.). Their inputs are usually -100 kHz (29.520, 29.540, 29.560, etc.). Transmit offsets are not in-

General	
Frequency Range	Band A—28.0000–28.4999 MHz Band B—28.5000–28.9999 MHz Band C—29.0000–29.4999 MHz Band D—29.5000–29.6999 MHz
Microphone	500 ohms Dynamic, w/PTT and Channel up and down
Speaker	8 ohms, 3 W
Operating Modes	CW, USB, LSB, AM, FM
Display	Backlit LCD
Display Items	Frequency, Channel #, Meter, Meter Mode, TX, Band, VFO Span
Size	7.32" x 10.35" x 2.44"
Weight	4 lbs. 3 oz.
Transmitter	
Frequency Stability	± 300 Hz Nominal, (at 25° C, 5 minutes after power on)
Output Power	CW 25 W Nominal USB/LSB 25 W PEP Nominal AM/FM 10 W Nominal
Spurious Harmonic Emissions	- 50 dB Nominal, all modes
Carrier Suppression	- 55 dB Nominal, USB/LSB Modes
Unwanted Sideband Suppression	- 45 dB Nominal, USB/LSB Modes
Power Consumption (No Modulation, PTT Depressed)	AM/FM 3 A Nominal USB/LSB 0.8 A Nominal CW 5 A Nominal (Key Down)
(Max. Modulation) Microphone Input	AM/FM/USB/LSB/ 3 A Nominal
CW Key Voltage/Current	1 mV Nominal for 50% AM Modulation 8 VDC, 10 mA
Receiver	
Sensitivity for 10 dB S/N	AM .5 μV Nominal CW/USB/LSB .25 μV Nominal FM .5 μV Nominal
Sensitivity for 20 dB S/N	70 dB Nominal (10 kHz Spacing)
Adjacent Channel Selectivity	4 W Nominal
Max. Audio Output	55 dB Nominal
RF Gain Range	± 3 kHz Nominal
RIT Range 1	100 μV Nominal
"S" Meter Sensitivity at S9	65 dB Nominal
Image Rejection Ratio	500 mA Nominal
Power Consumption, No Signal	1000 mA Nominal
Power Consumption, Max Audio	

Table I—Technical specifications of the Uniden HR-2510.

cluded in the 2510, so some fast button presses fill the void. It works. I keyed several repeaters and then switched to their output and heard my squelch tail. Honest!

Both RF and AF gain controls are included on the 2510's front panel, so reducing sensitivity when nearby stations are exceptionally strong is a snap. The unit's squelch also works on all modes, so you can leave the rig quietly monitoring for band opening and be pleasantly alerted when DX conditions are good. The rig's noise blanker is pushbutton-selectable and not level-adjustable, but it works like a champ. Uniden really "has their act together" on that feature. It even reduces power-line noises!

While the 2510 has an impressive-looking front panel with 20 controls, its use of muted colors is very beneficial for mobile installations. Flashy rigs catch evil eyes. The 2510 blends with the dash in many modern cars, and it's small enough to fit into those open tray areas in many center consoles.

## Circuitry Overview

Briefly studying any transceiver's block diagram always reveals its inner beauty, so let's take a closer look inside the HR-2510. First, I will point out that fig. 1's diagram is slightly simplified for discussion. The original filled two large pages. There is a substantial amount of circuitry in this little rig. Let's begin with the receive path.

An incoming signal from the antenna moves through the SWR detector and the low-pass filter, and then "taps off" and goes up to the RF amplifier (a 2SC1647L transistor is used). It moves through the 10 meter bandpass filter to the receive mixer, where it is downconverted to 10.69 MHz. Notice the noise blanker's amplifier, detector, ALC, and gating switch above the IF filter section—impressive for a low-cost rig. The signal continues through the bandpass filter to the IF amplifier (notice "takeoff" for the AGC section), then continues to the AM or SSB detector. Finally, the detected sig-



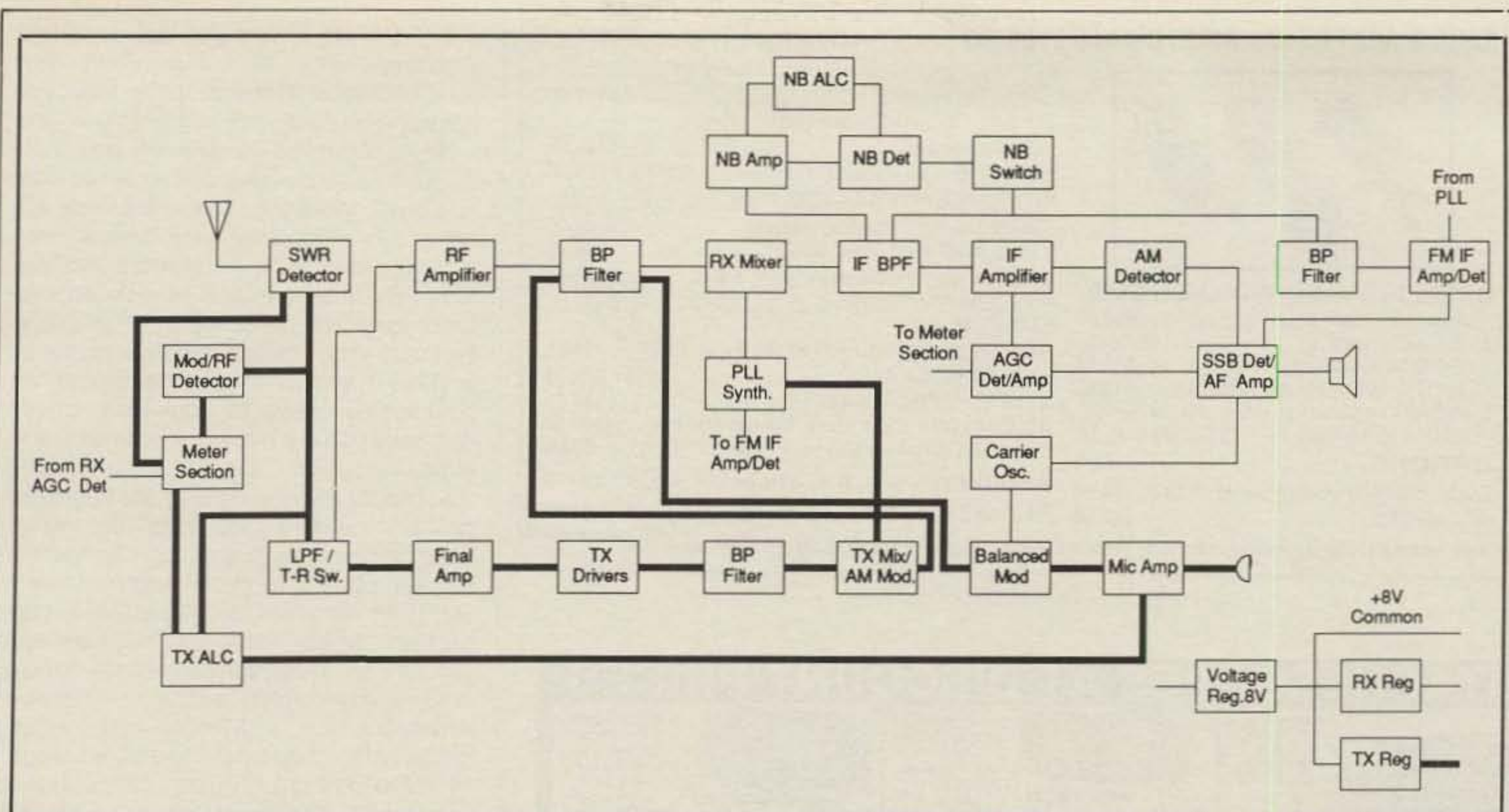


Fig. 1—Simplified block diagram of the Uniden/President HR-2510. Light lines are receive paths, while dark lines are transmit paths. See discussion in text.

nal moves through the AF amplifier and power amplifier to the speaker.

The 2510's transmit path begins at the microphone, goes through the mike amplifier, to the balance modulator, and through the bandpass filter. It then continues "down" to the transmit mixer, through the bandpass filter and TX drivers, then to the final (a hefty MRF477 transistor) through the low-pass filter, and to the antenna. Notice the TX ALC section "tapping off" the RF output and "going back" to the mike amp. This design improves the average SSB output to increase "talk power." The PLL synthe-

sizer block below the RX mixer contains the HR-2510's microprocessor control, "divide by N," PLL, and digital rotary encoder (main dial) sections. The rig's 50 preprogrammed memories are stored in the microprocessor and accessed by the mike's up/down buttons. Each memory is spaced and fixed in 10 kHz steps (example: 28.500 = 1, 28.510 = 2, etc.) Any selected memory can be tuned (but not reprogrammed) to a desired frequency (like 28.503) with the main tuning knob.

Several of the HR-2510's transistor types seem more "CB-oriented" than "KenYaeCom popular." However, I con-

sider that a natural design concept for this 28 MHz rig. Many of today's CB sets are impressive performers. Shaping factor details on the bandpass filter were not available, but its on-the-air performance is very good.

### On-The-Air

Although the Uniden 2510 is a 25 watt output transceiver, it makes an impressive account of itself on the air. Indeed, my first few days' contacts were all DX—even while mobile! I started off working northern Europeans on SSB, and then switched to FM on 29.600 and contacted several southern Europeans. Five of the world's six continents were also heard and worked on CW. I even ran a string of JAs from my car parked in the driveway. I used the HR-2510 during the 1988 CQ DX contest and honestly could not believe the super results. I even worked a good bit of "rare DX" (and a couple of new countries) right through pileups. What a blast! Ten was flourishing with good equinox-type excitement and everyone was having a ball. If you have not been on 10 meters recently or if you are a new Novice hesitant about operating HF bands, now's the time for action! Cycle 22 is doing great, and the next few years should be even better!

The 2510's selectable tuning rates take some getting accustomed to, but they are a snap to use afterwards. One button press changes from "coarse" or 1 kHz steps to "fine" 100 Hz steps. Two button pushes are then used to "jump



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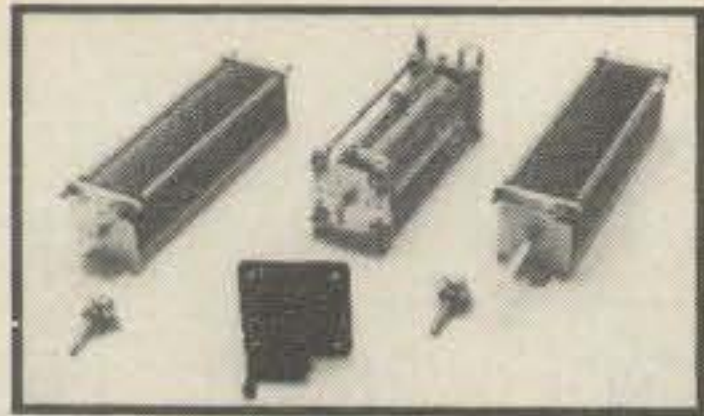
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over" 10 kHz tuning and returning to 1 kHz steps. The dial's cursor indicates your choice of steps to make selection easy and obvious.

Some of the 2510's favorable points are its good noise blanker, all-mode squelch, and SWR metering. These features are perfect for a "go anywhere" transceiver. It's easy to use, but I suggest new (Novice-enhanced) amateurs ask an old-timer for some guidance in initial setup. Listen to your transmitted SSB signal on another transceiver and determine the best speaking level for your voice. Check to assure you are transmitting and receiving on the same frequency, and then note that proper RIT setting with red fingernail polish. It makes a good "reminder" when band action is high and you change the RIT setting, and forget to return it to center. If an old-timer is not available, contact an "aged" amateur on-the-air and ask for honest-opinion assistance on how your audio sounds and its frequency. Amateurs are a friendly and helpful group. After those getting-started steps, listen to others until you feel confident (anxious?), and then get cracking on some fun DXing. It's great!

A couple of the 2510's less favorable points also warrant mention. First, its accessory plug with prestripped wires for an external key and speaker should be connected and/or covered with tape to avoid accidental shorts (the wires are affixed to the 2510's accessory plug). Second, there is no speech processor or provisions for keying an external linear amplifier. The rig "gets out" fine without speech processing, and problems of "overcompression" are avoided. You can also rig your own mike-energized switching for a big amplifier, if desired.

As designed, however, the 2510 assures new amateurs/Novices make few unnecessary mistakes—a very important consideration for first-time success. It is a clever approach to getting on the air and having fun. The 2510 is also an ideal second rig for old-time amateurs. You can use it in the den or car with few reservations or problems. Uniden has a good reputation for quality electronic equipment, and the 2510 is backed with a one-year limited warranty.

### Conclusion

All aspects considered, Uniden has done a good job on production of the HR-2510. The transceiver is a neat traveling companion with an attractive price tag rather than a lot of frills. Combine it with a mobile whip on the car and a short wire antenna like Radio Works' new "in tree vertical" for portable use, and you are set for fun almost anywhere and anytime. For more information contact President, Amateur Radio Division, 4700 Amon Carter Blvd., Fort Worth, TX 76155 (telephone 317-842-2483).





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# The WNZ Award: You Can Do It!

BY PATTY WINTER\*, N6BIS

**H**ave you read about the CQ Worked Novice Zones (WNZ) Award? It's an offshoot of the famous CQ Worked All Zones (WAZ) certificate, but if you're a Novice or Technician, it's just for you!

How do you earn a WNZ Award? By getting confirmed contacts with other amateurs in 25 of the 40 CQ zones around the world. You can obtain a map of the CQ zone system, plus a WNZ entry form, by sending CQ a stamped, self-addressed, business-size envelope. Wall-size zone maps are on sale at many amateur radio and electronics stores. You can also find zone listings, along with loads of other useful information, in the third edition (or later) of the ARRL *Operating Manual*.

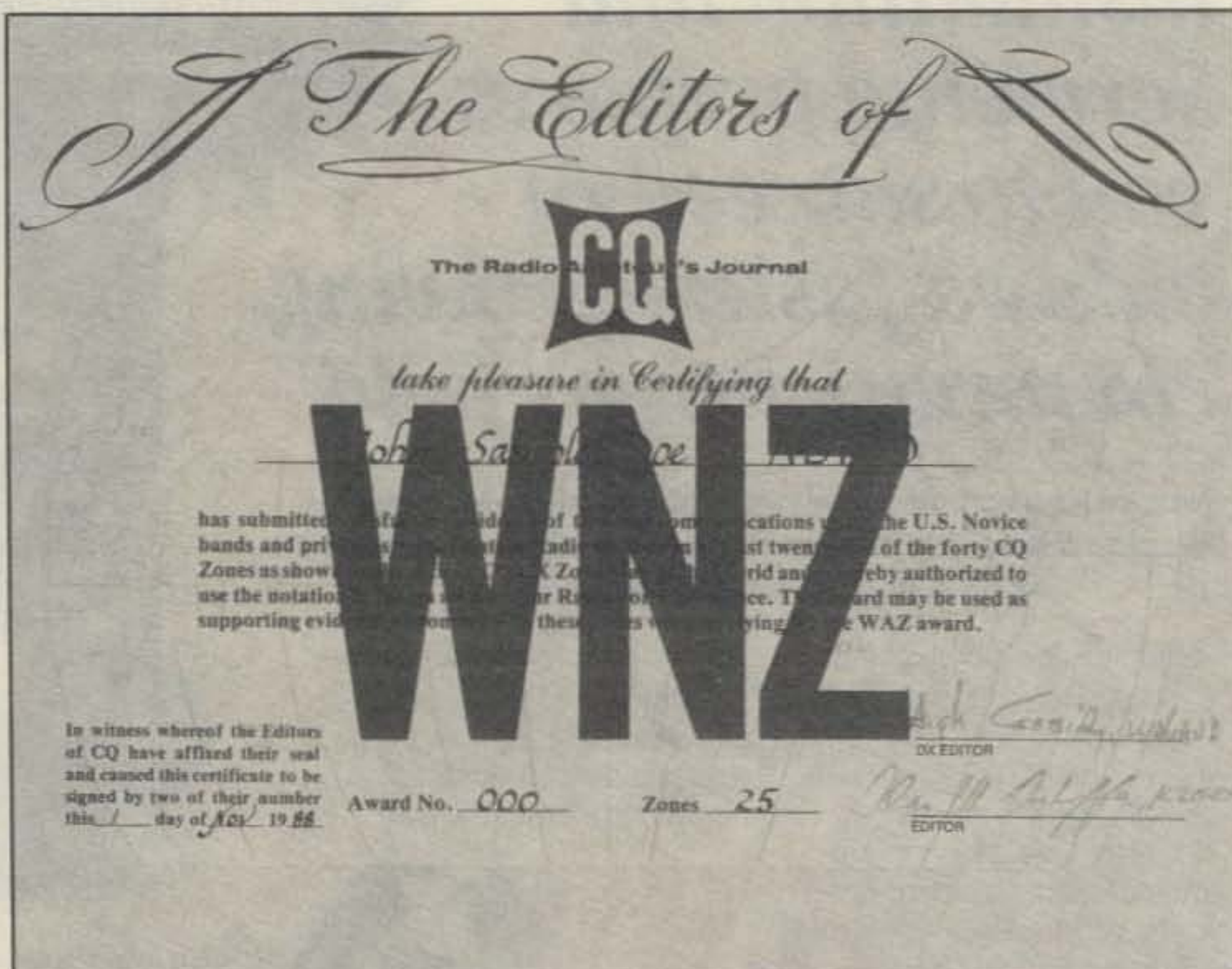
## Is It Really "Do-able"?

Does talking with more than half the world sound like an impossible goal to you? Do you despair that since you are a Novice or Technician—with restricted power, limited HF band allocations, and maybe a scrounged-together station—it will take forever to confirm contacts with 25 zones?

Well, consider a couple of things. If you live near New York City, 14 zones are no farther away from you than California, and several more are well within easy working distance. The situation from the West Coast is a little more difficult because of the smaller number of zones in the wide-open spaces of the Pacific, but I can assure you from personal experience that at least 15 zones are relatively easy to catch.

If that doesn't cheer you up enough, maybe this will: In my first three years on HF, I worked over 100 countries in 29 CQ zones using only 100 watts and (Are you sitting down?) an aluminum porch awning for an antenna! And that was during the worst possible part of the sunspot cycle, when the higher bands that are better for weak stations were practically nonexistent. Just think what you could do in the same amount of time with a real antenna and better propagation conditions!

Okay, you might say, but as an Advanced class amateur I had access to spectrum that you don't, including that legendary DX paradise, 20 meters. That's true, but the main reason I spent so much time on 20 is because 10 and 15 weren't open much during those years. When they are, and they sure are now,



contacts are *much* easier to make than on 20 meters. More on that in a minute.

If you aren't convinced already that you can earn your WNZ Award with some persistent effort, then let's take a closer look at your imagined disadvantages and see why they might not be as bad as you think. Then we'll consider some advantages you have about which you may not have even thought. As we go along, I'll be giving you more examples of how your station will probably be better than mine—all by way of saying that if I can do it, you can do it!

## Your Disadvantages?

Am I going to try to convince you that Novices and Techs can work DX as easily as higher-class licensees? Of course not. But is the situation as bad as you imagine? Probably not.

**Limited Band Access.** You are going to miss some exotic stuff because it's outside of your legal frequencies; there's no getting around that. I miss some opportunities because I don't have access to Extra-class frequencies. But hey—that's why they call it incentive licensing. If you get the DX bug, you'll have a good motivation for upgrading. Meanwhile, take full advantage of the spectrum you've got. It's better than you think, as I'll discuss soon.

**Limited Power.** You're allowed 200 watts on the HF bands. I earned DXCC (the ARRL's hundred-countries award) using 100. Next question?

Okay, that's a bit flip. It will be frustrating when you're competing for a DX station against higher-class licensees who are allowed more power. But what I just said really should give you hope. I worked most of my DXCC contacts on 20 meters, traditionally the home of the big-gun stations running full KWs. If I can sneak my way through them, you can do the same.

**Poor Equipment.** You might begin your amateur radio career with a spiffy new radio that has all the modern bells and whistles, in which case you can skip this section. Or you might continue the tradition of scrounging whatever you can, in which case you need some encouragement.

If you, like me, are using a radio that doesn't have any bandpass filtering or noise blanking, you're stuck with any QRM that appears. I've missed DX stations because they were drowned out by stronger U.S. stations just off-frequency. My radio also doesn't have any preamplification, so the stations are only as loud as my awning can pull them in, which is to say, not very!

All this is by way of saying that if you also have a rig without the fancier features, it will be frustrating. And yes, you'll miss some opportunities because of it.

\*P.O. Box 537, Menlo Park, CA 94026



But it isn't fatal. Put up the best antenna you can, promise yourself to make the most of the situation, and go to it. Sure, you'll have to work harder than your friends with beams and amplifiers to get those coveted DX stations, *but you will get them.*

**Lack of Experience.** This one you can start fixing right now. Turn on your radio and start listening—and calling. The jitters go away the more you do it. Honest!

### Your Advantages

Okay, enough of the supposed doom and gloom. Let's look at what you've got going for you, including some advantages over us higher-license folks!

**Good Conditions.** The number one reason why you probably won't have to wait three years to work 25 zones is improved propagation. As I mentioned, I earned my DXCC during the worst part of the sunspot cycle, when 10 and 15 meters were mostly unavailable. Those higher bands are getting better all the time now, and you have privileges on both of them (including voice on 10!). Lots of us are getting excited about the current conditions. Join in the fun, and you might even run into CQ's own Alan Dorhoffer, K2EEK, on 10 meters.

Why do I keep presenting these bands as your golden opportunity? Because they reflect your signal long distances with minimal signal loss. The difference between 40 and 15 meters can be the difference between having an unreadable or readable signal at the other end. If all your DXing has been on 40 or 80 meters, you'll be amazed at how much easier it is to snag stations on the higher bands.

**Novice Enhancement.** Some DX has always frequented the Novice bands to get away from pileups and to enjoy a nice leisurely chat. With Novice Enhancement, more foreign amateurs are now intentionally working in the U.S. Novice/Tech phone portion of 10 meters.

Just for fun, I spent some time listening between 28.300 and 28.500 one Sunday last October from a station in New Jersey that didn't even have a 10 meter antenna—just 40 and 80 meter dipoles. Here's what I heard in less than two hours: England, West Germany, Sweden, Barbados, Yugoslavia, Puerto Rico, East Germany, Turkey, Chile, Ireland, Portugal, Italy, Hungary, Ivory Coast, France, Romania, Bulgaria, Argentina, Belgium, Poland, Spain, Norway, The Netherlands, Scotland, Czechoslovakia, Venezuela, Panama, Ukraine, Wales, Azores, and Ceuta. You wouldn't mind getting those, would you?! The stations you need are on the air, and few of them have major pileups.

**Desire To Help Newcomers.** Don't overlook another advantage you have as a Novice or Technician: Other amateurs want to help you.

I have personally heard DX and DXpedition operators from rare locations call "Novices and Techs only." And many DX stations purposely hang out in the Novice bands on occasion. Partly it's to hide from the pileups they'd get in the General, Advanced, or Extra bands. (Sure, higher-class licensees can use the Novice bands, but most of them don't.) But partly it's because they, like anyone else, enjoy helping newcomers.

Think about it. Wouldn't you get a bigger thrill from giving a new amateur a brand new country than from working someone who's confirmed your country 50 times over? No matter how "com-

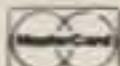
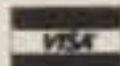

mon" their country is, if it's new to you, they've made someone happy—and that's a reward everyone enjoys.

### How To Increase Your Chances

I hope by now I've convinced you that you have a sporting chance of earning WNZ in your lifetime! Now how about some tips on speeding up the process?

**Operate Intelligently.** It may not be much consolation when you've been calling a station for 45 minutes, but you're getting valuable experience by earning your 25 zones the hard way—with modest equipment and low power. Very few of your

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contacts will be handed to you on a silver platter. You'll have to sharpen your operating skills to a fine point.

Big-gun stations can be sloppy. I know, as I've had the opportunity to operate some world-class stations, and when you can break through nearly any pileup simply by pressing the mike button and giving your callsign, where's the incentive to be clever? There isn't any.

But if you're outpowered, you have to learn all the tricks. Did that rare DXpedition show up on 10 meter phone at a certain time yesterday? If so, you should be waiting for him today; there's no substitute for catching a popular station before the pileup forms! Is the propagation going up and down? Then why waste your breath during the lows? Wait for the loud times.

And what about the individual DX operator's style? Is he coming back to the first call heard, or waiting for the hubbub to die

down and then picking one out? Is she going by callsign district? Is he working split frequency?

To sharpen your DXing skills, read books such as *The Complete DXer* by W9KNI (available from CQ's Bookshop), talk to more experienced amateurs, and listen to DXpeditions and major contests.

Is this learning experience fun? Not always. Frankly, it hurts when you've been trying to get a certain station for an hour and someone with a more powerful station keys up once, gets a response from the DX station, and says "Thanks for the contact from Transylvania. I've worked your country 49 times already this year and wanted to make it an even 50." As frustrating as that is, you have to remember that they have the right to do it, so just stifle your expletives and keep calling. When you do pull a new one out from under a stronger station because you had better operating skills, you'll feel great.

**Take Advantage of Contests.** Contests can be intimidating to newcomers, but they are one of our best opportunities for racking up new countries. Why? Because the goal of the die-hard contesteer is to work as many stations as possible. They know how to do that quickly and effectively, and you're as good for a point as anyone.

Skim through CQ for the rules of upcoming contests, make sure you understand the basic rules (such as the required exchange, and whether you can work a particular station on every band or just once during the entire contest), and jump in. You'll be surprised at how quickly it gets easy. Even if you're too nervous to transmit, at least listen; most of these people really know their stuff.

**QSL Effectively.** I hope my next statement isn't too discouraging, but working a new country is only half the battle. In order to qualify for major awards (including WNZ), you need proof of your QSOs. In other words, QSL cards.

Much has been written about effective QSLing, and you can find good information in the October 1988 issue of CQ. But here are some quick reminders:


- Use cleanly printed, easy-to-read cards. If your card has printing on both sides, make sure your callsign appears on the same side as the report block. DX and DXpedition operators who have to fill out thousands of cards don't like having to flip them over to get the complete information. (Personally, I think that an interesting card helps your return rate, too, but I can't prove that scientifically!)

- Let the DX station know that this is a new country for you. Even tell him that you're a Novice or Technician. As I said before, people like to help.

- Use stateside QSL managers whenever possible; it will save you overseas postage and usually be faster. The weekly W6GO/K6HHD List provides hundreds of such managers.

- If you're an ARRL member and don't mind trading off longer turnaround time for cheaper postage, use the League's outgoing QSL service.

- Don't forget to keep envelopes on file at your callsign district's incoming QSL bureau; DX stations will start sending QSLs via the bureau as soon as you become active. The addresses of the U.S. incoming bureaus are available from the ARRL. (You don't need to be a League member to use this service.)

**Be Persistent!** In your quest for DX, there will be times when everything seems to go against you—bad conditions, huge pileups, poor operating by the DX station or by other callers. If it gets to be too much, walk away from the radio for a while. It's only a hobby, remember? But if you keep trying, one of these days you'll have a CQ WNZ certificate of your very own hanging on the wall, and that'll make up for a lot of frustration. Good luck! 

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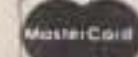
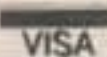
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## A Mag-Mount Conversion For Under A Buck

BY JOHN R. SOMERS\*, KC3YB



The brass antenna components prior to assembling the whip antenna.

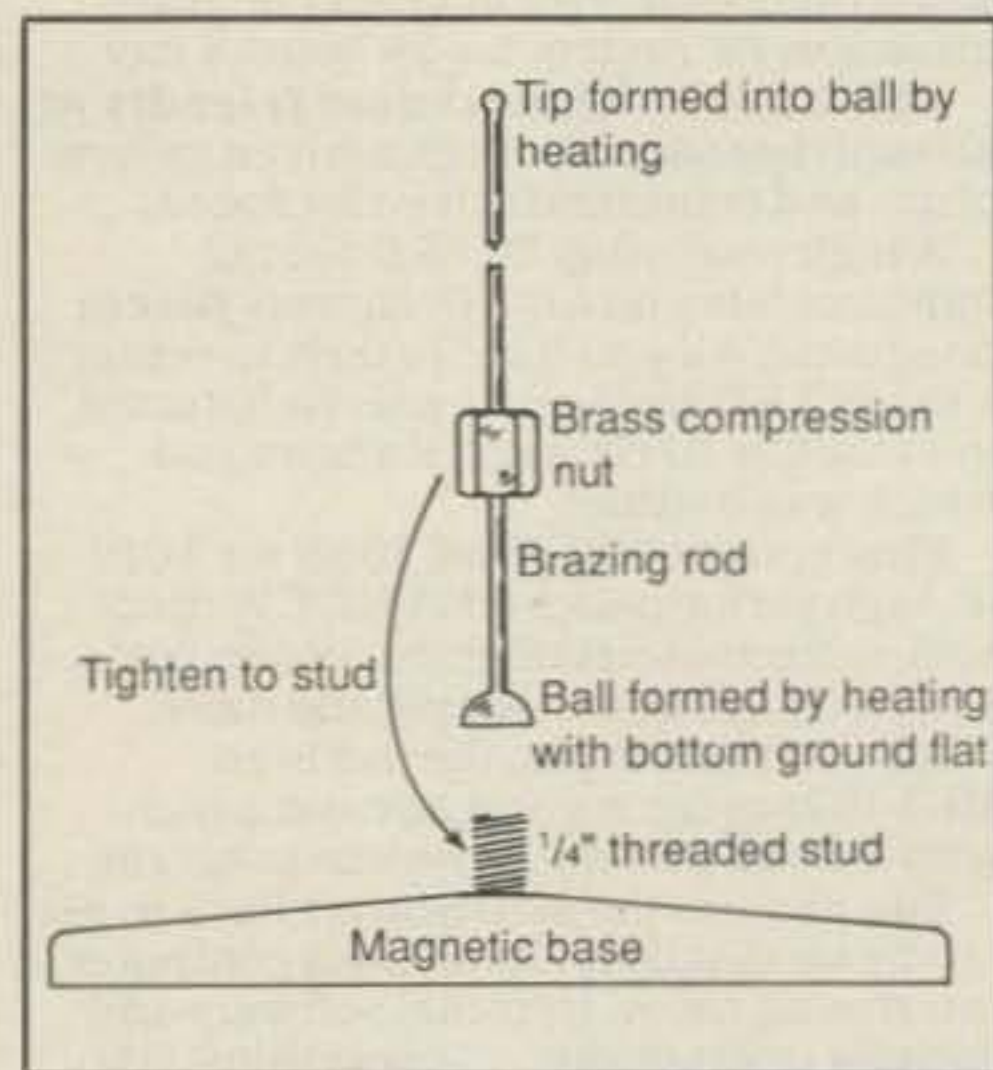


Fig. 1— A length of brazing rod and a brass fitting designed for use on copper tubing are all that is needed to convert a mag-mount base to a perfectly satisfactory quarter-wave antenna.

**R**ecently, due to a blown engine in my company car, I found myself without a 2 meter antenna to use on my "loaner." As my antenna was permanently installed, I could not easily remove it and install it on the other vehicle. A simple solution would have been simply to buy a magnetic-mount antenna. Unfortunately, I live close to 150 miles from the nearest amateur equipment supplier. I decided to see what I could devise from materials at hand.

### The General Idea

As I already had the important part, the magnetic base from a CB antenna I had converted to 10 meters, I decided to fabricate some type of quarter-wave whip.

\*93-25 Beechwood Place, Crisfield, MD 21817

Then when I got my car back I could just put the HF antenna back together.

Armed with the magnetic base, I headed for my local hardware store to see what I could find that would thread onto the 1/4 inch stud on the base. After much rummaging around through the plumbing fittings, I found a brass compression nut that had the same thread as the stud. For a quarter, the price was right. The whip part was easier; 39¢ bought a 3 foot brazing rod that turned out to be the same diameter as the hole in the top of the nut.

### Putting It All Together

Returning home, I heated the end of the brazing rod in the flame of a propane torch until it started to melt and form a ball at the end. I quenched it in water and ground the end flat to mate against the top of the stud. I then wire-brushed off all

the remaining flux coating from the rod. I slid the nut over the rod and tightened it down on the stud. Then with the aid of an SWR meter I pruned the rod to a proper match. In the interest of safety I heated the rod and formed a ball at the end that would hopefully cause me less injury if I poked myself than the sharp point where I had cut it to length.

### The Results

I have found that the homebrew quarter-wave works perfectly well. I was concerned that when my vehicle was in motion the wind would bend the soft brass rod, but such has not been the case. The whip will not stand being struck by low-hanging branches, though. However, if it does get bent, you can easily straighten it out again. Besides, what do you want for less than a dollar?





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**One of the benefits of not knowing something can't work is the elation you feel when it does work. How well it works is an entirely different matter. The fact remains that it does work.**

## Crazy Antennas I Have Used

BY JEFF LACKEY\*, K8CQ

**A** recent column in *CQ* brought back many memories of "crazy antennas" I have used over the years. Some have worked beyond my wildest imagination. Others have been quietly discarded.

### In The Beginning

One of my first experimental ventures resulted from an article that I read during the summer of 1958. As a newly licensed Novice (KN9MOA) still in grade school, I was eager to learn from the many sages who haunted the pages of the various radio magazines. These were learned men who had much to offer. With only modest storage space for magazines, I no longer have the article in question. Suffice it to say that the article extolled the virtue of *underground* antennas. Yes, *underground* antennas.

Anyone who has studied antenna literature should have become very familiar with the many theories of antenna images—*ad infinitum*. To a naive grade-school boy it seemed perfectly obvious, as this "expert" explained with great authority, that below-ground antennas ought to have above-ground images. And any fool will agree that constructing a below-ground antenna is considerably easier than putting one up in the air—as long as you have a hole. Well, my luck was unbelievable. My dad was putting in some drain tile for a new utility room that summer. Using an old piece of garden hose to enclose and protect about a hundred feet of wire, I proceeded to bury it at the bottom of the trench. It might have been 3 feet *below* the ground surface. The fact that its image was only 3 feet *above* the ground did not diminish my enthusiasm for this "obviously superior antenna."

Using my homebrew crystal-controlled 6AG7/6L6 transmitter, I tuned up on the 40 meter Novice band. With luck, it would give 15 watts DC input. I was getting a healthy amount of plate current, and the antenna appeared to be loading up nicely. This was indicated by a small neon

bulb which I would hold near the feedline while tuning the transmitter.

I listened for a CQ. Not hearing any on my one and only crystal frequency, I then called CQ. God, how I called CQ. No response. (Looking back now at those empty pages of calls, I must have had the patience of Job.) Little matter, as I knew I had a superior antenna!

Then wonder of wonders, I got an answer from a fellow across town, maybe 5 miles away. He was quite strong in my trusty surplus BC-348M receiver. I gave him a 599 report. He gave me a 449.

"He must have a lousy receiver," I muttered.

Several days went by, and I managed to make a half dozen contacts all locally within a few miles. Some doubts about this "obviously superior antenna" were beginning to enter my mind. Maybe I had done something wrong. Maybe the trench needed to be flooded with water.

"That's it!" I realized. "Mom hasn't used the clothes washer. I need to soak the ground around the antenna."

After a thorough soaking, more calls were made. Still little response. Then one Saturday morning I was answered by K8HBK in Ohio. He gave me a 589. Not bad. We chatted for over an hour. He was astounded when I told him of my underground antenna. In fact, I had the distinct impression he didn't believe me. No matter. I had shown—if to no one else but myself—that such an antenna *could* be used.

That was one of my last underground-antenna contacts. Sometime later it met a sudden death (lawnmowers can perform swift and irreparable damage) and I got my first lesson in giving adequate protection to antenna lead-ins.

By the way, if anyone is interested in trying out my underground antenna, I know a house in Indianapolis with a utility drain and a hundred feet of wire still buried about 3 feet below the ground surface.

### Apartments Are Fun

When my wife, Bobbi, WB8LKP, and I first moved to an apartment in Ann Arbor in 1969, we had only been married for a

few months. She had not yet become a "licensed ham" (anyone who knows her will surely agree that she was a *ham* long before she ever received a license), and she was not fully aware of the assorted contraptions that I was capable of constructing in my attempts to obtain better TV reception, etc. I am certain that many of her visiting relatives (especially her sister) thought I was a certified looney. Indeed, her sister once asked if the TV antenna mounted on a pole lamp in the living room was for drying clothes.

Landlords are generally unreceptive to "unsightly" coax, large beams, and full-sized dipoles hanging on the sides of their buildings. I have therefore tried a variety of indoor antennas. Most of them I have constructed using available materials.

One of my best 2 meter antennas was a 4-element beam consisting of coat hangers on a 1" x 1" wooden boom. Living on the third floor, I made several FM simplex contacts from inside the apartment across Lake Erie (ducting is quite common) into Cleveland. Anyone who has used 1960s vintage FM equipment will appreciate this accomplishment.

Another time I decided that the UHF TV reception provided in the apartment complex was of poor quality. Therefore, I built a 4-element screen reflector antenna with coat hangers and aluminum foil taped to some cardboard. It provided beautiful reception of the hockey games on Detroit's Channel 50. It also looked pretty good in the corner of the living room; a non-amateur friend once asked what school of art the "corner statue" represented.

These solutions are fairly straightforward for VHF and UHF. But how does an apartment-dweller amateur solve his HF antenna needs?

One of my main objectives was to work 40 meters. My first antenna was a helically wound vertical on a broom stick. It loaded up very nicely, and I made a number of contacts around the midwest on both SSB and CW. Unfortunately, there was so much RF floating around the apartment that my lips got burned more than once on the microphone. I even tried to load it on 160 one evening. My wife

\*1186 Temple Trails, Stow, OH 44224



yelled from the living room that the light over the kitchen table was turning off and on each time I keyed the transmitter.

Next I decided that a length of wire looped around the window frame might work reasonably well. It did, but it was too frequency sensitive and required constant retuning of the transmatch every time I changed frequency. Not good for contesting.

At this point I struck a good deal at a hamfest for a mobile ball mount and some assorted resonators. All I needed was the bottom section of the antenna. I decided to make a clamp assembly for the ball mount so that the antenna could be mounted outside the apartment when I wanted to operate. The clamp was fashioned from a piece of 1/8 inch aluminum about 3 inches wide and 2 feet long. It was bent so that the antenna angled away from the building about 45 degrees. The clamp assembly required two wood blocks to straddle the window casing for a firm fit. With some foam rubber placed between the window and the casing, I had an airtight seal to keep the cold Michigan winter winds outside. When I finished operating, the antenna was brought inside.

Initially I tuned the mobile antenna using the aluminum window frame as a counterpoise. This arrangement on 40

and 80 was only mildly successful. On 10, 15, and 20 it worked surprisingly well, and contacts were easily made around the world when these bands were open.

Unfortunately, I learned that I had a terrific RFI problem on these bands in the assistant manager's apartment. She owned an inexpensive stereo system and liked Beethoven. She was also deaf to my explanations of what was most likely at fault, since a subsequent survey of the apartment complex turned up no other RFI complaints. She did have the upper hand, though, since there was a clause in my contract concerning "external attachments to or antennas on" the building. I never did solve the RFI problem on these bands; so to keep peace I restricted my operating to 40 and 80.

To improve my 40 and 80 meter operations I needed to be more resourceful.

One thing I could do was to improve the counterpoise system for the mobile antenna. This I did by placing wire under the edges of the carpet throughout the apartment, linking the bedroom, hallway, living room, and kitchen. It's amazing how large a counterpoise can be constructed using this procedure. Eventually I even attached the counterpoise to the copper waterpipe in the bathroom. My wife was absolutely certain I had "gone bananas."

On both bands the improvement in my signal was obvious by the greater ease with which I was making contacts.

Never one to be completely satisfied, though, I decided to try one other approach to improve my 40 meter signal. I noted that the three-story apartment building had a wooden roof construction. That meant that a radiating system near the top would not be affected too greatly by the roof. Our L-shaped apartment was just short of 40 feet long from one end to the other. It occurred to me that a 40 meter dipole taped to the ceiling, even with a few bends, might work rather well. Some masking tape and appropriate bends in the kitchen and bedroom resulted in a working 40 meter dipole. It loaded very nicely, and signal reports were about one S-unit better than the mobile whip. I was ecstatic. Forty meter contacts were never so enjoyable. Finally I could be heard.

My joy ended, though, one morning at about 3:00 a.m. To the best of my recollection, I awoke to blood-curdling screams and unrepeatable words from my wife. It seems that the masking tape had let loose and the wire had dropped across the bed. She made it known, in no uncertain terms, that my madness must cease.

I'm a quick learner. I decided the mobile whip wasn't so bad after all.



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***N8HKV's interest in the voyage of the Titanic brought him to a search for one of the ship's wireless operators. Here is the story of that operator and the fateful night in April 1912.***

## **Harold S. Bride**

### **Heroic Telegrapher of the R.M.S. Titanic**

BY DAVID O. NORRIS\*, N8HKV

*The traditions of amateur radio have their roots in the rich history of the maritime wireless operators and telegraphers who preceded them. The dedication of those early pioneers of spark have set guideposts that point the way to the professionalism and dedication of the operators of today. The Veteran Wireless Operators Association, Inc. lists no less than 44 radio operators who have given their lives following in this tradition of service. The search for one of these early wireless pioneers had its roots in a gripping drama that occurred on a chilling April night in 1912 on the North Atlantic Ocean.*

**H**ow curious that hymns sung that memorable night on the R.M.S. Titanic concluded with a song whose verse pleaded:

*Eternal Father, strong to save  
Whose arm hath bound the restless wave  
Who Bidd'st the mighty ocean deep  
Its own appointed limits keep  
Oh hear us when we cry to thee  
For those in peril on the sea.*

In a cabin behind the Titanic's bridge, 22-year-old Englishman Harold S. Bride began to wake from a few hours of sleep. He could copy the rasping Morse code which Senior Operator Jack Phillips was working in the adjoining room. Bride, as Second Operator, planned to relieve Phillips earlier than usual so that Phillips could get some well-earned rest. During the day both wireless operators had labored for seven hours to repair their station. It had been off the air, and the two Marconi employees worked nonstop to get it operational.

They were now back on the air, and traffic through the powerful station at Cape Race had piled up. Phillips was busy



*Senior Marconi Operator Jack Phillips (left) and Second Operator Harold S. Bride pose outside their wireless room aboard the R.M.S. Titanic during the liner's trip from Cherbourg, France to Queenstown, Ireland. This is the last photograph of Jack Phillips, who perished when the Titanic sank. (Used by permission of the copyright owner)*

at the key and Bride knew he would be very tired. Phillip's exhaustion flared a little earlier when the wireless operator aboard the steamer *Californian* cut in with a message advising that they were stopped, with pack-ice all around. With the nature of wireless equipment of that era, and since the *Californian* was only about ten miles away, this well-intentioned message nearly blew the earphones off

Phillips's head. He flashed back to the *Californian* an irritated "shut up," and advised him to get out, so he could continue working Cape Race. The *Californian's* operator did just that; he shut down his station and went to bed, little knowing that within a very few minutes the grandest drama ever to pierce the ethers would begin.

Bride got out of his bunk and walked in-

\*4463 Sunnymead Ave., Burton, MI 48519



to the wireless room to relieve Phillips. As they stood talking, Captain Smith opened the door and advised them that the ship had struck an iceberg, and that they should be prepared to put out a call for assistance. Neither Bride nor Phillips had felt the collision at all. A few minutes later Smith returned and quickly ordered them to begin sending the "CQD" call for assistance. Both operators joked as they sent the first few messages. They contacted the steamer *Frankfort*, whose operator left the key to tell his captain.

About ten minutes later Captain Smith returned with the *Titanic's* true position and asked Phillips what he was sending. "CQD," Phillips responded. Bride chirped in, "Send S.O.S. It's the new call, and it may be your last chance to send it." The two operators and Captain Smith laughed, probably the last humorous moment that night. In fact, Bride's words were truer than he knew. Before this long night ended Phillips had become a Silent Key in the icy North Atlantic.

By the time the rescue ship *Carpathia* answered Phillips's and Bride's signals on the *Titanic's* station, "MGY," both operators had noticed a distinct list forward. Radio logs indicated the *Carpathia* received MGY's call at 12:25 AM. The *Carpathia* had not heard the earlier CQD's transmitted by MGY, and sent the following:

MPA (*Carpathia*): "I say, OM, do you know there is a batch of messages coming through for you from MCC (Cape Race)?"

MGY (*breaking in*): "Come at once. We have struck an iceberg. It's CQD OM. Position 41°46'N, 50°14'W."

MPA: "Shall I tell my Captain? Do you require assistance?"

MGY: "Yes, come quick."

We can forgive the *Carpathia* wireless operator's seeming disbelief. Station MGY was the *Titanic* on her maiden voyage. It was thought she was unsinkable. The steamer *Birma* picked up the CQD and responded. The *Titanic* replied urgently:

MGY: CQD—SOS from MGY. We have struck iceberg, sinking fast, come to our assistance."

SBA (*Birma*): "What is the matter with u?"

MGY: OK—We have struck iceberg and sinking. Pse tell Captain to come."

The mighty *Titanic*, now stopped dead in the water, began to exhaust the steam built up in her boilers. The sound was deafening. Phillips and Bride couldn't hear anything in their shack but the roar. During that time they sent 15 or 20 times:

MGY: "CQD-SOS-CQD-SOS. Require immediate assistance. We have collision with iceberg. Sinking. Can nothing hear for noise of steam."

Later the *Frankfort* contacted the *Titanic* again to confirm their position and then copied:

MGY: "Tell your Captain to come to our help. We are on the ice."

DFT (*Frankfort*): "What is the matter with u?"

MGY: "We have collision with iceberg. Sinking. Pse tell Captain to come."

At about 1:10 AM the *Titanic* contacted her sister ship the *Olympic* and sent:

MGY: "We are in collision with berg. Sinking head down—41.46N, 50.14W. Come as soon as possible."

Later that night the *Carpathia* advised the *Titanic* that she was "coming hard." Also responding were the *Frankfort*, *Baltic*, *Virginia*, *Mt. Temple*, and *Birma*, as well as other ships. The *Californian* was drifting now only 6 miles away from the *Titanic* but didn't respond. Her wireless was off and her operator asleep. The air was alive with signals. Still there was misunderstanding as to how seriously the *Titanic* was damaged. At 1:25 AM the *Olympic* sent the *Titanic* her position and asked:

MKC (*Olympic*): "Are you steering southerly to meet us?"

Bride and Phillips looked at each other in disbelief and fired back:

MYG: "We are putting women off in boats."

MKC: "What weather do you have?"

MGY: "Clear and calm. Engine room getting flooded."

MKC: "Am lighting up all possible boilers as fast as can."

The *Carpathia* received their last message from the *Titanic* at 1:45 AM which advised:

MGY: "Engine room full up to boilers."

At 2 AM the *Virginian* heard the *Titanic* calling very faintly, as her power was being greatly reduced. About ten minutes later she heard MGY send two "v's," apparently attempting to adjust their spark under low-power conditions. Seven minutes later they heard the *Titanic's* faint "blurred and ragged" signal, which ended very abruptly.

Aboard the *Titanic* Phillips and Bride had done their duty in the highest tradition. They manned the key of their station until they lost all power. Fifteen minutes earlier Captain Smith had returned to their wireless room and advised, "You have done your full duty. You can do more. Abandon your cabin. Now it's every man for himself." Smith looked sad. He glanced away and then quietly said, "That's the way of it at this kind of time." Even after the Captain had released them, Bride and Phillips decided to remain with their station as long as they had power.

To make matters worse, shortly after Smith released them a man tried to steal Phillips's lifejacket off of his back. Phillips was concentrating on the signals he was receiving and was unaware of what was happening. Bride, returning from the other room after getting their money and papers, jumped the man. The three men engaged in an intense brawl. Now their cabin was dark, power gone, and water was flowing through the wireless room door. The *Titanic* had only moments to live. Both operators fled their station, leaving the unconscious man on their cabin floor. Radio logs show the *Titanic's* last signal was at 2:17 AM, just three minutes before the *Titanic* sank at about 2:20 AM.

Arriving on deck, the two operators found all lifeboats gone. They shook hands, said goodbye for the last time, and parted. Phillips fled toward the stern of the foundering liner and Bride ran toward a group of men trying to launch a "collapsible" boat. As he reached them, the *Titanic* plunged forward, washing the men and Bride over the side. He came up under the boat and struggled to the surface. Eventually he and about 30 men climbed on the overturned hull, where they spent the rest of the night balancing for their lives. They had an awesome view of the *Titanic* towering over them. Her stern slowly lifted out of the water until she was almost vertical to the calm ocean. Then slowly, quietly she sank, picking up speed, as she plunged to her grave two miles below the North Atlantic.

During the night Bride's feet were frostbitten by the cold and crushed by the mass of men crowded on the overturned boat. Even in intense pain he could not move the men off of his feet because the slightest movement could have dashed them all into the icy waters. At dawn they were rescued by the *Carpathia*, and after Bride painfully struggled to her deck, he lost consciousness.

The next thing Harold Bride knew a woman was leaning over him in a cabin, brushing back his hair and rubbing his face. He was hustled to the ship's hospital, where his feet were bandaged and he remained until nightfall. At that time Harold Cottam, the *Carpathia's* wireless operator, had been awake for nearly 36 hours relaying emergency traffic. He was exhausted. Bride was asked whether he could help Cottam, and he agreed. With his feet bandaged he was carried to the wireless room, where he remained until the *Carpathia* reached New York days later.

Bride and Cottam never stopped sending health and welfare traffic. Newspapers and government officials were infuriated when the *Carpathia* wouldn't respond to many of their questions. Bride justified his actions by saying that he felt the personal messages from and about survivors should be priority. When asked



why he didn't respond to the *U.S.S. Chester*, a warship ordered by President Taft to contact the *Carpathia*, Bride said that he had answered the *Chester's* questions, but that its operator got on his nerves with his insufferable incompetence. Bride said that they were "insufferably slow, knew American Morse but not Continental Morse," and taxed his endurance to the limit. Said Bride, "The *Chester's* man thought he knew it, but he was as slow as Christmas coming!"

The *Carpathia* had already tied up in New York and Bride was still at the key sending traffic. He didn't notice that a man had entered the wireless room and stood quietly until Bride finished the message he was sending. When Bride turned around, weak and exhausted, he was face to face with Guglielmo Marconi himself.

After a *New York Times* interview Bride was carried off the *Carpathia* and into history. When he returned to England, although pictures don't seem to show it, a young neighbor remarked that his hair had turned white! After the British inquiry Bride continued maritime service and served on the Royal Navy ships during World War I. After that he dropped from sight, lost to history.

On a warm August evening in 1985 I was invited to have dinner with Walter Lord, author of the epic *A Night to Remember* and the most recent *The Night Lives On*. He was being interviewed by Ed Hayman of *The Detroit News*, who had invited me to come along. Hayman knew that I was a *Titanic* buff and a member of

the *Titanic* Historical Society. Lord and I had a wonderful evening discussing the unforgettable night 73 years before. As an amateur radio operator, I asked Lord what had become of Harold Bride. Lord said many people had searched for him through the years unsuccessfully, and his whereabouts was a mystery. Because I am a private detective by profession, Lord glanced over the top of his glasses and remarked, "You're the detective, David. You should be the one to find Harold Bride."

I left the meeting that night, read Lord's new book, and resolved that I would try to fill in the missing years. After over a year and a half of investigation, deadends, rumors, and national and international correspondence, I finally "found" Harold Bride. He had become a Silent Key on April 29, 1956 in Glasgow, Scotland. I didn't really expect to find him alive, but I must admit that I was saddened to know that another link to the fateful night had been broken.

A brief obituary in the *Glasgow Herald* of May 1, 1956 read:

"At hospital in Glasgow on 29th April, Harold S. Bride, beloved husband of Lucy Downie, Proven Hall Steps—Funeral private."

There was nothing more. His remains were cremated and nobody in Scotland other than his family knew Bride's place in history. His own nieces and nephew didn't know about their famous uncle until they found news clippings in their own father's family Bible. "Uncle Harold"

never talked about the *Titanic*. For many of the *Titanic's* survivors, the screams on the ocean that night echoed down through their lives. He was an ordinary man who had excelled in extraordinary circumstances. He reportedly left the Marconi Service in 1916 and ultimately became a traveling salesman. He and his wife, Lucy, had two daughters and a son—Lucy, Jeanette, and John. It is said that after living in Scotland, Harold developed a distinct Scottish accent. Who would have known that the curly-haired, chubby, jovial old man down the street had played a key role in the greatest maritime disaster?

Harold S. Bride remained comfortably unknown in Scotland, according to a niece, working his own home amateur radio transmitter, tinkering with antennas, and staying up late at night to talk with people all over the world. His callsign is presently unknown, but I'm certain that many old timers could search their logs and discover "Harold QTH Ashcliffe Dunning, Perthshire, Scotland." Little did they know that they were working one of the most notable wireless operators in history.

The tradition of Bride, Phillips, and other dedicated radio operators has established a goal emulated by thousands of other radio operators throughout the years—self-sacrifice to help their fellow man. I believe there is no greater monument on earth to these dedicated people than the brass telegraph key now resting in the darkened veil of the North Atlantic, preserved in the abandoned wireless shack of the *Titanic*. Like its operators it's silent now, having done its full duty. And there it shall remain, while high over the *Titanic's* grave, radio communications, undreamed of in 1912, flash around the world.

### About The Author

David O. Norris is a licensed private detective with offices in Burton, Michigan, about 70 miles north of Detroit. He specializes in personal-injury investigation, major felony defense issues, and locating missing persons. He became interested in the story of the *R.M.S. Titanic* in the early 1960s after reading Walter Lord's compelling *A Night To Remember*.

Norris is a General class amateur radio operator with the callsign N8HKV. While locating Harold Bride was one of the most difficult and satisfying cases he has ever had, Norris states that the personal relationship developed between Walter Lord and himself was the highlight of the search.

Norris and his wife, Christine, have two English Springer Spaniels named "Sparks" and "Lights." Sparks is named after Harold Bride, and Lights is named after Commander Herbert Lightoller, the highest ranking surviving officer of the *R.M.S. Titanic*.

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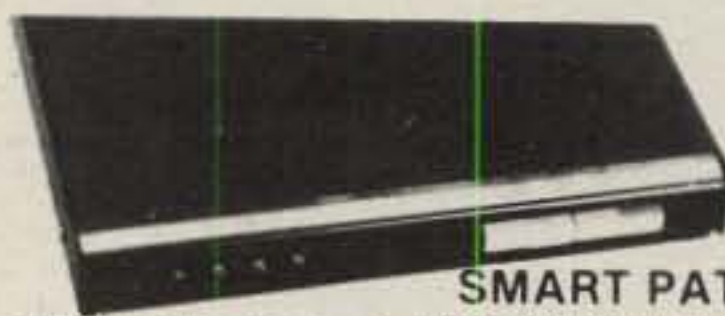
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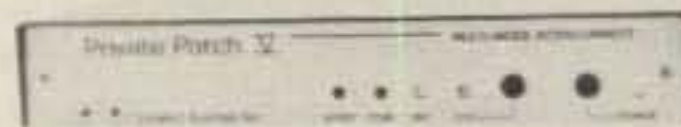
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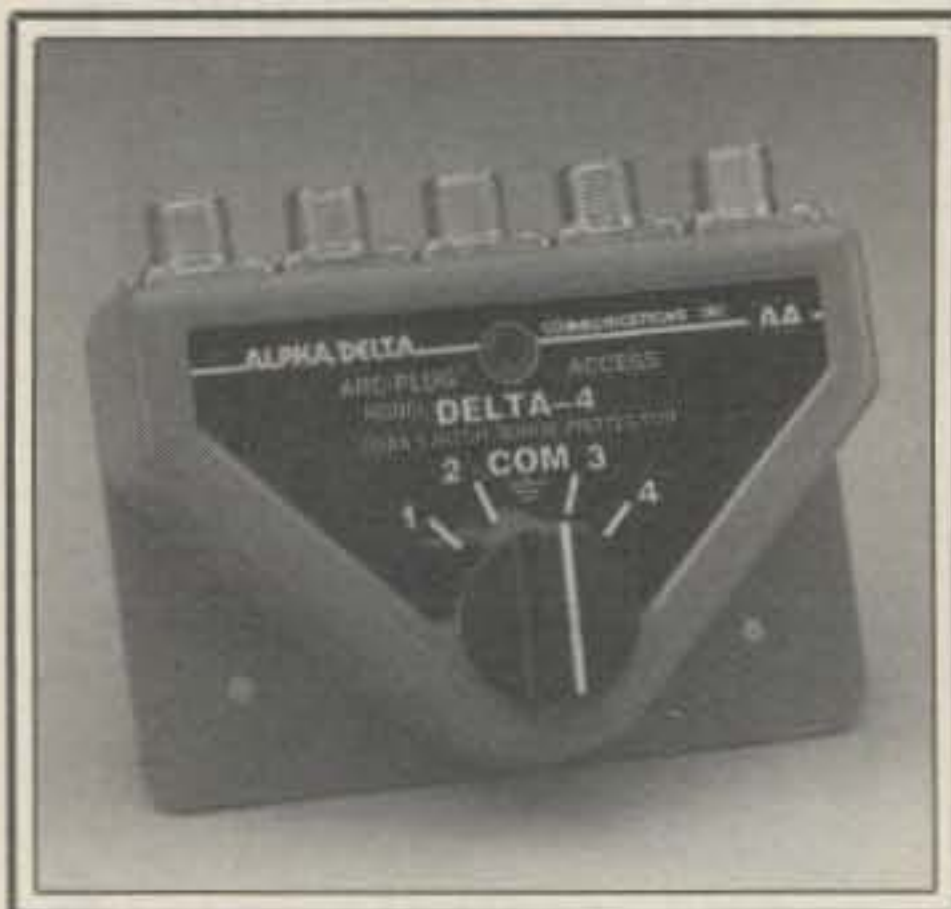
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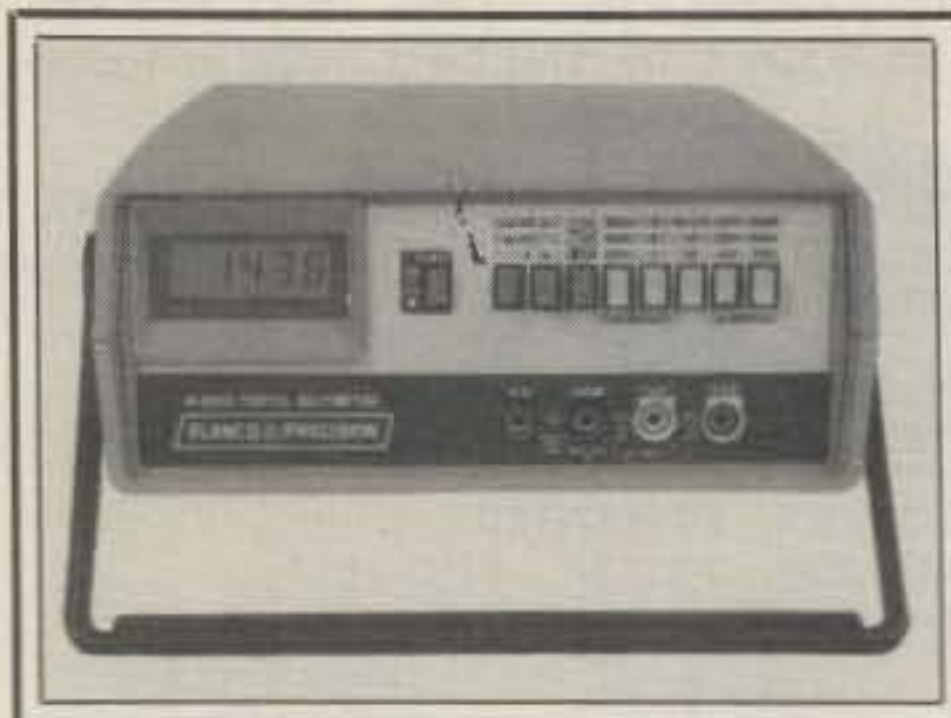


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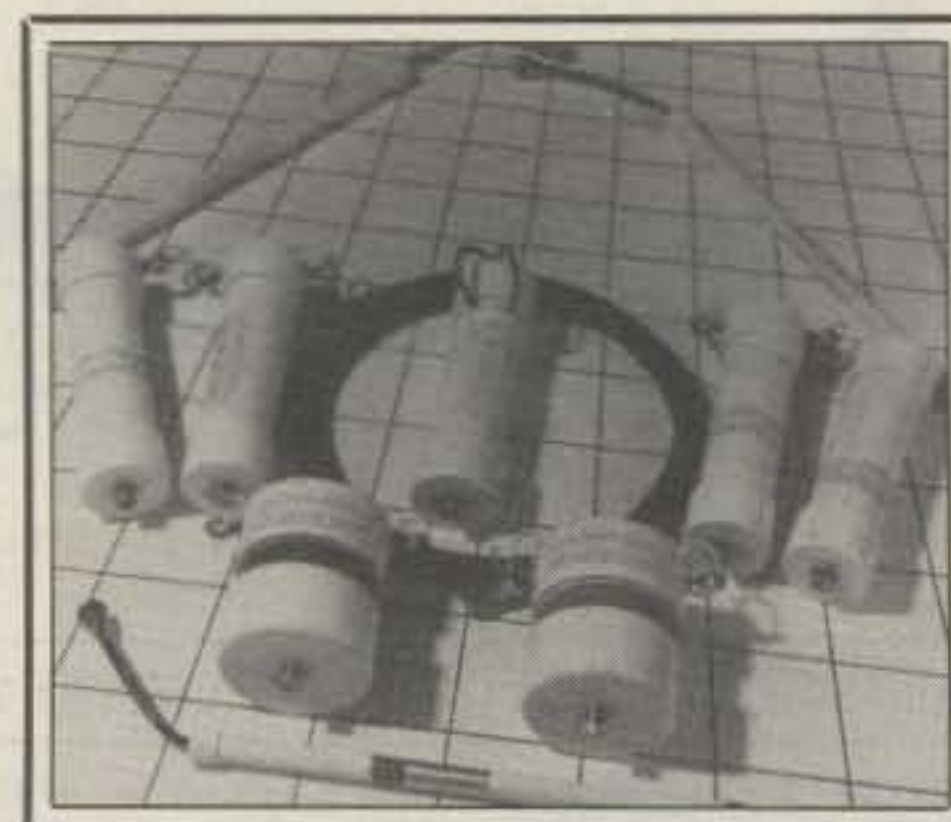
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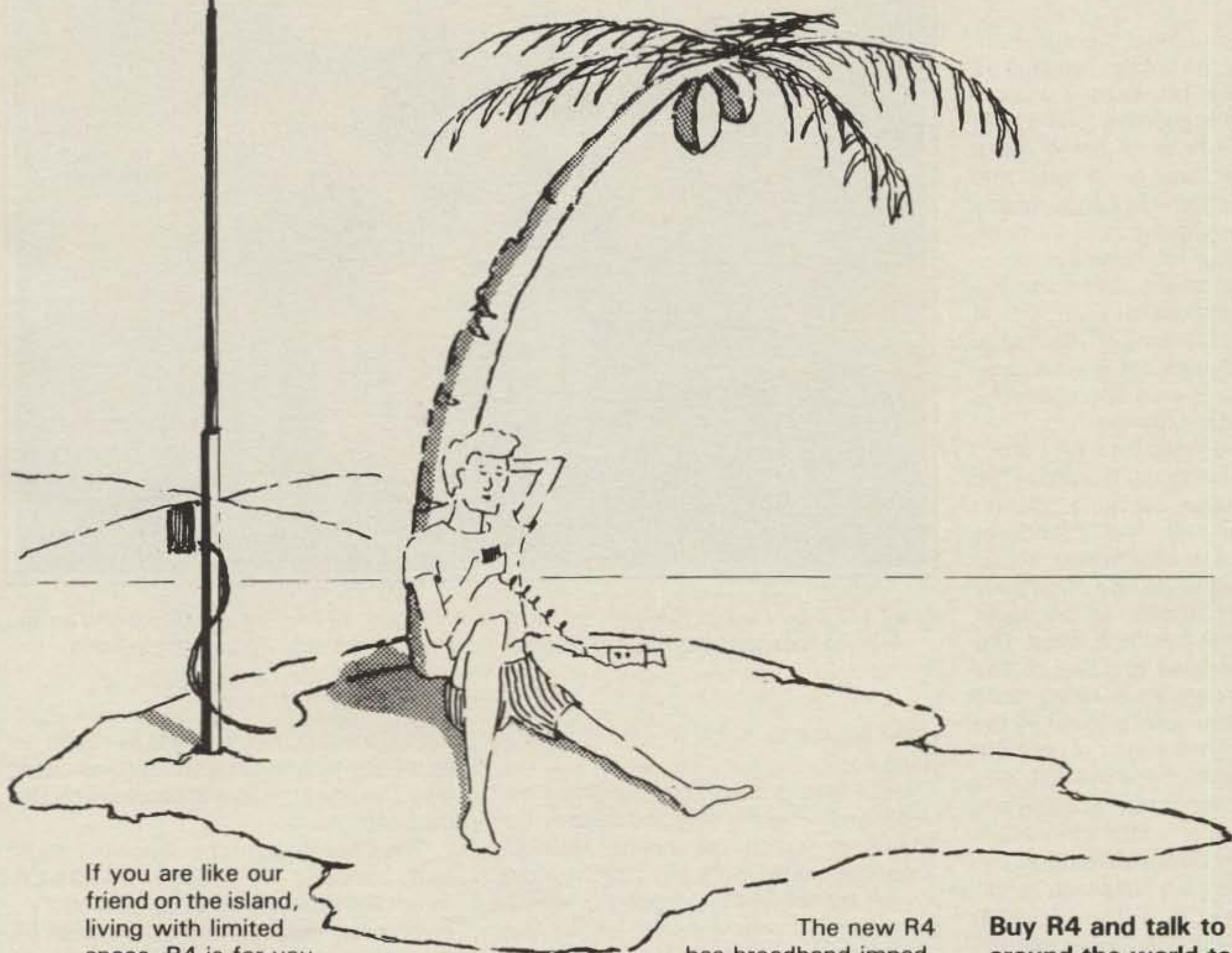
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***What's it like to be the distaff side of a famous DX duo? Well, sometimes it's a mixed blessing as we find out by reading VK9NL's latest article.***

## **And Blessed Be The XYL For She Needs The Patience of Job**

BY KIRSTI JENKINS-SMITH\*, VK9NL

**T**hose words apply to any extra special female companion of the OM, be it wife, mother, sister, or lover, even if she herself is a YL operator. Maybe especially then.

A rig, coax, and at least a vertical antenna form part of the holiday luggage as a matter of course. Unnecessary items like makeup, evening dress, and shoes are abandoned in favor of some spare wire (for dipoles) and other bits and pieces which may come in handy. In any case, where she is going she won't be needing those things left behind.

Traveling light is an absolute no-no. Extra time must be allowed for at airports in order to explain to customs officials what it is all about. And extra money has to be forked out to porters groaning under the weight of the holiday luggage.

The XYL does not have to be a YL operator, however, to become involved in the fun and games of amateur radio. She too becomes familiar with the interior of hardware stores and electronics shops wherever she goes while she is skillfully steered past such stores which might otherwise catch her feminine fancy. The OM may have decided to "live off the land" to some extent. It is often more convenient than carrying a tower in the luggage. Thus, I once found myself parading with Jim through the main streets of Kuching, the capital city of Sarawak, triumphantly carrying a 10 meter length of 2 inch waterpipe on our shoulders. The locals never had such a fun day in town.

The DXing YL and the XYL of the DXing OM must quickly learn to ignore popular opinion about her sanity. Being covered in stinging red ants while standing with head, arms, and upper torso buried in the foliage of a tree in Papua New Guinea is part of the fun. Those guywires just have to be tangled up in the bushes to make it all worthwhile. In Apia, Western Samoa, I flitted unconcerned hither and thither on the hotel roof to interested stares from



*As all XYLs are aware, there is nothing as challenging as serving a meal around an antenna—except, perhaps, getting the OM away from the rig and to the table.*

other guests lounging around the swimming pool.

Even Heard Island had its onlookers. Seals and penguins stopped dead in their tracks to watch me lumber clumsily around in heavy boots and clothing, doing my bit for the common good of the DX community.

Back home, what XYL does not know those fatal words of the OM: "I need a little help, love!" So, out she goes to help erect antennas. This may involve just hanging off the rafters, or it may involve exciting projects like keeping an 80 meter vertical from bending. She finds that her prized rhododendron has been unceremoniously removed and the OM is ready and shouting instructions: "Pull! Now! Not that rope, the other one!"

When the vertical finally lies on the ground in a crumpled heap of tortured

metal, the XYL needs great fortitude not to let any of her OM's mutterings get to her. The pharmacy sells earplugs for this purpose.

The OM retires to the shack in a slight huff, checking the bands in an effort to forget the afternoon's disaster. The XYL, having relinquished her job as chief underdog of the antenna department, removes her earplugs and turns on the TV. She has just settled down to watching an interesting program called "The Do it Yourself Divorce," when the screen is blanked out by lines and squiggles.

"You're causing TVI," she snaps at her beloved sitting ensconced in front of the rig.

"Am I?" he asks, all innocence. For some reason he knows the limits to which he can stretch her patience. TVI falls outside these limits, so chances are that he

*P.O. Box 90, Norfolk Island, 2899, Australia*



will do something about it—one day.

When the evening meal is ready, the XYL often dines alone, depending on what rare DX is around at the time. This is sometimes an advantage. Dinner can be something quick and easy. The OM would not be able to tell the difference between duck a l'orange and old boots once it had rested in the oven overnight.

But simple rag-chewing can also keep the OM from the table. I silently applauded the XYL of an OM I heard one Sunday lunchtime. The OM talked for roughly 15 minutes about how he had to QRT and go and eat. I waited, determined to learn just how long it would take him to actually QRT. After a while I heard a frantic note in his voice: "I must go and save my dinner. The XYL has put it out on the veranda, and I think the dog may get it!" That's the way to do it, ladies. If he is not hungry, there is always the dog.

When the bands are closed, the OM turns to his junk box. He keeps an ear to the ground for any word of other people's junk being offered for sale or giveaway, and he will travel great distances to add to his collection. His junk box grows and grows until it cannot be called a box anymore. It is more like a room full or perhaps a garage full while the family car slowly rusts away out in the open. Rubbish dumps become treasure troves; the OM brings home "handy" bits and pieces on

a regular basis. The whole house takes on an aura of despair as the XYL struggles to keep her head above water in a sea of "handy" items, some of which are indeed handy (as doorstops), and QSL cards of such value that they rate above the family silver. She develops stoicism, waiting patiently for the day when the OM will take up another hobby.

The one redeeming feature of the OM is that the XYL always knows where to

find him. Not for her the restless tossing and turning in bed at night, worrying in case he has met with an accident, or wondering who is keeping him from her side. She can hear the drone of his voice through the long, dark, lonely hours or watch the lights flicker rhythmically with his CW signals. He may be in QSO with Isao, JH1RNZ. Isao went to Fiji for his honeymoon, operating 3D2RN, and another XYL was welcomed to the fold. **CQ**

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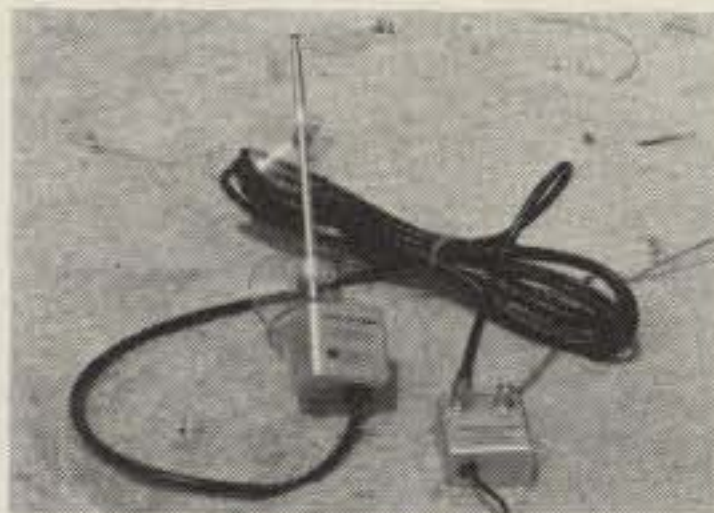
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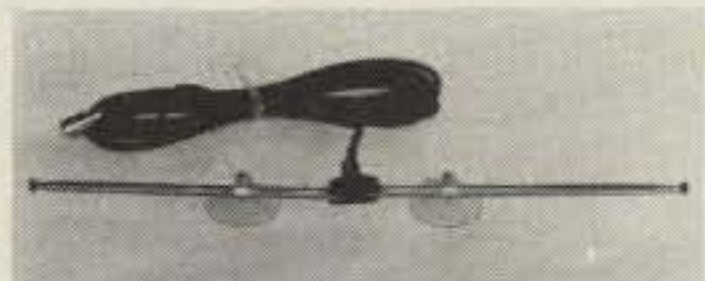
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CIRCLE 85 ON READER SERVICE CARD



## CodeMaster 100

BY JONATHAN L. MAYO\*, KR3T

**M**y Model 100 portable computer accompanies me almost everywhere. I use it for telecommunications, word processing, scheduling, and many other tasks. Like most other computer users, I like to keep a few "fun" programs in memory to help break the monotony during a long trip or work session. One such program is CodeMaster 100. CodeMaster 100 is designed to send random Morse code groups at a user-defined speed using the computer's built-in tone generator.

\*1819 Saratoga Court, Allentown, PA 18104

I wrote the program in BASIC on the TRS-80 Model 100 portable computer, and it should easily fit in a minimal 8K system. CodeMaster 100 should also run without any trouble on any of the Kyocera compatibles.

### Description

When run, the program first presents a title screen for a few seconds. Then the status screen is presented. The status screen is the central hub of the program, and all options are selected from here. Function keys are used to select the options, which include setting the sending rate (in wpm), generating and sending the

random code, displaying a help screen, and returning to the Model 100's main menu. Each of the options is indicated by a key word located over the appropriate function key label.

To activate an option simply press the corresponding function key. A new screen display will appear, and if any new information is needed, a question prompt will also appear.

For example, to set the speed at which the code is to be sent, the first function key, labeled **Sped**, would be pressed. A new screen display will appear along with a prompt asking for the speed in words per minute between 1 and 60 wpm. Any input that does not meet these require-

```

10 REM CodeMaster 100
20 REM Morse Code Practice Program for the Model 100
30 REM Written by Jonathan L. Mayo KR3T
40 REM
100 SCREEN 0,0:CALL 16959
110 CLS:PRINT"pqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqq";
120 PRINT"u" u";
130 PRINT"u CodeMaster 100 u";
140 PRINT"u";
150 PRINT"u";
160 PRINT"u Copr. 1985 Jonathan L. Mayo KR3T u";
170 PRINT"u";
180 PRINT"vqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqw";
190 FOR Y%=1 TO 1000:NEXT Y%
200 DIM A$(40),C$(40),R(150)
210 FOR X%=1 TO 40:READ A$(X%),C$(X%):NEXT X%
220 DATA "A",".-.", "B","-...", "C","-.-.", "D","-..", "E",".",
"F","...-", "G","---", "H","...", "I","..", "J",".---"
230 DATA "K","-.-.", "L",".-..", "M","---", "N","-.", "O","---",
"P",".---.", "Q","---.", "R",".-.", "S","...", "T","-."
240 DATA "U",".-.", "V","...-", "W",".-.", "X","-.-.",
"Y","-.-.", "Z","-.-.", "0","-----", "1",".-----", "2",".-----",
"3",".-----"
250 DATA "4",".....", "5",".....", "6","-.....", "7","-.....",
"8","-----.", "9","-----.", ".",".-.-.-", ",", "-----",
"-","-.-.-", "?",".-----"
300 S=10
310 CLS:KEY 1,"Sped":KEY 2,"":KEY 3,"":KEY 4,"Send":KEY
5,"Help":KEY 8,"Menu"
320 CLS:SCREEN 0,1:PRINT"pqqqqqqqqqqqqCodeMaster
100qqqqqqqqqqqq";
330 PRINT"u" u";
340 PRINT"u" u";
350 PRINT"u Speed = ";
355 PRINT USING "##";S;
357 PRINT" WPM u";
360 PRINT"u" u";
370 PRINT"u" u";
380 PRINT"vqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqw";
390 KEY ON:ON KEY GOSUB 400,,,600,500,,,1000
395 GOTO 390
400 SCREEN 0,0
410 CLS:PRINT"pqqqqqqqqqqqqCodeMaster 100qqqqqqqqqqqq";
420 PRINT"u" u";
430 PRINT"u Current Speed = ";
440 PRINT USING "##";S;
450 PRINT" WPM u";
455 PRINT"u" u";
457 PRINT"vqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqw";
460 N$="":PRINT:LINE INPUT " Enter new speed (WPM): ";N$
465 IF N$="" THEN 320
470 IF LEN(N$)=1 THEN N$="0"+N$
480 T1%=ASC(LEFT$(N$,1)):T2%=ASC(RIGHT$(N$,1)):IF (LEN(N$)<>2)
OR (T1%<48) OR (T2%<48) OR (T1%>57) OR (T2%>57) OR VAL(N$)<=0 OR
VAL(N$)>60 THEN BEEP: GOTO 400
490 S=VAL(N$):GOTO 320

```



ments will be rejected and the prompt will reappear. Once a proper response is received, the program will return to the status screen, where the new speed will be displayed.

To generate and send Morse code, the fourth function key, labeled **Send**, would be pressed. The computer will then generate the random code groups. Its progress can be observed from the number of period characters displayed on the screen. One period is displayed as each character is generated. There are a total of 150 characters to be randomly generated, so the process can take several seconds. However, it can be aborted by pressing the ENTER key at any time, and the program will return to the status screen.

Once the 150 characters are generated, the code is sent at the specified speed in five-letter "words." Each character is displayed on the screen as it is sent, and when 30 "words" have been sent, the program halts until the ENTER key is pressed so that you may check your copy against the screen. When the ENTER key is pressed, the program will return once again to the status screen.

Pressing function key number five, la-

Lowercase Character	Model 100 Graphic Character
p	SHFT-GRPH-U
q	SHFT-GRPH-P
r	SHFT-GRPH-O
u	SHFT-GRPH-:
v	SHFT-GRPH-M
w	SHFT-GRPH->

*Table 1— To enter the graphic character on the Model 100, hold down the Shift and GRPH keys and press the appropriate character's key.*

beled **Help**, will cause the program to display the help screen. The help screen contains brief instructions on how to use the program. Pressing the ENTER key will return you to the status screen.

To return to the main menu and end the program, press function key eight, labeled **Menu**. The program will be ended and the computer's main menu will be displayed.

### Programming

The listing of CodeMaster 100 is shown in this article. You are free to enter the

program into your computer as long as the remarks in the beginning of the program are maintained.

All of the display screens contain graphic characters specific to the Model 100. When printed on my Epson, they are represented by lowercase characters. Table 1 is a conversion table which should be consulted when entering these characters. Any BASIC commands which you do not fully understand can be looked up in your owner's manual.

Line 100 turns off the function key labels and calls a ROM routine which stops the screen from scrolling. Lines 110 through 180 print the title screen. Line 190 is a time delay which determines how long the title screen is displayed. The For/Next values may be changed to suit your preference.

Line 200 dimensions the subscripted arrays which will hold the Morse code characters. Line 210 reads the characters and the corresponding code strings from the data statements in lines 220, 230, 240, and 250.

Line 300 sets the default code speed to 10 words per minute. This value may also be changed to suit your preference. Line 310 clears the screen and assigns the

```

500 SCREEN 0,0
510 CLS:PRINT"pqqqqqqqqqqqqCodeMaster 100qqqqqqqqqqqr";
520 PRINT"u This program generates and sends u";
525 PRINT"u random Morse code at any speed u";
530 PRINT"u between 1 and 60 WPM. To set the u";
540 PRINT"u speed, press F1. To generate and u";
550 PRINT"u send the code, press F4. Have fun! u";
570 PRINT"vqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqw";
580 PRINT" Press <ENTER> to continue";
590 N%=INKEY$:IF N%="" THEN 590 ELSE 320
600 SCREEN 0,0:CLS:PRINT:PRINT:PRINTTAB(12);"Generating Code"
610 PRINTTAB(9);"Press <ENTER> to stop"
620 Q=(60/5)
630 FOR XX=1 TO 150:PRINT". ";
640 A=VAL(RIGHT$(TIME$,2))
650 FOR IX=1 TO A
660 D=RND(1)
670 NEXT IX
680 D=INT((RND(1)*39)+1)
690 R(XX)=D
695 I%=INKEY$:IF I%<>"" THEN 320
700 NEXT XX
705 CLS:PRINTTAB(2);"Sending Code - Press <ENTER> to stop"
707 PRINT"qqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqq";
710 Z%=0
720 FOR TX=1 TO 5
725 PRINT" ";
730 FOR X%=1 TO 6
740 FOR Y%=1 TO 5
750 Z%=Z%+1
755 I%=INKEY$:IF I%<>"" THEN 810
760 N=R(Z%):GOSUB 900
770 NEXT Y%
780 SOUND 0,(5*Q):PRINT " ";
790 NEXT X%
795 PRINT" ";
800 PRINT:;NEXT TX
810 PRINT@2," Code Sent
820 PRINT@288,"Press <ENTER> to continue";
830 I%=INKEY$:IF I%<>"" THEN 320 ELSE 830
900 B%=C$(N)
910 L=LEN(B%):PRINT A$(N);
920 FOR K%=1 TO L
930 IF MID$(B%,K%,1)="-" THEN W=3*Q
940 IF MID$(B%,K%,1)="." THEN W=Q
950 SOUND 2200,W
960 NEXT K%
970 SOUND 0,(3*Q)
980 RETURN
1000 CLS:SCREEN 0,0
1010 CALL 16964
1020 CALL 23164,0,23366
1030 CALL 27795
1040 MENU

```



new function key labels. Lines 320 through 380 clear the screen again, turn the function key label back on, and print the status screen. Lines 390 and 395 loop until one of the labeled function keys is pressed. The program then passes to different subroutines depending on which function key has been pressed.

If function key one, **Sped**, is pressed, the program will go to line 400 and continue from there. Line 400 turns off the function key labels. Lines 410 through 457 print the current speed. Line 460 presents the prompt for the new speed, and lines 470 and 480 check to make sure the input is valid. Line 490 assigns the new speed and returns to the status screen.

If function key five, **Help**, is pressed, the program will go to line 500. Lines 500 through 580 turn off the function key labels, clear the screen, and print the help screen. Line 590 waits for the ENTER key to be pressed, which will cause the program to return to the status screen.

If function key four, **Send**, is pressed, the program will go to line 600. Lines 600 through 830 generate and send the random Morse code characters. Lines 600 and 610 clear the screen and print the "generating code" message. Line 620 computes length of a single element of Morse code at the set speed. Lines 630 through 700 generate the random characters.

Since the random function in the Model 100 follows a predictable pattern, lines 640 through 670 were implemented. The built-in time clock is used to reset the random number generator.

Line 680 generates a random number between 1 and 40 inclusive which corresponds to one of the 40 Morse code characters the program has assigned. Line 690 stores each number in a subscripted variable. Line 695 checks to see if the ENTER key (or any other key) has been pressed. If the ENTER key was pressed, the program returns to line 320.

Lines 705 and 707 clear the screen

and print the heading for sending the code. Lines 720 through 800 recall the random numbers and control the sending of the code. Z% is the counter which keeps track of the number of characters sent. They are sent in groups of 5. There are 6 groups per line and a total of 5 lines for a total of 150 characters. Line 750 points to the next character's number, and line 760 assigns the next character's number to N. The program then goes to a subroutine at 900 where the code is actually sent.

Line 900 assigns the string of "-"s and "."s associated with each character number to B\$. Line 910 prints the actual character to the screen. Each character of B\$ is then checked. If the character is "-" then the tone generator is sounded for three time elements, and if it is a "." the tone generator is sounded for one time element. Line 970 puts a space after each character, and line 980 returns the program to line 770.

Once all 150 characters have been sent, the program goes to line 810 where the "code sent" message is printed. Line 820 and line 830 wait for the ENTER key to be pressed before returning to the status screen.

Lines 1000 through 1040 are called when the "Menu" option is selected from the status screen. They return all the function keys to their default values and turn the screen scroll back on. Line 1040 then returns to the Model 100's main menu.

## Operation

Once the program is saved in memory, it can be run at any time. Just position the cursor over the program name in the main menu and press the ENTER key. The title screen will be displayed for a few seconds, and then the status screen will appear.

The tone generator will produce an added power load, so use the AC adapter or other power source whenever possible to conserve the batteries.

Keep in mind that this program uses only 40 of the most common Morse code characters. If you desire, additional characters may be added. To do so, you must add them to the data statements, change the subscripted variable dimensions, change the For/Next values when reading the data, and increase the random number generator by the number of characters you have added.

## Conclusion

I hope you find this program fun to use. It is a great way to practice the code without bothering with cassette tapes and players, radios, and other traditional methods of code practice. If you have any questions or comments, feel free to write. Alternately, I can be reached on CompuServe (User ID: 72276,2276).

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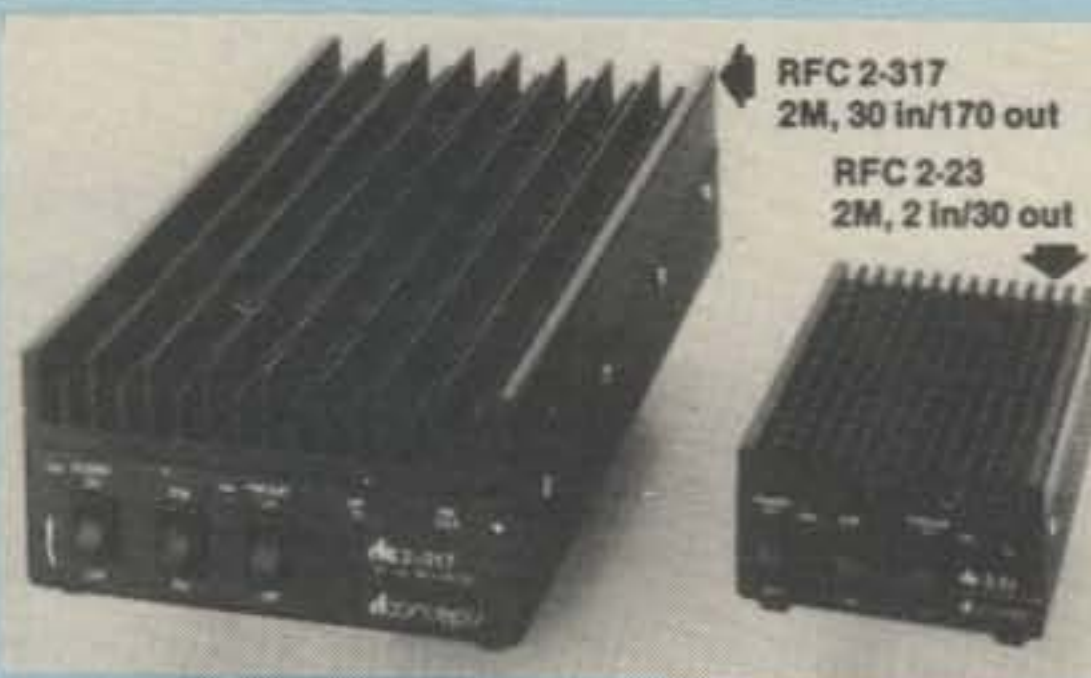
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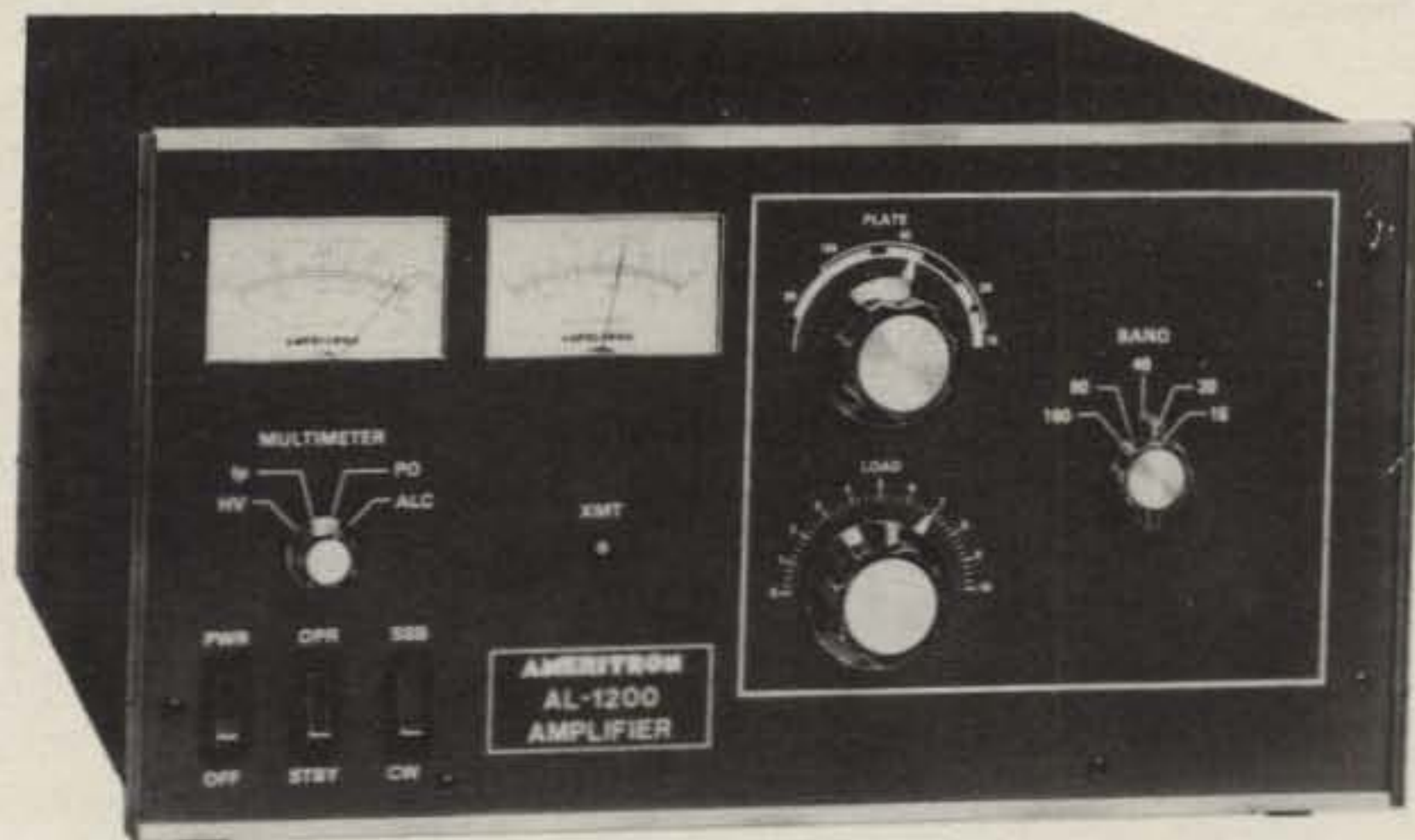


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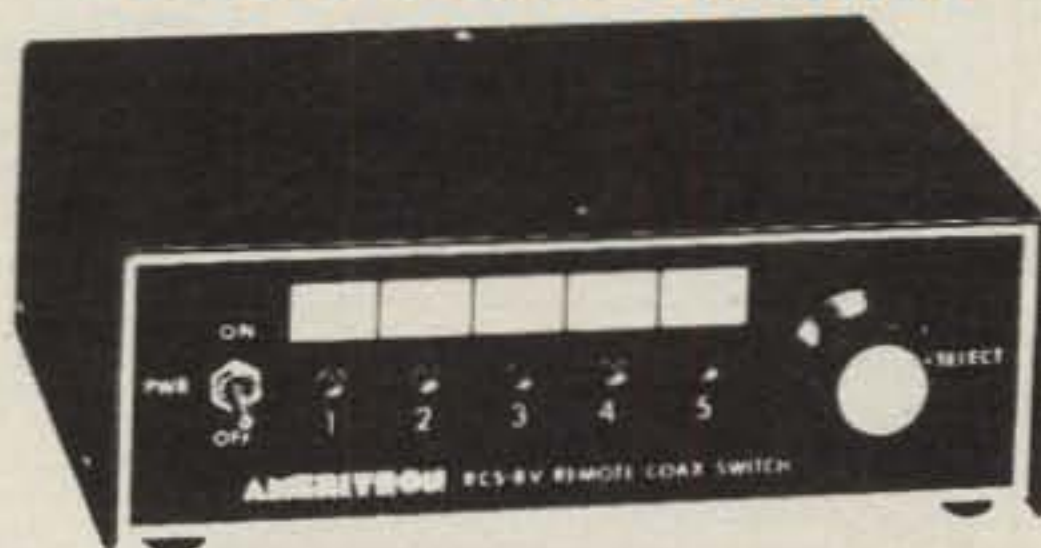
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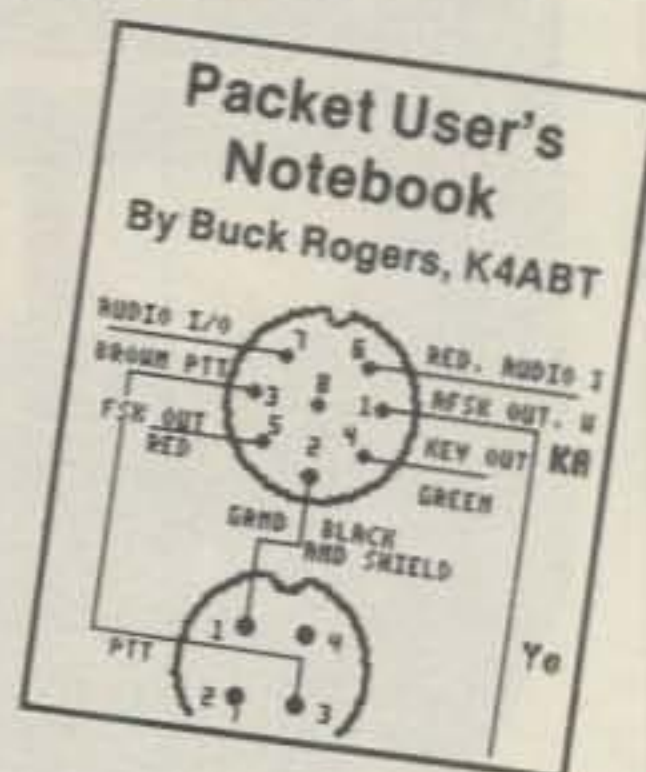
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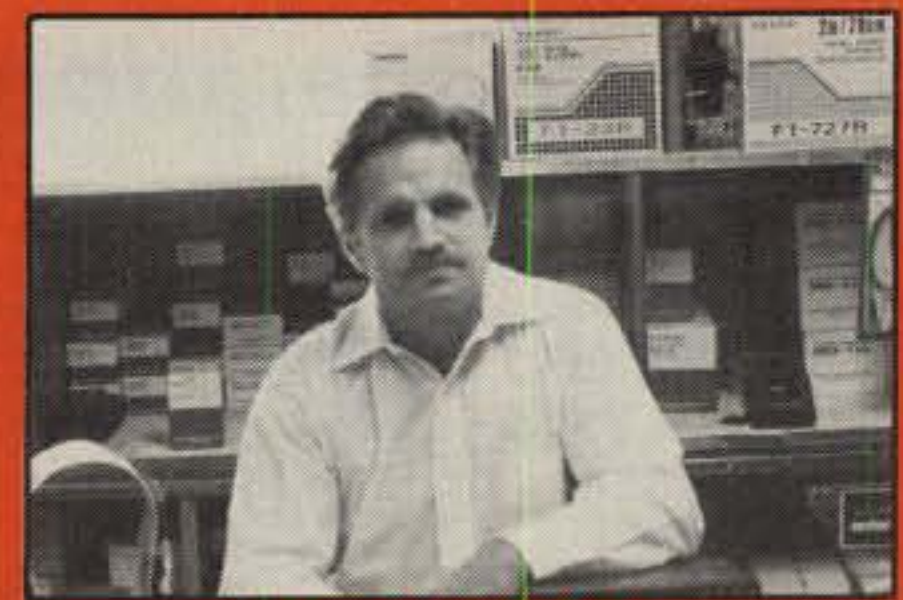




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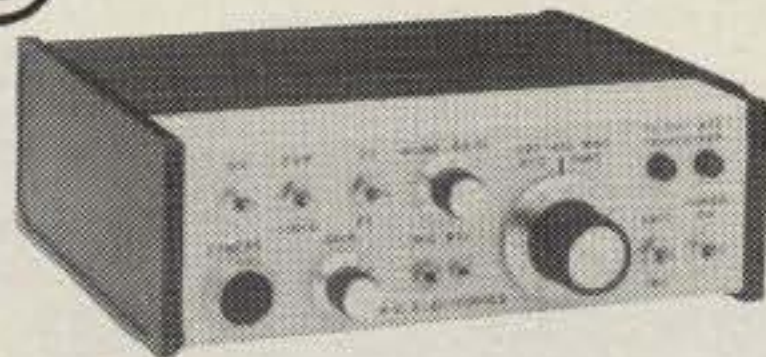
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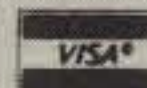


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**Portable operation can be a lot of fun. W4FA describes some ideas for a portable station that provide quite some operating comfort compared to QRP, battery-operated portable stations.**

## The Evolution of An HF Suitcase Station

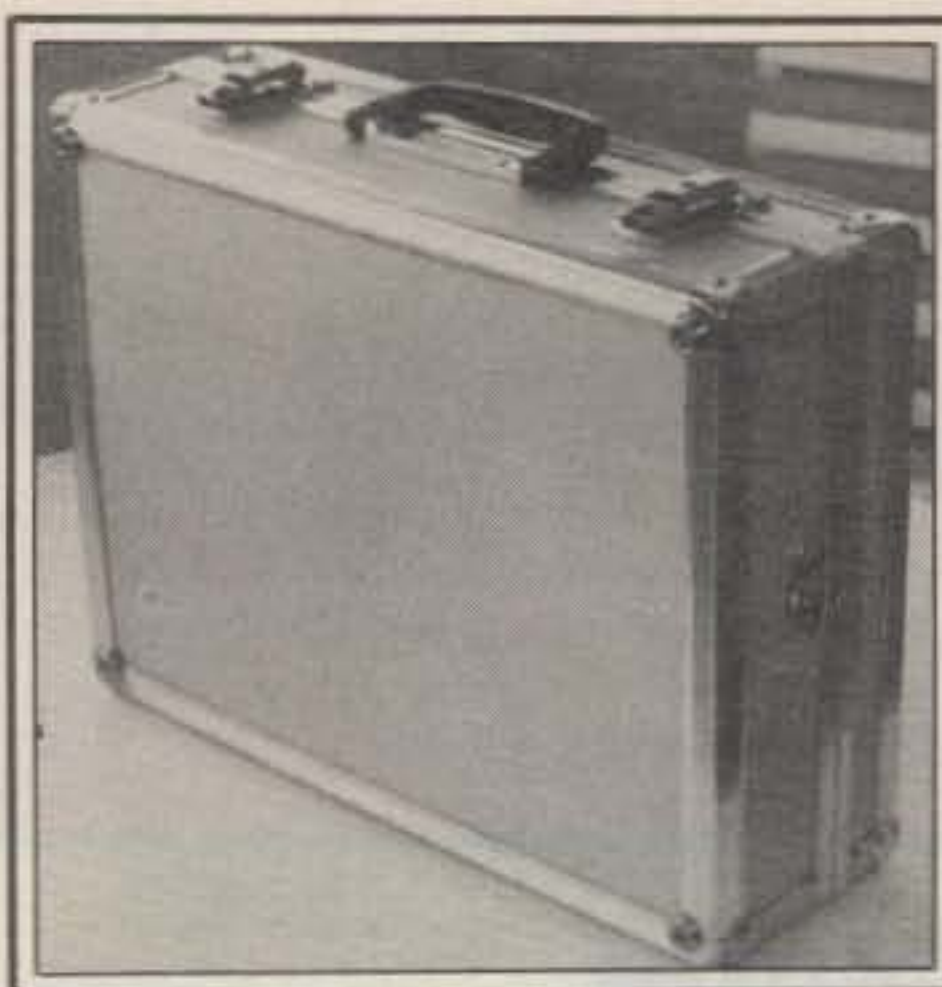
BY JOHN J. SCHULTZ\*, W4FA/SV0DX

Over the years I have had a lot of fun operating portable stations in various U.S. and foreign locations. The station setups I have used ranged from those using miniature homebrew QRP equipment to relatively large station setups using commercial equipment which took up most of the trunk space in an automobile. The QRP setups were fun and provided challenge, but it sure was nice at times to have a station setup that produced easy contacts for ragchewing.

In recent years I have settled on what I consider to be a more or less reasonable compromise—namely, a full-power (100 watt output) station which will fit into a small suitcase. The relatively small suitcase station I would like to describe can be used as a true portable station, or it can even form the basis for a permanent station setup if you are confined to small living quarters. The station setup is based mostly on commercially available equipment augmented by a few easy-to-build accessory items. However, you can develop the station from any desired mix of commercial or homebrew equipment.

### Suitcase Size

Quite by accident when I was looking through some mail order catalogs years ago, I came across various so-called photographic equipment suitcases which had, more or less, uniform dimensions of 18" x 13½" x 6"H. The size of the cases would allow them to qualify as "carry-on" baggage for most airline flights or would take up relatively little space in an automobile. The cases all had a combination of aluminum and plywood frame construction, appeared to be quite strong, and came with foam padding material which could be cut out to accommodate any odd-shaped object. I thought at the time that such a case would be ideal to transport a portable station, and that in-



*This is the closed suitcase station. The suitcase itself is a very strong photographic-equipment type with a volume of less than 1 cubic foot!*

deed proved to be the case. The Hakuba HA103L or Partner GO-3000L cases can be found at most photographic supply outlets selling for about \$60. I found a no-brand equivalent at a discount outlet for \$35.

### Choosing the Equipment

The mix of equipment that you might choose depends to a great deal on where you are going to operate. If you are going to operate from an isolated DX QTH, there is obviously no possibility of visiting the local radio-parts shop in case you forget to bring along an operating or repair part. Therefore, you have to take along a very complete station from A to Z. If you are going to operate from or near a populated area, you have only to concentrate on the station's basic equipment. If you



*A look inside the opened but unpacked suitcase station. Air-bubble-type plastic bags are used to both enclose and pad various items.*

\*c/o CQ magazine



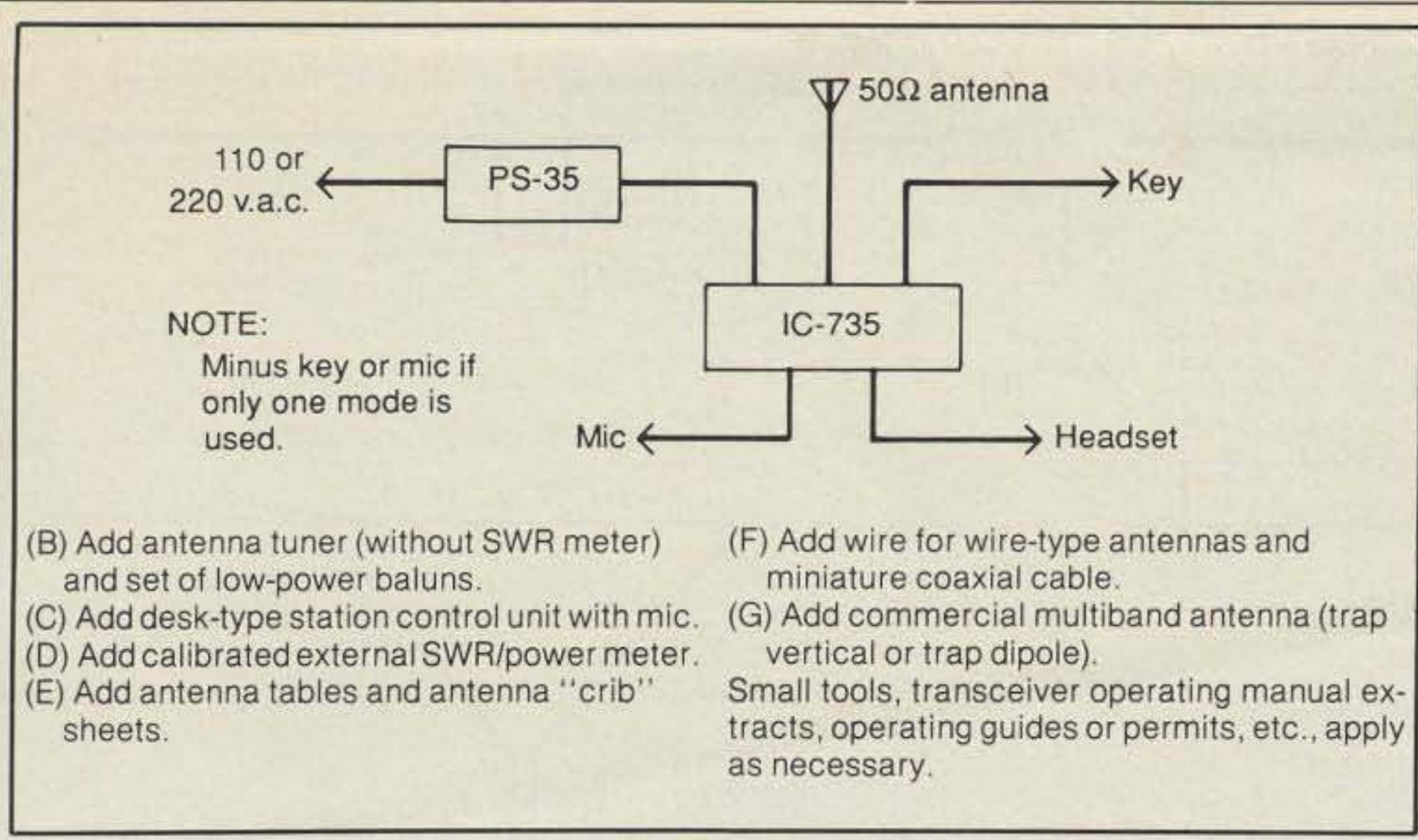


Fig. 1—(A) represents the basic suitcase station setup, while (B) through (G) represent progressive accessory items that you might like to consider. The suitcase station actually shown and described in this article includes all of the items except (G).

need a bit of wire for an antenna or a tool, it can be purchased locally.

Fig. 1 presents a sort of flow diagram for the equipment for my portable station. The basic transceiver is the very compact but full-featured ICOM IC-735, which among other features has built-in SWR metering circuitry so an external SWR meter is not absolutely required. The transceiver mates ideally with ICOM's PS-35 switching-type power supply. The power supply has less than half the volume of the IC-735, yet will deliver 13.8 VDC regulated at 20 amps from either a 110 VAC or 220 VAC line. The PS-35 is normally sold as the internal power supply for the IC-751 transceiver, but it performs perfectly well as a stand-alone power supply. The PS-35 comes with a metal plate which contains an AC line filter and which is meant to be mounted on the back panel of an IC-751.

I put the filter in a small metal enclosure to which I hard-wired the AC line cord. The modification is extremely simple and quite clear once you have the PS-35 in hand. No other wiring changes are necessary, since the power-supply connectors on the IC-735 and IC-751 are identical. The only disadvantage to the PS-35 is that the changeover from 110 VAC to 220 VAC line input requires that you remove the bottom cover from the supply and change some internal jumpers. There is no simple way that a switch can be installed to do the job. Overall, however, that is an extremely small price to pay for having such a compact and lightweight power supply available. The PS-35 can, of course, be used with any transceiver when properly interfaced.

My IC-735 has the built-in keyer and 250 Hz CW filter options, so all that is necessary to get on the air for SSB/CW

with the IC-735/PS-35 combination is to add a key, microphone, and headset. The key I use is the model SSM from the Austrian firm SIRtex. It's a gem of a compact squeeze key that utilizes a combination of magnetic and mechanical tensioning adjustments. The microphone uses a Heil HC-4 DX element with a homebrew pre-amplifier. The headphones are a "stethoscope" type, the Telex HMY-2. I find that type of headphone much more comfortable—especially in warm, humid wea-

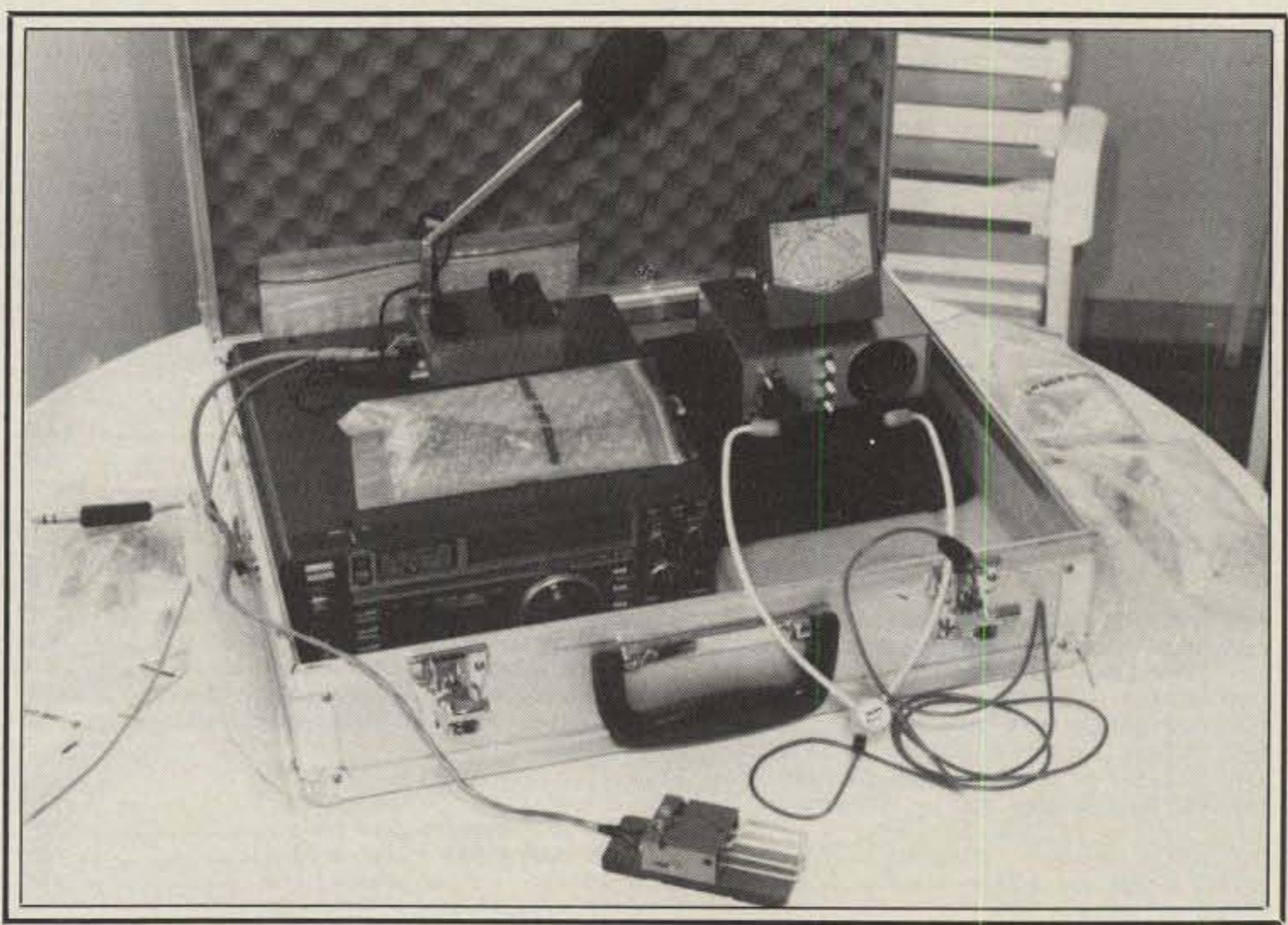
ther—than headphones that have pads which make contact with the outer surface of your ears.

The rest of fig. 1 shows my preference for adding additional accessories to the basic station setup. Many readers might well prefer to put a commercial multiband antenna at the top of the list. I prefer to utilize wire-type antennas as I go along; hence, a tuner is at the top of my list. The tuner I use is a compact homebrew unit using a simple LC network. It's similar to many small tuners I have described in CQ. A small MFJ type would be a good bet for those who don't wish to construct a unit.

Next on my list comes a control unit, and, in fact, this is the unit I described in the September 1988 issue of CQ. Besides freeing you from having to hold a hand microphone constantly, it adds several convenience features which simply make tune-up and operation of a transceiver more comfortable.

Still next on my list is a good external SWR/power meter, such as a Daiwa CN-520. It's a cross-needle type, so power output and SWR can be read simultaneously. Besides being very convenient to use when adjusting an antenna tuner, the power output scale on it provides a double-check to the transceiver's internal metering to see that the transceiver maintains its rated output power.

Last on my list are antenna-related items. The most important is a "crib" sheet to remind me of the dimensions necessary for a variety of wire-type antennas for those occasions when I can



Here is only a partial exposure of all the items packed inside the suitcase. The IC-735 transceiver is on the left. The darkest item to the right of it is the PS-35 power supply. The station-control-unit/microphone is on top of the transceiver. The antenna tuner and cross-needle SWR/power meter are on top of the PS-35. In the foreground are the squeeze key and headphones. Not shown are various antenna construction materials.



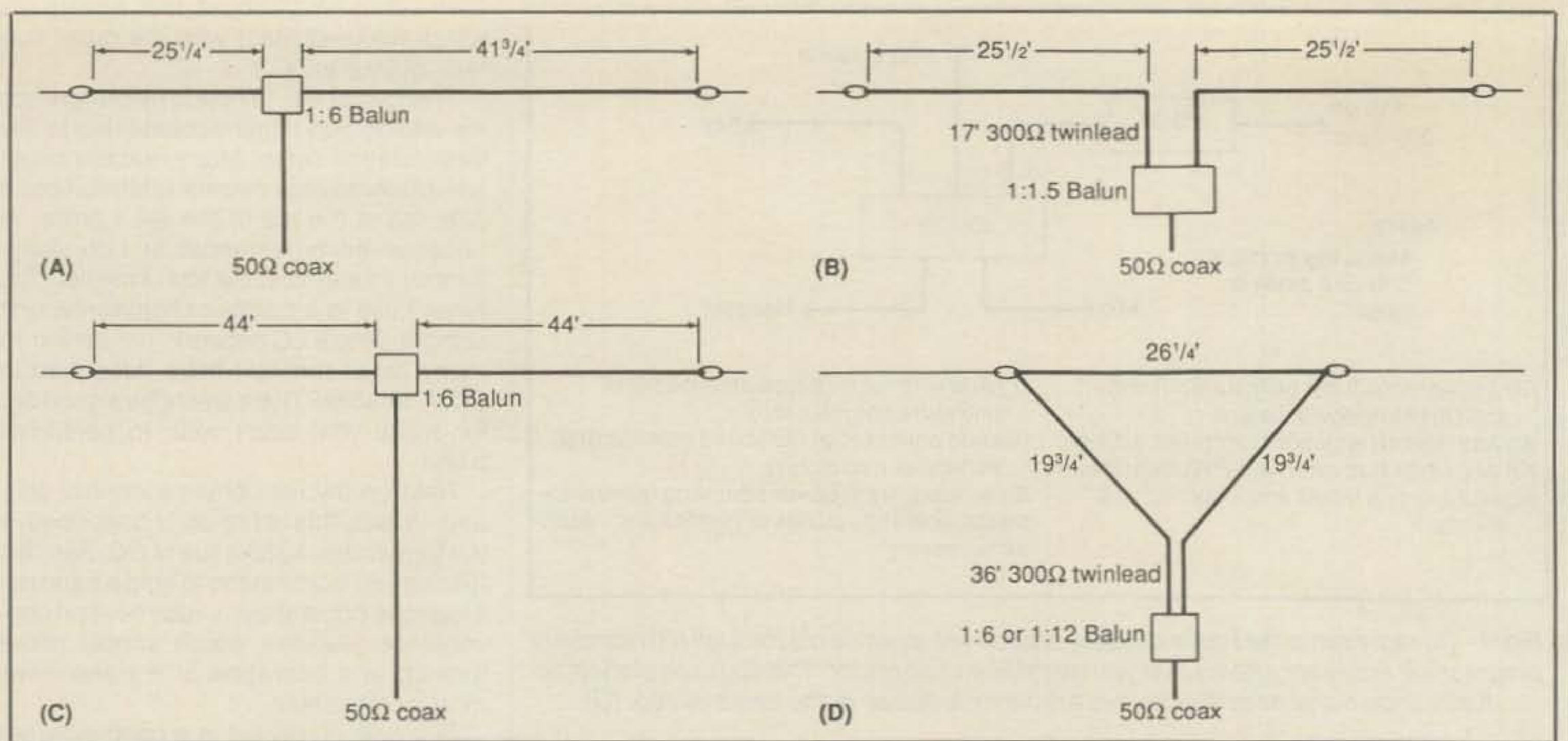


Fig. 2—This is a sampling of the wire antenna designs I have on my suitcase station's antenna "crib" sheet. The frequency bands covered by each of the antennas is explained in the text. A random-length wire antenna, operated against ground, is used when a "proper" antenna cannot be erected.

put up something better than just a random-length wire antenna. Among the hardware items on my list are a selection of miniature baluns, a hundred or so feet of small antenna wire, and 50 to 100 feet of RG-174 miniature coaxial cable. The baluns are from Palomar Engineers' PB series. The baluns can handle 300 watts PEP and also serve as the center insulator for wire-type antennas. I prefer baluns

with a ratio of 1.5:1 (PB-1.5), 6:1 (PB-6), and 12:1 (PB-12), as they will allow you to couple a coaxial line into a wide variety of wire-type, multiband antennas.

### Packing the Suitcase

The photographs show how the equipment is packed into the suitcase. No particular technique is used except to keep

the heavier items towards the rear of the suitcase. However, it is absolutely amazing how much can be packed into that small suitcase if you take a bit of time to experiment with the placement of various items. I make extensive use of the air-bubble type of plastic bags both for individually enclosing small items (such as a hand microphone) and for padding larger items (like the transceiver) from the walls of the suitcase. The plastic foam material that comes installed in the top cover of the case compresses to a large degree and provides a firm fit around the equipment as the cover is closed. A small cardboard box is used as a catch-all enclosure for the headphones, interconnecting cables, small tools, etc.

With all of the basic station items and the accessory items listed in fig. 1 packed inside the case, the case and its contents weigh about 28 lbs. I make a point of it, by the way, to put the original or a copy of my operating permit on the top of the equipment so it will be immediately visible when the suitcase is opened.

### A Note About Antennas

Some amateurs prefer to take trap-type, multiband vertical antennas along for portable operation. It's true that some types can especially be broken down so they will fit in a suitcase, or at least into a shipping tube. Such antennas can be pre-tested to see how they operate, which is a great advantage. But on balance, I still would vote for packing along a wide-range antenna tuner and using wire-type antennas, especially if you are going someplace where some sort of wire is

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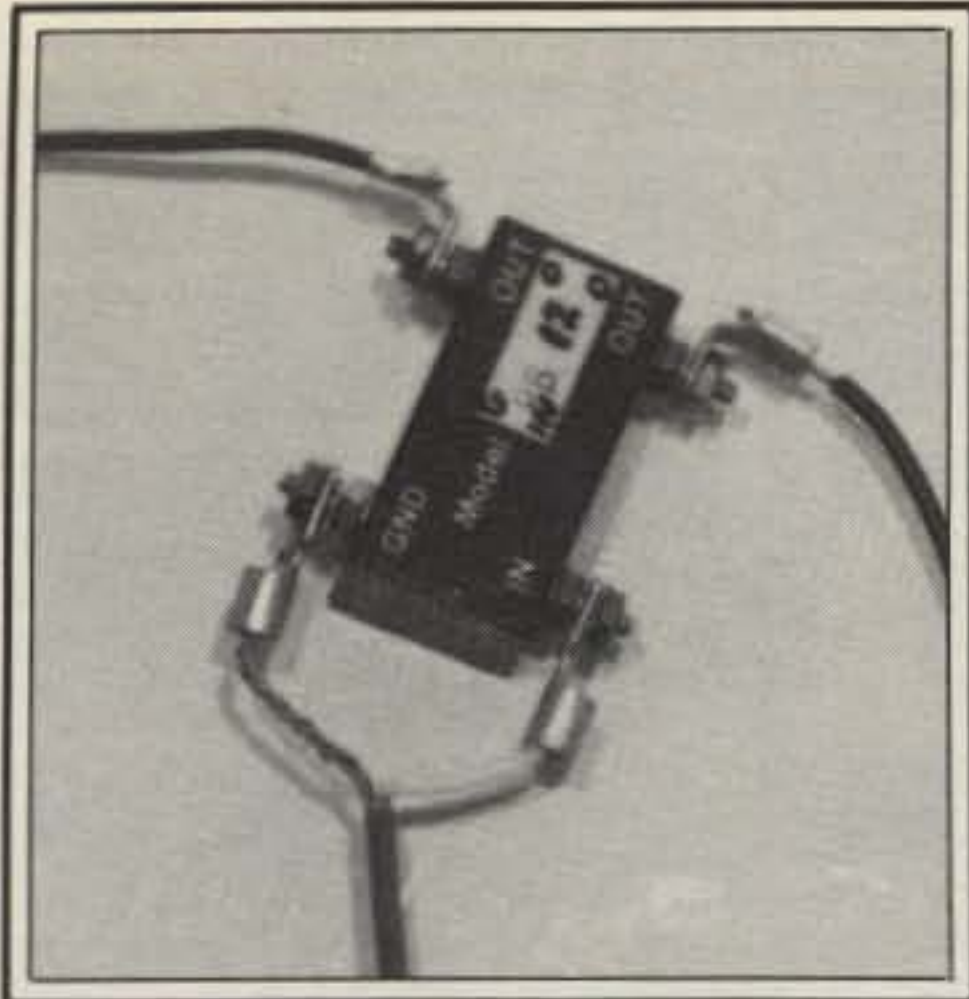
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One of three miniature Palomar Engineer's baluns carried in the suitcase station. The coaxial feedline is at the bottom, while the flattop sections of an antenna go off to the left and right. Disposable crimp-type spade lugs are used to connect to the screw terminals on the balun. Although perfectly satisfactory for temporary antenna installations, this interconnection method cannot be used for permanent installations, because humidity problems would rapidly degrade the interconnection points.

readily available. Besides the elemental dipole, there are all sorts of wire antennas you can erect. Fig. 2 presents a small selection from my antenna "crib" sheets.

Fig. 2(A) is a slightly modernized version of the famous Windom antenna (Loren Windom, W8GZ). A 1:6 balun couples the coaxial line into the antenna. It will operate fine on 40, 20, and 10 meters even without a tuner. A tuner will also permit useful operation on 15 meters, although you may have to cut or lengthen the coaxial line a bit to get the tuner to do its job. The antenna of Fig. 2(B) will operate on 40, 20, 15, and 10 meters using a tuner. The antenna of fig. 2(C) evolved out of a shortened dipole for 80 meters, but it will operate on 80, 40, 20, and 10 meters and with reduced efficiency on 15 meters. The antenna of fig. 2(D) will operate on 40, 20, 15, and 10 meters. The first three antennas can also be used in inverted-Vee fashion, although the resonances will change, and you will either have to experiment a bit with the leg lengths or rely more on a tuner to get power coupled into the antenna/transmission-line system. Please note that I'm referring here to temporary, portable antennas. I certainly would not suggest that a tuner be used to "disguise" a poorly dimensioned antenna in a permanent station setup.

Portable operation can be a lot of fun whether you're going to the seashore or to the mountains for a break. I hope some of the ideas in this article prove to be useful. Enjoy yourself.



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# The 33rd Annual CQ World-Wide WPX Contest

**SSB: March 25–26, 1989**

**CW: May 27–28, 1989**

**Starts: 0000 GMT Saturday**

**Ends: 2400 GMT Sunday**

**I. Contest Period:** Only 30 hours of the 48 hour contest period permitted for Single Operator stations. **Off periods must be a minimum of 60 minutes in length and clearly marked in the log.** Multi-operator stations may operate the full 48 hours.

**II. Objective:** Object of the contest is for amateurs around the world to contact as many amateurs in other parts of the world as possible during the contest period.

**III. Bands:** The 1.8, 3.5, 7, 14, 21, and 28 MHz bands may be used. No WARC bands.

**IV. Type of Competition:** 1. Single Operator (a) All Band, (b) Single Band (one entry per operator). 2. Multi-operator, All Band *only*. (a) Single Transmitter (only one transmitter and one band permitted during the same time period, defined as 10 minutes, no exception), (b) Multi-Transmitter (one signal per band permitted).

**NOTE:** All transmitters must be located within a 500 meter diameter or within the property limits of the station licensee's address, whichever is greater. The antennas must be physically connected by wires to the transmitter.

**V. Exchange:** RS(T) report plus a progressive three-digit contact number starting

with 001 for the first contact. (Continue to four digits if past 1000.) Multi-transmitter stations use separate numbers for each band.

**VI. Points:**

A. Contacts between stations on different continents are worth three (3) points on 28, 21, and 14 MHz and six (6) points on 7, 3.5, and 1.8 MHz.

B. Contacts between stations on the same continent but different countries are worth one (1) point on 28, 21, and 14 MHz, and two (2) points on 7, 3.5, and 1.8 MHz. **Exception: For North American stations only—contacts between stations within the North American boundaries count as two (2) points on 28, 21, and 14 MHz and four (4) points on 7, 3.5, and 1.8 MHz.**

C. Contacts between stations in the same country are permitted for multiplier credit but have zero (0) point value.

**VII. Multiplier:** The multiplier is the number of different prefixes worked. A "PREFIX" is counted only once regardless of the number of times the same prefix is worked.

A. The letter/numeral combinations which form the first part of the amateur

call will be considered the prefix. Examples: N8, W8, Y22, Y23, WD8, HG1, HG19, WB2, WB200, KC2, KC200, OE2, OE25, U3, GB75, ZS66, NG84, etc. Any difference in the numbering, lettering, or order of same shall constitute a separate prefix. A station operating from a call area or country different from that indicated by its callsign is required to sign portable. In cases of portable operation, the portable designator would then become the prefix. Example: N8BJQ/6 would count as N6, J6/N8BJQ would count as J6, KH6/N8BJQ would count as KH6, etc. Portable designators without numbers will be assigned a zero (0) at the end of the designator to form the prefix. Example: LX/W8IMZ would count as LX0. **The portable prefix must be an authorized prefix of the country/area of operation. Check current FCC regulations for reciprocal licensing in the USA.** All calls without numbers will be assigned a zero (0) after the first two letters to form the prefix. Example: XEFTJW would count as XE0, RAEM would count as RA0, etc. Maritime mobile, mobile, /A, /E, /J, /P, or interim license class identifiers do not count as prefixes.



B. Special event, commemorative, and other unique prefix stations are encouraged to participate.

**VIII. Scoring:** 1. Single Operator (a) All Band score, total QSO points from all bands multiplied by the number of different Prefixes worked. (b) Single Band score, QSO points on the band multiplied by the number of different Prefixes worked. See VII.

2. Multi-Operated stations. Scoring in both these categories is the same as the All Band scoring for Single Operator.

3. A station may be worked once on each band for QSO point credit. However, **prefix credit can be taken only once** regardless of the number of different bands on which the same station and/or prefix has been worked during the entire contest.

**IX. QRPp Section:** (Single Operator Only). Power must not exceed 5 watts output to qualify for QRPp section competition. **You must denote QRPp on the summary sheet and state the actual maximum power output used for all claimed contacts.** Results will be listed in a separate QRPp section and certificates will be awarded to each top scoring QRPp station in the order indicated in Section X. These certificates will be marked QRPp and will show your power output. QRPp stations will be competing only with other QRPp stations for awards. All other information contained in these rules is applicable to this section.

**X. Awards:** Certificates will be awarded to the highest scoring station in each category listed under Section IV.

1. In every participating country.

2. In each call area of the United States, Canada, Australia, and Asiatic USSR.

All scores will be published. However, to be eligible for an award, a Single Operator station must show a minimum of 12 hours of operation. Multi-operator stations must show a minimum of 24 hours.

A single band log is eligible for a single award **only**. If a log contains more than one band, it will be judged as an all band entry, unless specified otherwise. However, a 12 hour minimum is required on the single band.

In countries or sections where the returns justify, 2nd and 3rd place awards will be made.

**XI. Trophies, Plaques and Donors:**  
**SSB**

**Single Operator, All Band**

WORLD - Stanley Cohen, WD8QDQ  
U.S.A. - Atilano de Oms, PY5EG  
CARIB./C.A. - Auturo Gigante, Jr., HI8GB  
EUROPE - Jim Hoffman, PY5ZBA  
\*JAPAN - The DX Family Foundation  
SO. AMERICA - Ron Moorefield, W8ILC  
WORLD QRPp - Dayton A.R.A.

**Single Operator, Single Band**

WORLD - John N. Reichert, N4RV  
\*WORLD 21 MHz - Lee Wical, KH6BZF

WORLD 7 MHz - William Diggins, WA8LXJ  
EUROPE - Myron E. Crofoot, WB4VQO  
JAPAN - Ken Ruddock, K6HNZ

\*JAPAN - 28 MHz - Joe Arcure, W3HNL & Toshi Kusano, JA1ELY (Terry Appleton, W4GSM Memorial Award)  
U.S.A. 3.7 MHz - Lance Johnson Engineering

U.S.A. 7 MHz - William Diggins, WA8LXJ  
U.S.A. 14 MHz - Doug Zwiebel, KR2Q  
U.S.A. 21 MHz - Bernie Welch, W8IMZ  
U.S.A. 28 MHz - Novice/Tech. only - Jon Engelhardt, KA0ZFX

**Multi-Operator, Single Xmtr.**

WORLD - Mike Badolato, W5MYA

**Multi-Operator, Multi-Xmtr.**

WORLD - Henry Thel, VE7WJ  
U.S.A. - Glenn Tracey, KC3EK

**Contest Expedition**

WORLD - Kansas City DX Club

• • •

**CW**

**Single Operator, All Band**

WORLD - Terry Baxter, N6CW  
U.S.A. - Steve Bolia, N8BJQ  
\*JAPAN - The DX Family Foundation  
OCEANIA - Tom Morton, KT6V  
\*CANADA - Canadian Amateur Radio Federation (C.A.R.F.)  
WORLD QRP/p - QRP A.R.C.I.

**Single Operator, Single Band**

WORLD - Pedro Piza, Jr., NP4A  
(Pedro Piza, Sr., KP4ES Memorial)  
WORLD 3.5 MHz - Lance Johnson Eng.  
U.S.A. - Kansas City DX Club  
U.S.A. 21 MHz - Wayne Carroll, W4MPY  
U.S.A. 14 MHz - Gene Walsh, N2AA  
U.S.A. 7 MHz - Dennis Younker, NE6I  
ASIA - Bruce Frahm, K0BJ  
Oceania 3.5 MHz - Les Myers, K0SCM

**Multi-Operator, Single Xmtr.**

WORLD - Ron Blake, N4KE  
U.S.A. - Austin Regal, N4WW  
\*CANADA - Tetrahedral Contest Circle

**Contest Expedition**

WORLD - Ed Roller, K4IA

**Club (SSB & CW)**

WORLD - CQ Magazine  
U.S.A. - Northern Ohio A.R.S. (N.O.A.R.S.)

*\*Donor is responsible for this trophy.*

Trophy and Plaque winners may win the same award *only once* within a **TWO** year period. This does not apply to any QRPp, Club, Expedition, or CQ Special Awards. A station winning a World Trophy will not be considered for a sub-area award. That Trophy will be awarded to the runner-up for that area if the returns justify the award.

**XII. Club Competition:** A trophy will be awarded each year to the club or group that has the highest aggregate score from logs submitted by members. The club must be a local group and not a national organization. Participation is limited to members operating within a local geographical area. **(Exception: DXpeditions especially organized for operation in the contest and manned by members.)** Indicate your club affiliation. To be listed, a minimum of three logs must be received from a club.

**XIII. Log Instructions:** 1. All times must be in GMT. The 18 hour non-operating periods must be clearly shown.

2. Prefix multipliers should be entered only the **FIRST TIME** they are contacted.

3. Logs must be checked for duplicate contacts, correct points, and prefix multipliers. Duplicate contacts must be clearly shown. Computerized logs must be checked for typing accuracy. Original logs may be requested if further cross-checking is required.

4. An alphabetical/numerical check list of claimed PREFIX multipliers must be sent along with your contest log. (A prefix is counted one time only.)

5. Each entry must be accompanied by a Summary Sheet listing all scoring information, the category of competition, and the contestant's name and mailing address in **BLOCK LETTERS**.

Also submit a signed declaration that all contest rules and regulations for amateur radio in the country of the contestant have been observed.

6. Official log and sample summary sheets are available from CQ. A large self-addressed envelope with sufficient postage or IRCs must accompany your request.

If official forms are not available, you can make your own with 40 contacts to the page.

**XIV. Disqualification:** Violation of amateur radio regulations in the country of the contestant, or the rules of the contest, unsportsmanlike conduct, taking credit for excessive duplicate contacts, unverifiable QSO's or multipliers will be deemed sufficient cause for disqualification. (Incorrectly logged calls will be counted as unverifiable contacts.) Actions and decisions of the **CQ WPX Contest Committee** are official and final.

**XV. Deadline:** All entries must be post-marked no later than **May 10, 1989** for the SSB section and **July 10, 1989** for the CW section. **Indicate SSB or CW on the envelope.** Extensions may be granted if requested.

All logs go to: **CQ Magazine, WPX Contest, 76 N. Broadway, Hicksville, NY 11801 U.S.A.**

Questions pertaining to the WPX Contest can be sent to: WPX Contest Director, Steve Bolia, N8BJQ, 4121 Gardenview Dr., Beavercreek, OH 45431 U.S.A.

**Please remember to send in early for the WPX Contest Logs and Summary Sheets.**



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RS35A	25	35	145
RS35M	25	35	160
RS50A	37	50	215
RS50M	37	50	240

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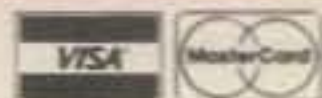
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Packages shown below are rated for wind zone "B" (86 mph wind). Zone "C" (100 mph wind) design prices slightly higher. All tower packages shipped freight collect from our Plano, TX warehouse, in stock for prompt delivery.

Model	25G	Model 45G	Model 55G
50'	\$669	\$1369	\$1689
60'	849	1549	1899
70'	919	1699	2069
80'	1099	1899	2299
90'	1179	2199	2489
100'	1269	2399	2689
110'	1499	2569	3129
120'	1579	2749	3349

**US TOWER CORPORATION**

These rugged crankup towers and masts now available from Texas Towers!

Check these features:

- ✓ All steel construction
- ✓ Hot dipped galvanized
- ✓ Totally self-supporting—No guys needed

Coax arms, Thrustbearings  
Masts, Motor drives, Remote controls, Hinged bases, Rotor bases, & Raising fixtures also in stock.

**CALL FOR SALE PRICES!**

Model	Min.Ht.	Max.Ht.	Ant.load*	Sale price
MA40 mast	21'	40'	10 sq ft	\$629
MA550 mast	22'	50'	10 sq ft	999
TX438	22'	38'	18 sq ft	919
TX455	22'	55'	18 sq ft	1385
TX472	23'	72'	18 sq ft	2279
HDX555	22'	55'	30 sq ft	2079
HDX572	23'	72'	30 sq ft	3559

Note-US Towers Shipped Freight Collect From Visalia, CA Factory

\*Note-towers rated at 50 mph to EIA specifications

**RG-213U**

\$ .36/ft \$349/1000 ft.  
Up to 600 ft via UPS

- RG-213/U—95% Bare Copper Shield
- Mil-Spec Non-contaminating Jacket for longer life than RG8 cables
- Our RG-213/U uses virgin materials.
- Guaranteed Highest Quality!

**RG-8X**

\$ .22/ft \$209/1000 ft.

- RG8X—95% Bare Copper Shield • Low Loss
- Non-contaminating Vinyl Jacket Foam Dielectric

**9086**

\$ .42/ft \$409/1000 ft.

- Same Specs as Belden 9913
- Lower loss than RG8U
- 100% shielded-braid & foil

**HARDLINE/HELIAX®**

Lowest Loss for VHF/UHF!

Cable Type	Imped.	10MHz	30MHz	150MHz	450MHz
RG-213/U	50	.6	.9	2.3	5.2
RG8X	52	.8	1.2	3.5	5.8
9086	50	.4	.64	1.7	3.1
1/2" Alum	50	.3	.5	1.2	2.2
1/2" Heliax	50	.2	.4	.9	1.6
3/4" Heliax	50	.1	.2	.5	.9

**HARDLINE & HELIAX® CONNECTORS**

Cable Type	UHF FML	UHF MALE	N FML	N MALE
1/2" Heliax®	\$29	\$29	\$29	\$29
3/4" Heliax®	\$55	\$55	\$55	\$55

**COAX CONNECTORS**

Amphenol Silver PL259	\$1.50
UG21B N Male	\$3.50
9086/9913 N Male Connector	\$4.95

**ANTENNA WIRE & ACCESSORIES**

Stranded Copper 14ga	\$.10/ft.
1/4 mile 18ga copper-clad steel wire	\$.30
Dog bone end insulator	\$.79 ea.

**Van Gorden**

1:1 Balun	\$15	Center Insulator	\$8
Dipole Kits	D80 \$31.95/D40 \$28.95		
Short Dipole Kits	SD80 \$35.95/SD40 \$33.95		
All-band Dipole w/ladder line	\$29.95		
G5RV all band antenna	\$49.95		

**ALPHA DELTA**

DX-A 160-80-40 Sloper .....\$49

**CUSHCRAFT**

A3 3-el Tribander	\$259
A4S 4-el Tribander Beam w/S.S. Hdwre	\$349
A743 & A744, 30/40 mtr KIT for the A3 & A4	\$ 89
R4 20-10 mtr Vertical	\$229
AP8 80-10 mtr Vertical	\$159
AV5 80-10 mtr Vertical	\$119
D40 40 mtr Dipole	\$159
40-2CD 2-el 40 mtr Beam	\$339
A50-5 5-el 6 mtr Beam	\$ 98
215 WB NEW 15-el 2 mtr Beam	\$ 89
230 WB NEW 30-el 2 mtr Beam	\$229
4218 XL 18-el 2 mtr Beam	\$129
3219 19-el 2 mtr Beam	\$109
424B 24-el 432 MHz Beam	\$ 89
ARX2B 2 mtr Vertical	\$ 45

**hy-gain**

Discoverer 2-el 40-mtr Beam .....\$259

Discoverer 3-el Conversion Kit .....\$349

EXPLORER-14 SUPER-SPECIAL

QK710 30/40 mtr. Add-On-Kit	\$ 89
V2S 2-mtr Base Vertical	\$119
V4S 440MHz Base Vertical	\$119
TH5MK2S Broad Band 5-el Triband Beam	\$349
TH7DXS 7-el Triband Beam	\$349
TH3JRS 3-el Triband Beam	\$119
205BAS 5-el 20-mtr Beam	\$119
155BAS 5-el 15-mtr Beam	\$119
105BAS 5-el 10-mtr Beam	\$119
204BAS 4-el 20-mtr Beam	\$119
64BS 4-el 6-mtr Beam	\$119
12 AVQ 20-10 mtr vertical	\$119
14 AVQ 40-10 mtr vertical	\$119
18 AVT/WB 80-10mtr Vertical	\$119
18HTS 80-10 mtr Hy-Tower Vertical	\$119
23BS 3-el 2 mtr Beam	\$119
25BS 5-el 2 mtr Beam	\$119
28BS 8-el 2 mtr Beam	\$119
214BS 14-el 2-mtr Beam	\$119
2BDQ 80/40 mtr Trap Dipole	\$119
5BDQ 80-10 mtr Trap Dipole	\$119
BN86 80-10 mtr KW Balun W/Coax Seal	\$119

**HUSTLER**

68TV 80-10 mtr Vert	\$149	58TV 80-10 mtr Vert	\$129
48TV 40-10 mtr Vert	\$99	G7-144 2-mtr Base	\$129
G6-144B 2-mtr Base	\$89		

Mobile Resonators	10m	15m	20m	40m	75m
400W Standard	\$16	\$17	\$19	\$22	\$26
2KW Super	\$20	\$22	\$25	\$29	\$39

Bumper Mounts - Springs - Folding Masts in Stock!

**BUTTERNUT ELECTRONICS CO**

HF6VX 80-10m Vertical \$149 Delivered

- Full Legal Power
- Highest Q Tuning Circuits

HF2V 80-40m Vertical \$139 Delivered

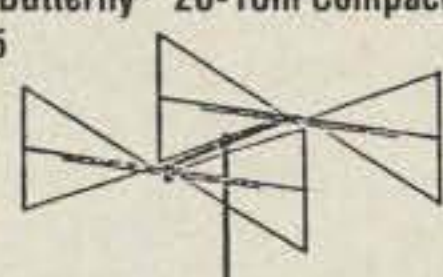
- Full Legal Power
- Automatic Band Switching

Accessories:

RMK II Roof Mtg. Kit	\$55
STR II Stub-Tuned Radials	\$35
TBR160 160m Coil Kit	\$55
30m Add-on Kit	\$35
17/12m Add-on Kit	\$35

FREE UPS on ACCESSORIES when purchased with antenna

HF5B "Butterfly" 20-10m Compact Beam \$229.95



- Unique Design Reduces Size
- No Lossy Traps
- Turns w/TV Rotor
- Boom Length 6 Feet
- Element Length 12.5 Feet

FREE UPS Shipping in Continental USA

**MIRAGE/KLM**

KT34A 4-el Broad Band Triband Beam	\$399.95
KT34XA 6-el Broad Band Triband Beam	\$589.95

**ROTORS**

Alliance HD73 (10.7 sq ft rating)	\$119.95
Alliance U110 (3 sq ft rating)	\$49
Telex CD 45II (8.5 sq ft rating)	\$Call
Telex HAM 4 (15 sq ft rating)	\$Call
Telex Tailtwister (20 sq ft rating)	\$Call
Telex HDR300 Heavy Duty (25 sq ft rating)	\$Call

**ROTOR CABLE**

Standard 8 cord cables \$.22/ft. (vinyl jacket 2-#18 & 6-#22 ga)

Heavy Duty 8 Cond cable \$.39/ft (vinyl jacket 2-#16 & 6-#18 ga)



**ROHN GUYED TOWER SECTIONS**

10 FT. STACKED SECTIONS

20G	\$49.50	45G	\$139.50
25G	\$59.50	55G	\$179.50

ALL ACCESSORIES IN STOCK—CALL

**ROHN FOLDOVER TOWERS**

Model	Height	Ant. Load*	Price
FK2548	48 ft.	15.4 sq. ft.	\$1129
FK2558	58 ft.	13.3 sq. ft.	1199
FK2568	68 ft.	11.7 sq. ft.	1239
FK4544	44 ft.	34.8 sq. ft.	1489
FK4554	54 ft.	29.1 sq. ft.	1599
FK4564	64 ft.	28.4 sq. ft.	1699

25G Double Guy Kit .....\$279.  
45G Double Guy Kit .....\$299.

\*Above antenna loads for 70 mph winds w/guys at hinge and apex. All foldover towers shipped freight prepaid in 48 states. Prices 10% higher west of Rockies.

**TOWER/GUY HARDWARE**

3/16 EHS Guywire (3990 lb rating)	\$ 15/ft
1/4 EHS Guywire (6650 lb rating)	\$ 18/ft
5/16 EHS Guywire (11,200 lb rating)	\$ 29/ft
5/32 7 x 7 Aircraft Cable (2700 lb rating)	\$ 15/ft
3/16 CCM Cable Clamp (3/16" or 5/32")	\$ 45
1/4 CCM Cable Clamp (1/4" Cable)	\$ 55
1/4 TH Thimble (fits all sizes)	\$ 45
3/8EE (3/8" Eye & Eye Turnbuckle)	\$6.95
3/8EJ (3/8" Eye & Jaw Turnbuckle)	\$7.95
1/2 x 9EE (1/2" x 9" Eye to Eye Turnbuckle)	\$9.95
1/2 x 9EJ (1/2" x 9" Eye & Jaw Turnbuckle)	\$10.95
1/2 x 12EE (1/2" x 12" Eye & Eye Turnbuckle)	\$12.95
1/2 x 12EJ (1/2" x 12" Eye & Jaw Turnbuckle)	\$13.95
5/8 x 12EJ (5/8" x 12" Eye & Jaw Turnbuckle)	\$16.95
3/16" Preformed Guy Grip	\$2.49
1/4" Preformed Guy Grip	\$2.99
6" Diam - 4 ft Long Earth Screw Anchor	\$17.95
500 D Guy insulator (5/32" or 3/16" Cable)	\$1.69
502 Guy Insulator (1/4" Cable)	\$2.99
5/8" Diam - 8 ft Copper Clad Ground Rod	\$12.95

**PHILLYSTRAN GUY CABLE**

HPTG2100 Guy Cable (2100 lb rating)	\$ .32/ft
HPTG4000 Guy Cable (4000 lb rating)	\$ .52/ft
HPTG6700 Guy Cable (6700 lb rating)	\$ .72/ft
9901LD Cable End (for 2100/4000 cable)	\$9.95
9902LD Cable End (for 6700 cable)	\$11.95
Socketfast Potting Compound (does 6-8 ends)	\$16.95

**GALVANIZED STEEL MASTS**

Heavy Duty Steel Masts 2 in OD - Galvanized Finish

Length	5 FT	10 FT	15 FT	20 FT
.12 in Wall	\$29	\$49	\$69	\$89
.18 in Wall	\$49	\$89	\$129	\$149
.25 in Wall	\$69	\$129	\$189	\$249

**ORDER TOLL FREE 1-800-272-3467**

Texas, Alaska & for information 1 (214) 422-7306

**TEXAS TOWERS**

Mon-Fri: 9am - 5 pm  
Sat: 9am - 1 pm

Div. of Texas RF Distributors Inc. 1108 Summit Ave., Suite 4 • Plano, Texas 75074

(Prices & Availability Subject To Change Without Notice)

(Antenna/tower product prices do not include shipping unless noted otherwise)



## 'HOW TO' FOR THE NEWCOMER TO AMATEUR RADIO

### Potpourri 1989

**T**he *CQ 1989 Buyer's Guide* is a 168-page book that is filled with information about modern amateur radio equipment and accessories. This book contains something of interest to all amateurs, and is particularly useful to newcomers to the hobby.

The *1989 Buyer's Guide* starts with an introduction that states what is in the book and tells how to use it. It devotes 12 pages to accessories. It covers antenna/rotator mounts, antenna noise bridges, antenna rotators, antenna tuners, artificial ground, audio filters, automatic coders, auto power connector, baluns, battery eliminators, bugs, clocks, code filters, code-practice oscillators, cordless telephone link, cooling fans, crystals, direction finder, docking boosters, duplexers, encoders/keyboards, frequency counters, ginpoles, grid-dip meters, headsets, keyer paddles, keyers, keypads, loudspeakers, low-pass filters, microphones, power supplies, ropes, safety belt, surge protectors, SWL antenna, SWR meters, touch-tone decoder, trap dipoles, UHF/VHF/VLF converters, voice keyers, and wattmeters. This section of the book is aimed directly at the new amateur who wants a brief introduction to currently available accessories.

Amplifiers are covered in 2½ pages, and 6 pages are devoted to antennas presently being sold to amateurs. Currently available computers are detailed, and 3½ pages are used to tell you how to select the most suitable computer for your needs. Another 6½ pages are used to explain computer uses (packet, etc.) in amateur radio stations. There is a 6½ page explanation of contests and contest operation. This section should be helpful to new amateurs who have not yet experienced the fun of operating in contests. You do not have to spend a lot of time in a contest to derive some benefit from it. This contest introduction is good. Five pages are used to cover the controllers and interfaces which are common to modern amateur radio stations.

FCC rules and regulations are detailed in 6½ pages, providing a handy source for this information. Almost 5 pages are about flea-markets and hamfests. This coverage should encourage more amateurs to participate in these activities. Nearly 6 pages provide you with valuable tips on selecting FM equipment.

High frequency is well documented in the *1989 Buyer's Guide*. HF antennas are detailed on 6-plus pages. HF station accessories (and uses) are covered very well on 4½ pages. This coverage is very helpful to amateurs who are considering which items they should get for their stations. Almost 6 pages are devoted to covering the HF transceivers now being sold. Almost 5 pages are used to provide detailed explanations of when and how HF transceiver controls should be used. AGC, audiotone, IF



Here are (left to right) Frances Howard; Marie Welsh, W6JEP; Bill Welsh, W6DDB; and Peter Howard, EA5GBS. The Howards are from Alicante, Spain. They toured the United States last summer.

shift memory, meter, noise blanker, notch filter, passband tuning, QSK, speech processor, and VOX coverage is presented in a simple style that is easy to understand.

One of the major features of this book is a 17-page alphabetical list of amateur radio equipment and accessories manufacturers. This list is useful to individual amateurs, and it should be helpful to organizers of amateur radio conventions.

Receivers and scanners are detailed in 2½ pages. UHF/VHF transceivers are covered very well in the *1989 Buyer's Guide*. More than 5 pages are used to cover handheld transceivers. Multi-mode transceivers are detailed on 2½ pages. FM base and mobile transceivers are covered on 5 pages. A 5-page explanation of VHF/UHF weak-signal operating techniques is also included to help promote such operation by amateurs who may not have tried it before.

A little more than one-fourth of the book is advertising. These ads are positioned to complement adjacent text. They enhance the coverage, rather than distract from it.

The *1989 Buyer's Guide* contains a lot of basic material. It warrants the detailed coverage this article provides. This is one of the most helpful publications I have ever seen to introduce new amateurs to accessories, equipment, and their operation. It is well worth its \$3.95 cover price. If your local outlet does not yet have this publication, you can order it directly from *CQ* for \$3.95.

#### EGE, Inc.

New amateurs face a tremendous challenge in selecting the equipment and accessories for use in their stations. EGE publishes a "Communication Equipment Catalog" (for \$1.00) that enables you to quickly and easily compare many of the available items. It contains several tables of features, specifications, and accessories. This catalog can be ordered from EGE, Inc., 14803 Build America Drive, Woodbridge, VA 22191. Their toll-free telephone number for ordering items is 800-444-4799. The regular store number is 703-643-1063. An EGE store has been established to serve New England customers. It is located at 224 North Broadway (Route 28), Salem, NH 03079. Their toll free ordering number is 800-444-C047. The regular store telephone number is 603-898-3750.

Lacombe Distributors is an associate of EGE located at Davis and Jackson Road, Lacombe, LA 70445. Their mailing address is P.O. Box 293. The Lacombe telephone number is 504-882-5355. Most of the EGE products are stocked by Lacombe, but prices can differ.

#### EIA Booklets

I served as chairman of the Boston TVI committee when television interference was at its worst. I still help resolve occasional interference problems. I recently received a pamphlet on this subject, "Consumers Should Know Something About Interference." This booklet



# DAYTON Hamvention®

April 28, 29, 30, 1989

## Early Reservation Information

• General Chairman, Bill McNabb, WD8SAY

• Asst. General Chairman, Ed Hillman, N8ALN

- Giant 3 day flea market • Exhibits
- License exams • Free bus service
- CW proficiency test • Door prizes

Flea market tickets and grand banquet tickets are limited. Place your reservations early, please.

### Flea Market Tickets

A maximum of 3 spaces per person (non-transferable). Tickets (valid all 3 days) will be sold IN ADVANCE ONLY. No spaces sold at gate. Vendors MUST order registration ticket when ordering flea market spaces.

### Special Awards

Nominations are requested for 'Radio Amateur of the Year,' 'Special Achievement' and 'Technical Achievement' awards. Contact; Hamvention Awards Chairman, Box 964, Dayton, OH 45401.

### License Exams

Novice thru Extra exams scheduled Saturday and Sunday by appointment only. Send FCC form 610 (Aug. 1985 or later) - with requested elements shown at top of form, copy of present license and check for prevailing ARRL rates (payable to ARRL/VEC) to: Exam Registration, 8830 Windbluff Point, Dayton, OH 45458

### 1989 Deadlines

Award Nominations: March 15

Lodging: April 7

License Exams: March 26

Advance Registration and banquet:

USA - April 4 Canada - March 31

Flea Market Space:

Spaces will be allocated by the Hamvention committee from all orders recieved prior to February 1. Express Mail NOT be necessary! Notification of space assignment will be mailed by March 15, 1989.

### Information

General Information: (513) 433-7720  
or, Box 2205, Dayton, OH 45401

Lodging Information: (513) 223-2612  
(No Reservations By Phone)

### Lodging

Please write to Lodging, Dayton Hamvention, Chamber Plaza, 5th & Main Streets, Dayton, OH 45402 or refer to our 1988 Hamvention program for lodging information which includes a listing of hotel/motels located in the surrounding areas of Dayton. Reservations for the surrounding area will then become the responsibility of the individual.

HAMVENTION is sponsored by the Dayton Amateur Radio Association Inc.

## Advance Registration Form

Dayton Hamvention 1989  
Reservation Deadline - USA-April 4, Canada-March 31  
Flea Market Reservation Deadline: February 1

Enclose check or money order for amount indicated and send a self addressed stamped envelope.

Please Type or Print your Name and Address clearly.

	<u>How Many</u>		
Admission (valid all 3 days)	_____	@ \$10.00*	\$ _____
Grand Banquet	_____	@ \$20.00**	\$ _____
Women's Luncheon (Saturday)	_____	@ \$7.00	\$ _____
(Sunday)	_____	@ \$7.00	\$ _____
Flea Market (Max. 3 spaces)	_____	\$25/1 space \$50/2 adjacent	
Admission ticket must be ordered with flea market tickets	_____	\$150/3 adjacent	\$ _____
		<b>Total</b>	\$ _____

\* \$12.00 at door      \*\* \$22.00 at door, if available

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Make checks  
payable to -

**Dayton HAMVENTION**

Mail to -

**Dayton Hamvention  
Box 2205  
Dayton, OH 45401**



was produced by the FCC in cooperation with the EIA (Electronic Industries Association). It is directed to people experiencing various forms of interference to electronic devices such as audio frequency amplifiers, cordless telephones, stereo equipment, radios (AM/FM), television sets, and video-cassette recorder-reproducer equipment. It helps the consumer identify, understand, and resolve interferences.

Active amateurs are likely to encounter interference complaints once in a while. It is not enough to verify that your station is not at fault. Prompt rectification of interference conditions is essential to the continued good standing of our amateur radio service. Be cooperative, but do not do any work on a neighbor's equipment; if you do so, you may be found to be legally liable for anything that goes wrong with it in the future. Cooperate with tests and technical advice. Remember that your neighbor probably knows very little about interference. The extent of her/his understanding may be just the knowledge that interference occurs when you operate. Above all, please remember that you are dealing with neighbors, and it is important to be on good terms with them.

A free copy of the FCC/EIA pamphlet can be requested from the FCC (Public Service Division, 1919 M Street NW, Room 725, Washington, DC 20554). It can also be requested by writing to Interference, Electronic Industries Association, P.O.B. 19100, Washington, DC 20036.

EIA also has a free 52-page booklet entitled "Consumers Should Know: How to Install, Connect and Expand TVs, VCRs, Telephones, Audio Systems and Other Electronic Products." This booklet can be obtained by sending your request to the Executive Director of Consumer Affairs, 2001 Eye Street NW, Washington, DC 20006.

To obtain either booklet send a self-addressed #10 (business) envelope to EIA. The interference booklet postage is 25 cents. The postage for the 52-page booklet is 65 cents.

The American Radio Relay League (ARRL) has several publications which include information about the causes and cures of interferences. Their RFI Tips booklet is particularly useful. A list of ARRL publications can be obtained by writing to the ARRL, 225 Main Street, Newington, CT 06111.

## Long-Wire Antenna Support

The April and May 1988 columns are about random- and long-wire antennas. That article describes an installation arrangement that is not subject to problems if support ropes stretch. In such installations the yellow polypropylene rope can be used, but it deteriorates rapidly and it usually needs to be replaced within a year or two. Consequently, polypropylene rope should not be used in any installation that is intended to remain in service several years. Nylon rope lasts longer than polypropylene, but it stretches when it gets wet. If you use an installation configuration wherein such stretching would degrade the antenna system, nylon rope should not be used.

Clothesline and wire are poor choices for supporting antennas. Clothesline is not strong and it degrades quickly. Wire is undesirable, since it is best to have no conductor close to the end of the antenna, which is a maximum voltage point.

Dacron rope is used in the marine environment, and it is suitable for use as the antenna

support. White dacron rope is satisfactory for about four years; after that it should be replaced. There is another type of dacron rope that lasts 9 to 15 years; it is black double-braided rope, that is protected against ultraviolet radiation. Black dacron rope is available in three diameters that could be of interest to amateurs; these are  $\frac{3}{32}$ ,  $\frac{3}{16}$ , and  $\frac{5}{16}$  inch. The approximate respective tensile strengths are 260, 770, and 1790 pounds. Cut ends should be sealed using a cigarette lighter or a match. If your local marine supplier does not stock this excellent rope, one of the companies you can contact is Synthetic Textiles, 2472 Eastman Avenue, Building 21-22, Ventura, CA 93003.

If you want a free reprint of the long-wire antenna article, send a self-addressed and stamped envelope (45 cents postage) to my California address. Be sure to state what you are requesting.

## Telegraph Keys

One of the requests I receive is for information about where one can purchase a good manual (hand) telegraph key. I do not know a source of good keys at low cost, but I do know where they can be obtained at reasonable cost.

The military J-37 key is sold by several surplus outlets. Used J-37 keys (with base) can be purchased from Fair Radio Sales Company, Inc. at \$10.95 each. Their mail address is P.O.B. 1105, Lima, OH 45802. Their street address is 1016 East Eureka, and their telephone number is 419-227-6573. Fair Radio markets a wide range of equipment and accessories that are useful in amateur radio stations. If you are interested in purchasing military surplus items, you should request a free copy of their current catalog.

The William Nye Company markets an excellent assortment of handkeys, including some that are complete with code-practice oscillators. Their Speed-X keys used to be manufactured by E. F. Johnson Company. I have had ex-students buy and use Speed-X keys during the past several decades. These are good keys which are sold at appropriate prices. Your local amateur radio outlet probably has Nye keys in stock. If not, you could request a flyer by writing to William M. Nye Company, 1614 130th Avenue NE, Bellevue, WA 98005.

An excellent key at low cost is the Japanese manufactured TK-11 (telegraph key model 11). It has ball bearings at the pivot points, large keying contacts, adjustable contact spacing, adjustable contact pressure, and a test (key down) switch. I have seen this key being marketed by several companies; it is probably on sale in your area.

## A Shack Accessory

One of the items of information we often exchange with other amateurs is our local temperature. We use degrees Fahrenheit when talking with other Americans, whereas degrees Celsius (ex-Centigrade) is preferred when we are working DX (foreign) amateurs. I recently purchased a shack accessory for my wife (Marie, W6JEP) that may be of interest to many readers of this column. It combines many features.

Temperature can be displayed continuously. A switch is used to select degrees Celsius (-9.9 to +49.9 C) or degrees Fahrenheit (14.2 to 122 F). Ambient (room) temperature is displayed to the nearest one-tenth of a degree,



*This is Rick Prosser, KC4CFS. He is majoring in electrical engineering at the University of South Carolina. He passed the Novice test in October of 1987 and he upgraded to General 10 days later. He has worked 25 states using a Heath DX-60B transmitter, Drake 2-C receiver, and a dipole antenna.*

which enables you to see whether the temperature is rising or falling.

Time accuracy is within 15 seconds per month at a room temperature of 24 degrees C, thanks to a quartz crystal controlled oscillator. Two times can be selected and displayed simultaneously, and most amateurs display UTC (Universal Time Coordinated) and their local times. A rotary switch is used to select any of the 24 labeled time zones, with 61 specific areas listed on the face of the unit. The same switch has a winter/summer time offset marker. The time format is switch selectable to the 12- or 24-hour format.

The unit includes a timer that can be used to time up to 23 hours, 59 minutes, and 59 seconds. Among other things, it can be used to remind you to identify your station within 10-minute intervals during a long transmission. This is particularly useful to newer amateurs sending code at slow speeds. It is easy to forget to identify (as required) when concentrating on your sending.

An alarm is included, which provides a 1-minute long warning, which can be cut short by means of a switch. A 10-minute snooze feature is also included.

The unit is completely portable in its protective case. It can be slid open and it locks into a tilt-back position that is convenient to use. The display remains visible when the unit is in the stowed position. The alarm and time selection switches remain accessible in the stowed position.

It weighs 3.75 ounces, including battery (LR-44, S-76, or equivalent), and the battery service life is approximately one year. The size is 5.125" x 2.6875" x 0.75". It is available in black or maroon. A light can be switched on for viewing in the dark.

Two times can be displayed continuously, or you can select the continuous display of one time and one type of temperature (C or F). When the timer function is selected, no other information is displayed. The major (usually local) time is displayed in  $\frac{1}{2}$  inch tall numerals, whereas the secondary time is displayed in  $\frac{1}{4}$  inch tall numerals. The display includes symbols for alarm, degrees C, degrees F, world (UTC) time, and temperature.

This unit is simple to use, despite its versatility. It is probably available from many suppliers, but the one I bought was purchased from B.E.A.M. Solar and Electronics (Bill, N2ZY), 6205 11th Avenue, Brooklyn, NY 11219. I paid \$20, plus a \$2.00 shipping fee. It has proven to be a welcome addition to our shack.



## Reciprocal Operating Agreements and Third-Party Traffic Agreements— Supplemental Information

The October 1988 column lists the countries with which we have third-party traffic agreements and reciprocal operating agreements. That column urges non-U.S.A. (DX) amateurs to take action to establish these agreements between their countries and the United States, if such agreements do not already exist.

Draft notes are available to people who want to establish these agreements. They can be requested by writing to the Office of Radio Spectrum Policy, Bureau of the Coordinator for International Communication and Information Policy, CIP/RSP Room 5310, Mr. Warren G. Richards, Department of State, Washington, DC 20520. His telephone number is 202-647-0049.

## Postal Worker's Comments

The September 1988 issue of this column covered "Postal Rates, QSL cards, and DX QSL Bureaus." That article caused me to receive letters and cards from many amateurs who appreciated the simple explanations of associated subjects. If you want a copy of that issue, it can be purchased from CQ for \$2.50 each. A free reprint can be obtained by sending your request (state what you want) and a self-addressed, stamped, #10 business envelope to my California address.

Several postal workers sent comments about that September article. The most informative of those letters came from Dan Conna, WF2R, of Plattekill, New York. He is a mail processor operating Optical Character Reader (OCR) and Bar Code Reader (BCR) equipment at the Mt. Vernon, New York post office. Dan explained that an OCR can process up to 35,000 letters per hour, which is a lot more than my Uncle Frank used to sort in a railroad car during the run between Boston and New York. The OCR reads a zip code typed on a letter, sprays the correct barcode on the letter, and sorts it for delivery to the correct destination. The newest OCR units can scan the destination (street, city, and state) of letters without zip codes; it then sprays on the appropriate zip code and barcode. If a letter shows the zip code and barcode, the OCR can sort it to the route of the specific letter carrier who will deliver it.

Dan uses the same approach to sending cards that I have always used. He sends a card to each new amateur he works, and he sends a QSL to each amateur who requests one.

## Ham Stamp Group

The November and December 1988 Basics columns contain an article about amateur radio stamps. That article mentions the existence of a ham stamps group. If you have a sincere interest in collecting such stamps, you may decide to become a member of Ham-Stamps. Membership is \$10 (U.S.A.) per year, and the address is c/o Manfred Bussemer, DL4UE, Eckstr. 1, D-6792 Ramstein 2, West Germany. Membership brings quarterly issues of the *Ham-Stamps* magazine. Applicants are urged to include information regarding their specific interests in both amateur radio and stamp collecting. Such interests are printed in the *Ham-Stamps* newsletter to initiate exchanges between members.

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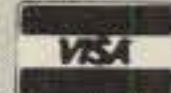
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## A LOOK AT THE WORLD AROUND US

### By Popular Request: More Keys Revisited

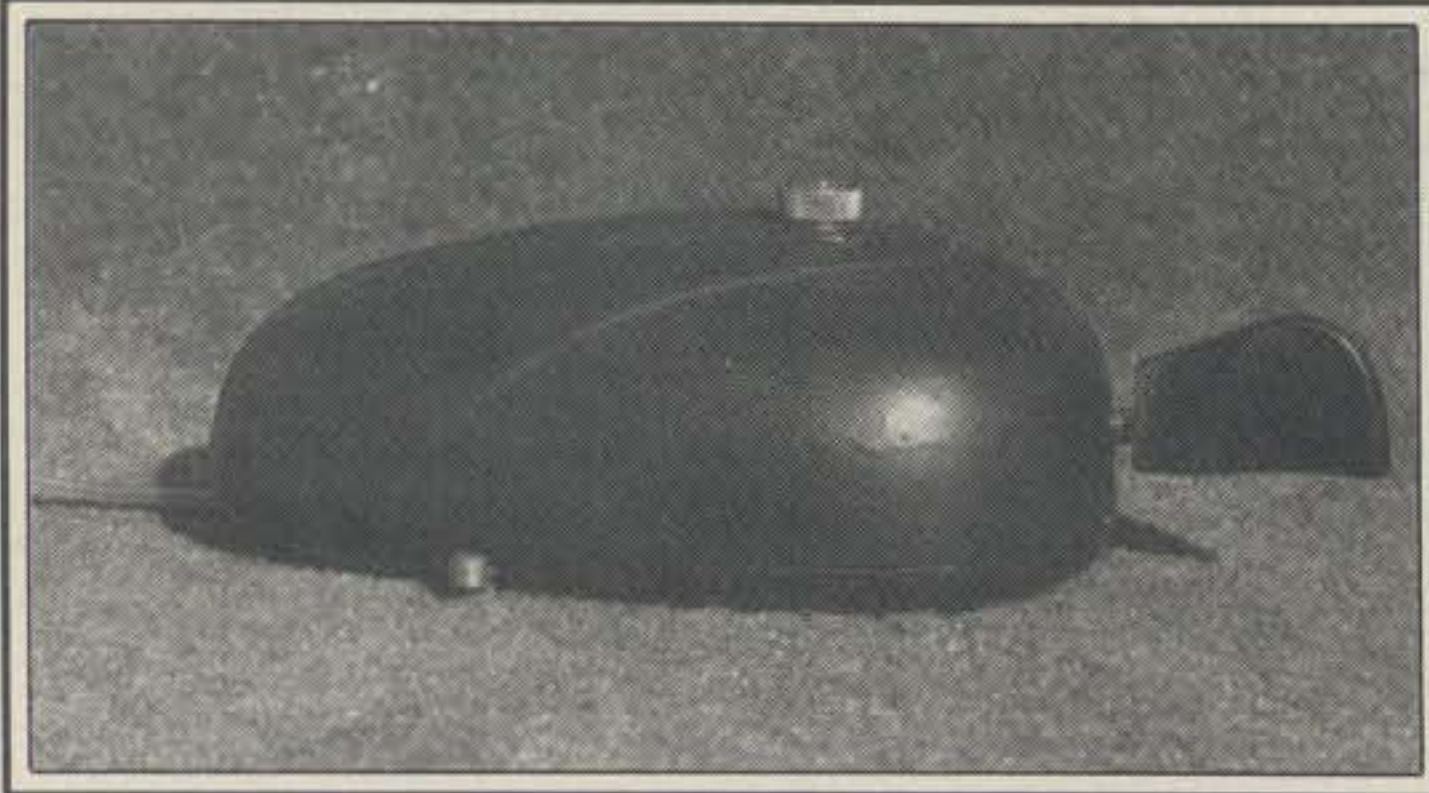


Photo 1— VE7FOU's unique Eddystone bug. Put three wheels on this little roadster and it will hit 40 words per minute.

**W**hile a large number of subjects are featured in this open-ended CQ column, few topics generate more widespread interest than classic keys and old-time radio gear. Indeed, all of our previous "Keys Revisited" columns have been followed by a landslide of favorable on-the-air comments and mail from around the world. Key collections of all sizes and varieties are quite popular among amateurs new and old, and an increasing number of operators are joining the game every day. We are thus proud to present more keys this month and follow with some low-power classic rigs you can use with the keys next time. I trust you will enjoy this light-hearted romp through yesteryear as much as I enjoyed putting it together.

Our special thanks to Steve Wilson, K0JW, and Rick Van Krugel, VE7FOU, for their keys featured in this column. Steve is a rather specialized collector with a knack for finding like-new goodies, and Rick is a superb craftsman capable of producing special parts or unique items for immaculate restoration. More details of their specialties will be highlighted as we get into the photos. We will also include some unusual items and useful notes for new key collectors, so read on!

#### Photo 1

Leading our views is VE7FOU's unusual Eddystone bug, a little critter that looks like it should be chasing The California Raisins™ around a shack rather than working DX on 30 meters. Who knows? Maybe it was designed as a mobiling companion for hams with Hudson Hornet cars. Seriously, however, Rick assures us this torpedo-bodied gem handles beautifully during on-the-air use. He loves it. The cover and bottom are a very dark gray with a chrome contact-closing switch on the left side and a hold-down nut on the top, adding "class." The key's name is stamped on the top. Notice the unique-carved and single-lever fingerpiece protruding like a "tail." The Eddystone appears to be a British-manufactured item of the late '30s or early '40s.

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Photo 2— Under-the-cover view of VE7FOU's Eddystone reveals a smooth-working mechanism that handles like a dream. Bug is approximately 8 inches long and is dark gray in color.

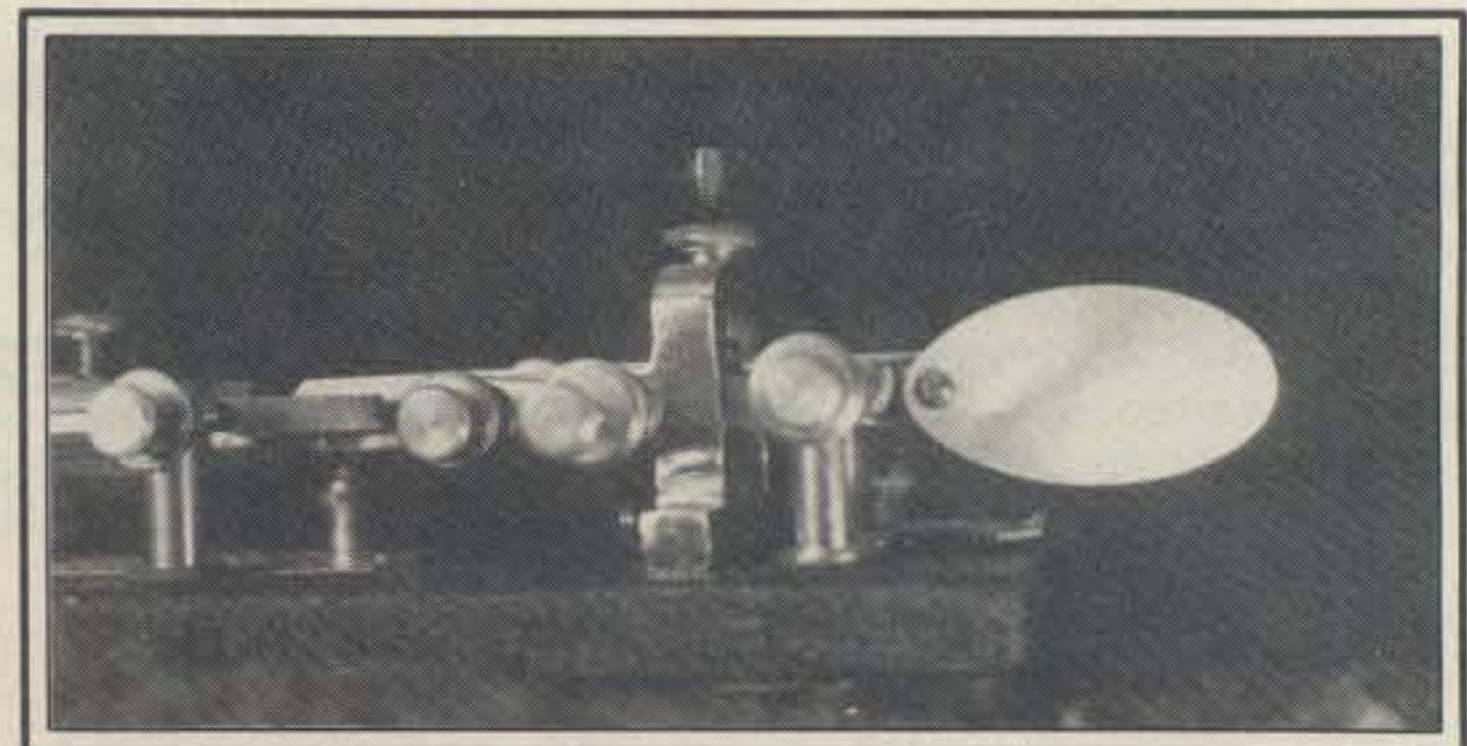


Photo 3— The genuine mother-of-pearl handle on this Blue Racer was handcrafted by VE7FOU. Cameras cannot pick up the pearl's true depth and texture, but it is truly beautiful. Rick has more ideas for "designer handles" that sound fantastic.

#### Photo 2

Removing the Eddystone's cover reveals classic bug designs in a neat "low boy" profile. The tripod-type yoke, for example, looks like a cut-down version of the lightning bug. Each of its adjustments includes a tiny ball that is sandwiched between a screw's concave end and a similar concave area on the key's main shaft. Dot tension is not directly adjustable, so Rick cut a couple of turns off its spring for a perfect feel. The damper consists of a regular panel-type rubber grommet mounted on a small "L" bracket (nice and replaceable!). The bracket moves within a slotted area of the base for adjustment. All operating parts are solid, unplated brass. This key simply begs to be mated with an HRO or S-38 receiver and Harvey Wells or Johnson transmitter. Imagine using a setup like that on the air today. Sheer nostalgic bliss!

#### Photo 3

The main attraction in this picture is not the neat little Blue Racer bug, but its handmade pearl handle. The fingerpiece was meticulously crafted from genuine mother-of-pearl by Rick,



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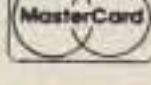
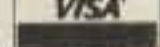
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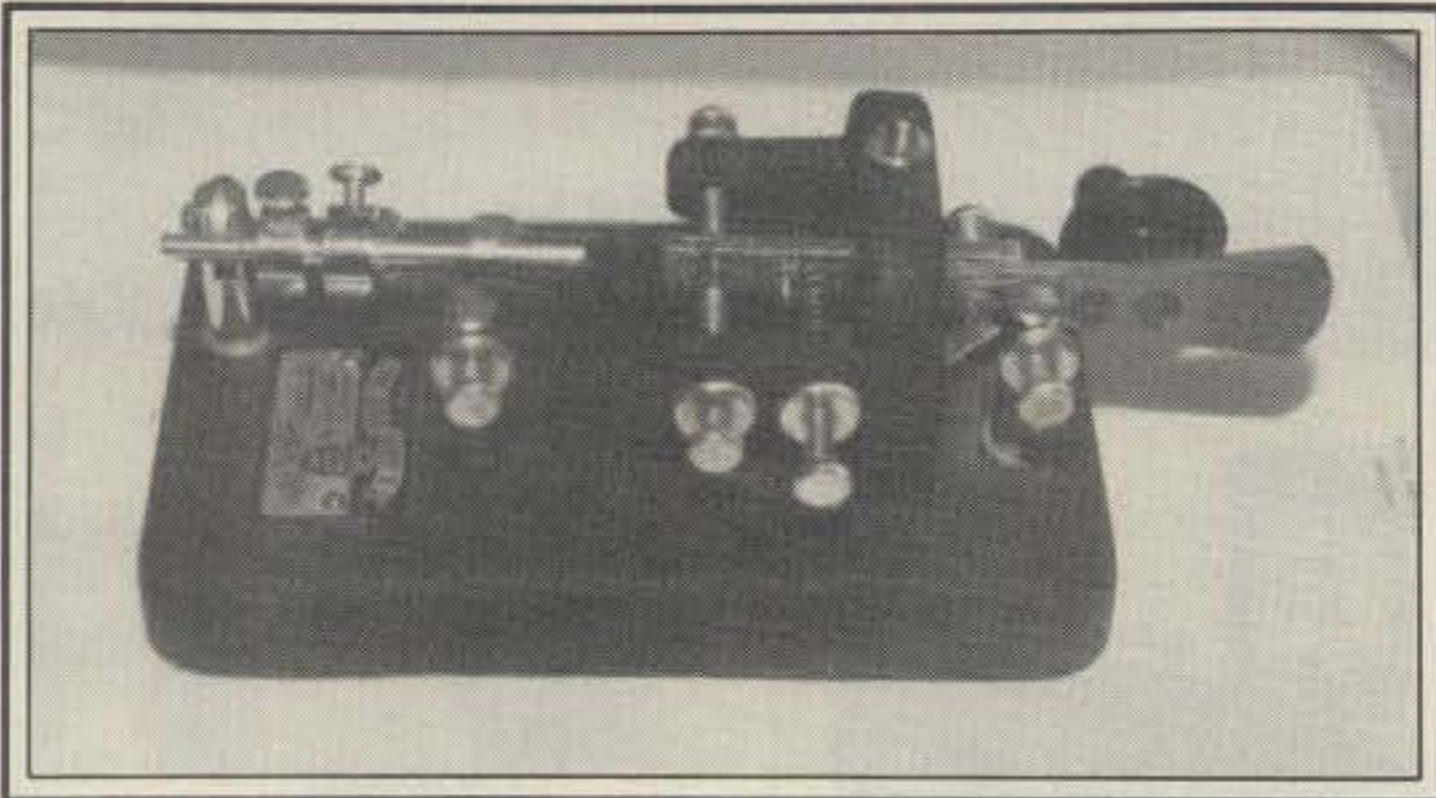


Photo 4— This streamline Mac Key belongs to Steve, K0JW, and its like-new appearance is equalled only by its smooth on-the-air operation. Notice its rounded yoke rather than Mac's famed "Tee" bar.

VE7FOU, and its feel of pure silk makes regular plastic fingerpieces seem like pasteboard. Cameras cannot pick up the pearl's full texture, but I assure you there's nothing else like it. The fingerpiece really turns my favorite bug into a glamorous showpiece.

Pearl strips are laminated to each side of a plastic center stock that is cut with a groove for the bug's main lever. The fingerpiece thus slips over the lever's end and secures with a small screw that held the original fingerpiece. I asked Rick if he would make more pearl fingerpieces for friends, and he hesitantly said yes, if they did not mind waiting and not too many folks "bombarded" him. I told Rick not to worry, as handcrafted pearl is rather expensive and will be attractive only to connoisseurs, and their number is small (I will probably eat those words). Rick is due to move soon, but his address as of this column's writing is: P.O. Box 7000, Port Hardy, British Columbia, Canada V0N 2P0.

#### Photo 4

Our next item is K0JW's streamline model Mac Key, a very smooth-handling bug that looks as good as it sounds on the air. Notice its solid-cast round yoke rather than the famed "Tee Bar" used on Mac Keys highlighted in previous columns. These curved designs were a popular style of the early 1940s and influenced everything from automobile lines and radio cabinets to key layouts. Notice also the use of two small weights rather than one large weight for speed control. Evidently some operators had difficulty taming those high-speed dits that were no problem for world-champion Ted McElroy. The old chap's 1939 record of 77 words per minute still stands proud today.

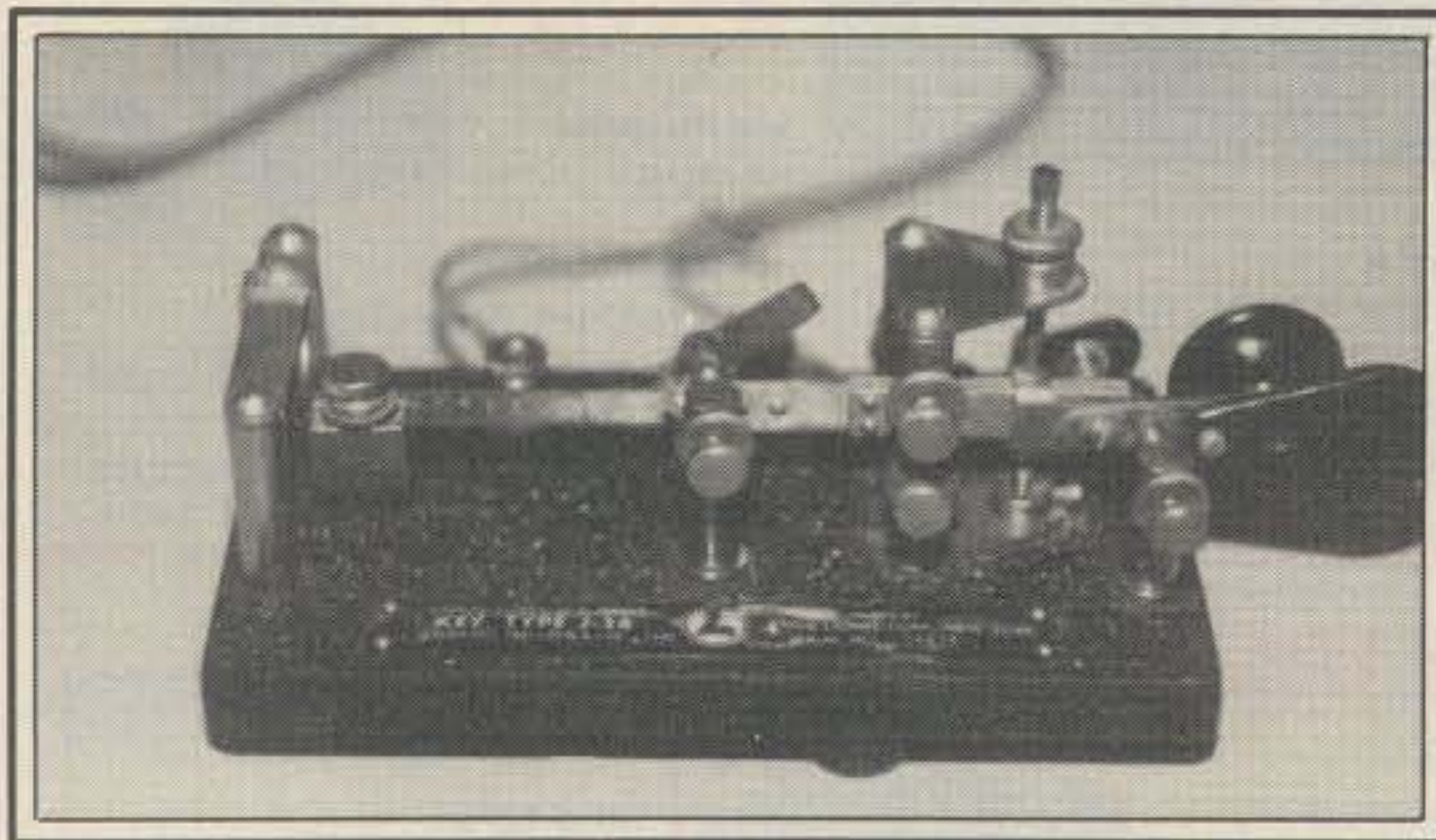


Photo 5— This may look like a Vibroplex "Lightning Bug," but it is actually a Lionel J-36. This is surely the most popular style of semiautomatic key ever made. Remember using one yourself? (Picture from K0JW's collection.)

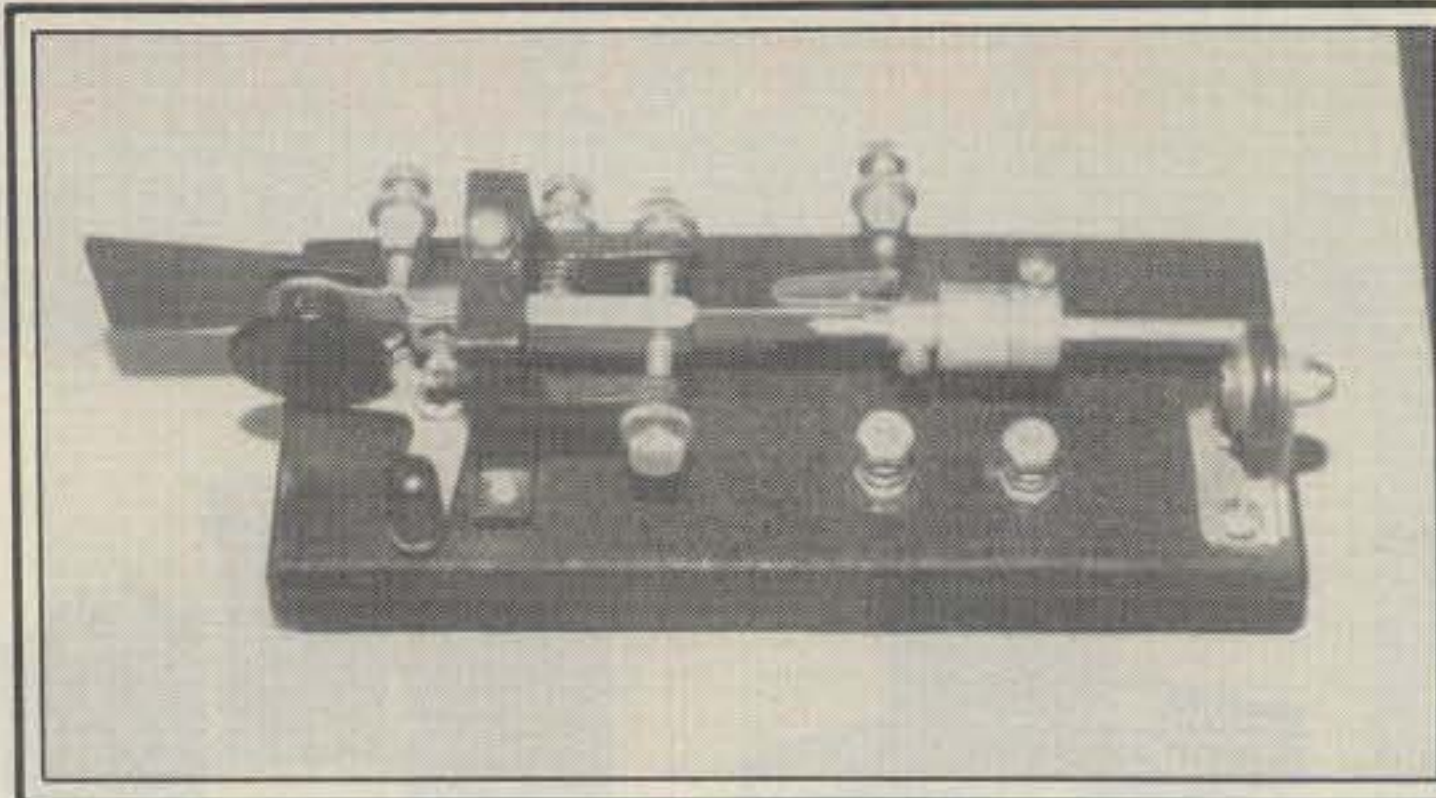


Photo 6— The only kit bug ever made—the Radio Specialty Company's "Speed Bug." Unit originally sold for a scant \$7.00! (Photo from K0JW's collection.)

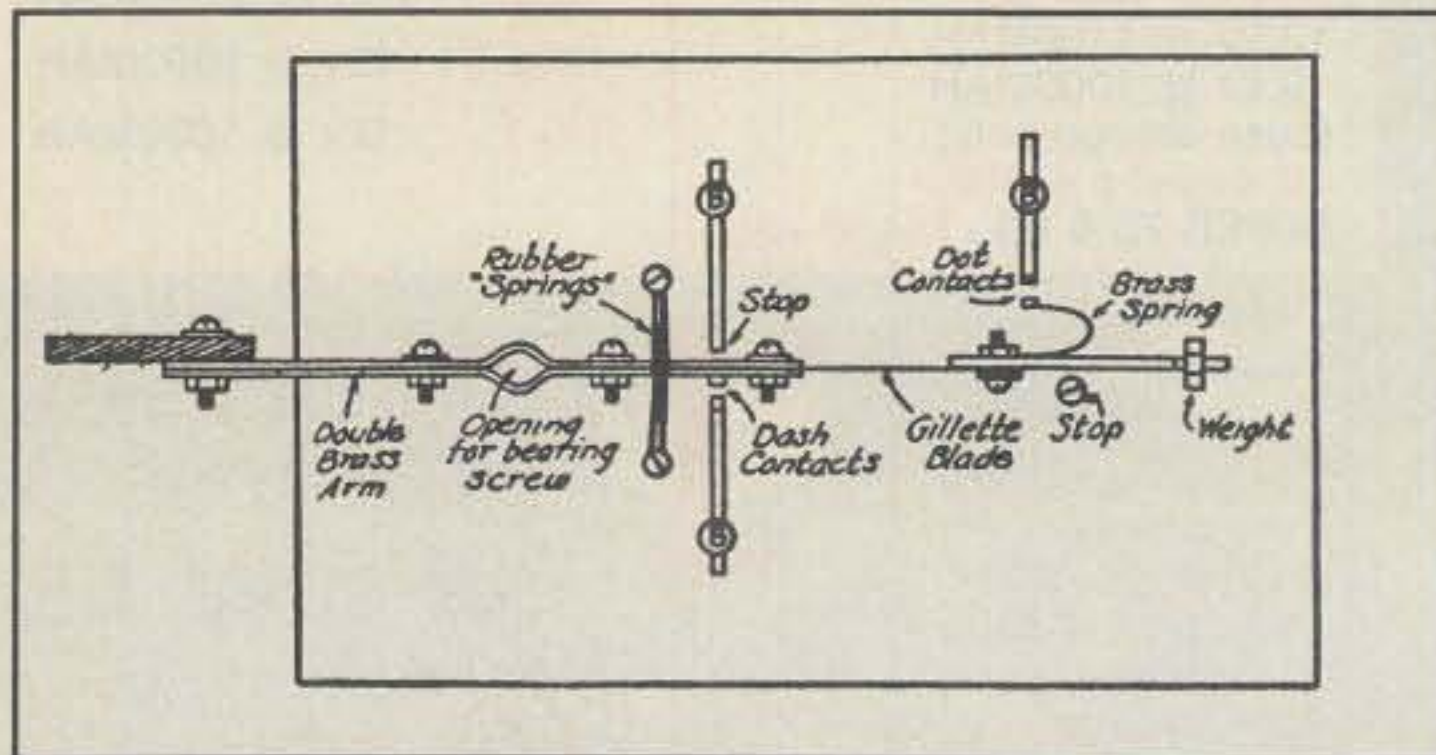


Fig. 1— Sketch of 1920-style homebrew bug. No compromises or loose parts were spared in this two-bit marvel. Discussion in text.

One thing I have always noticed about Mac Keys is their heavy base and desk-gripping feet which really "hold tight" during use to avoid "walking." Other bugs usually require your other hand to hold them steady. You say you're trying to master a bug by using a light touch and only one hand? That works fine for electronic keyer paddles, but you must get more wrist action going with a bug. Remember that it is all mechanical. Bugs, and especially Mac Keys, have a great personality and flair. Once you become accustomed to one, you will throw rocks at electronic keyers. Honest!

#### Photo 5

Another K0JW key is the Lightning Bug "clone" shown in Photo 5. This J-36 was manufactured by the Lionel Corp. in New York during the '40s, and it's surely the most popular style of semiautomatic key ever made. Literally thousands of radio operators used J-36s during World War II. Many carried them home after the war, and an untold number of unclaimed J-36 keys turned up in military-surplus stores thereafter. The J-36/Lightning Bug is easily recognized by its flat-design yoke, damper bar, pendulum, and square weight. Neophyte operators also had a habit of adding one or two extra weights onto the pendulum for slowing its speed. The last time I checked with Vibroplex, incidentally, they still had some extra weights for Lightning Bugs. Using a J-36 on the air today is like driving a Stutz Bearcat; you don't need to worry about keying polarities, and there are no (keyer) batteries to go dead in the middle of a QSO. Try one. You'll love it!

#### Photo 6

While the semiautomatic key rage covered slightly more than half a century, only one bug was ever manufactured in kit





Photo 7— This Japanese-manufactured bug of yesteryear was named the "Swallow," and it handles like a dream. Note metal straps for wiring and plastic yoke.

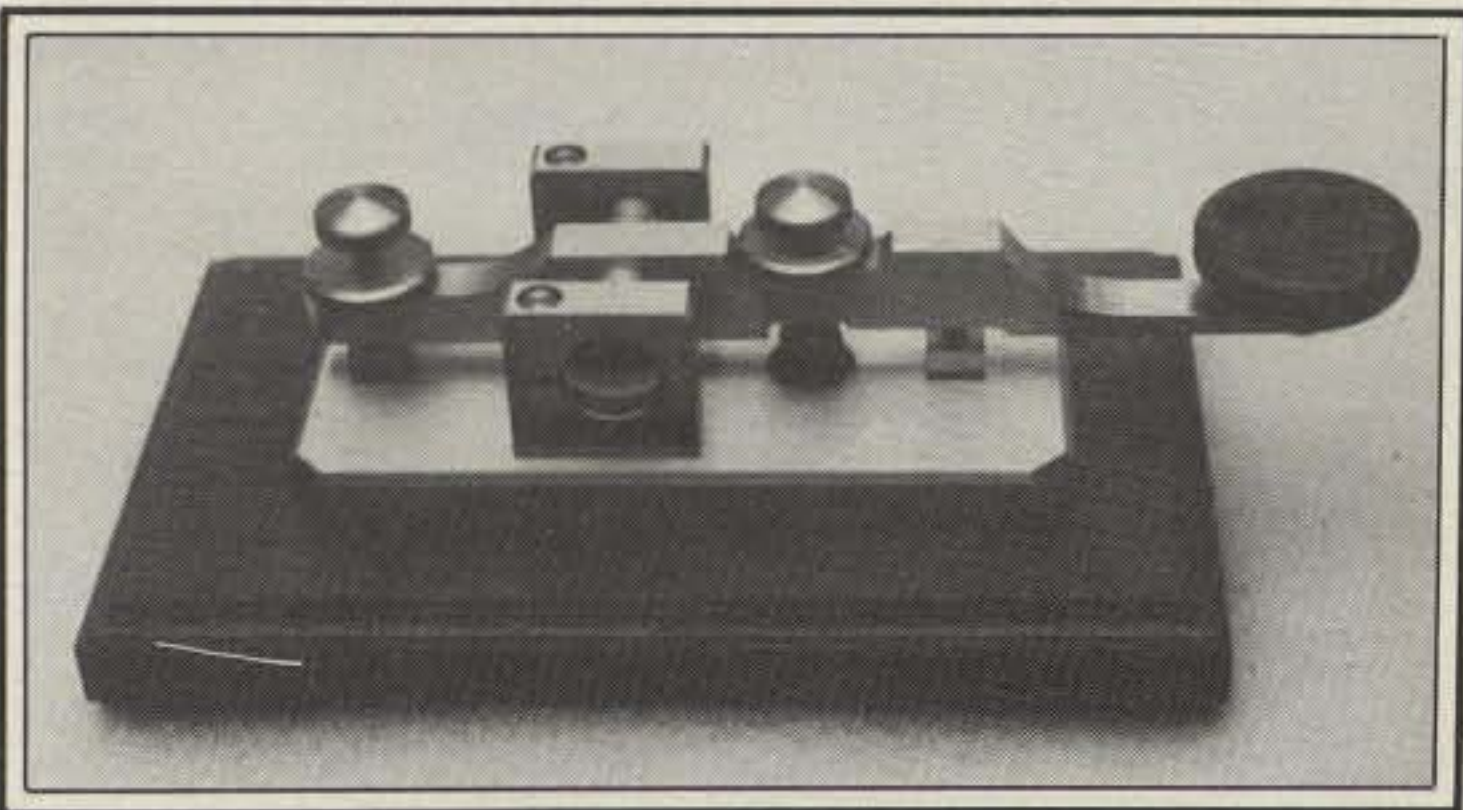


Photo 8— A genuine modern classic key available brand-new from DL7NS. This handmade Schurr "Champion" is a true masterpiece.

form—the Radio Specialty Company's "Speed Bug" shown in Photo 6. This home-assembler's delight was available to amateurs for a modest \$7.00, and all of its pieces went together in just a few minutes. The bug handles fairly well, but it definitely lacks the smoothness of a Mac Key or Vibroplex. That fact, coupled with the key's low cost, inspired several forms of "personalization." Two popular examples were slightly bending the fingerpiece's metal bracket to fit one's wrist angle and filing cut-outs in the vibrating spring to reduce dit speeds.

My personal observations of these "Cedar Rapids Specials" are an inherently weak dash spring that results in uneven dot/dash keying pressure. After working with the dash spring and adjusting the bug, however, it can be used to send fairly good code. The rubber roller damper is a bit unusual, but it works quite well. This key begs for special painting and pinstriping, and it's perfectly at home with an open-air Harley transmitter and two-tube regenerative receiver of 1930 vintage. K0JW's like new "Speed Bug" is shown in the photo. Mine is not in as good condition, and I can't decide whether to leave it "authentic" or totally refurbish it to new—a popular (and controversial) point among key collectors.

While on the subject of self-assembly, I should also mention that many amateurs tried "rolling their own" keys during the '20s and '30s. Their degrees of success ranged from beautiful to humorous, but improvising was often the most logical way to get on the air. One interesting hand key was assembled from an ordinary spring-loaded clothespin mounted on a pine board. Screws were threaded through holes drilled in the clothespin, and then filed flat and wired for key contacts. A wood knob was added to one side for manipulation, and a rubber band was used to offset the clothespin spring's hefty tension. I tried that

method and it works for slow speeds, but you really "pump" for the full QSOs.

Another method that worked for building dirt-cheap bugs centered around using a razor blade for the vibrating dit spring (see fig. 1). The razor blade was sandwiched between two thin, long strips of brass to make an arm and secured with bolts. The strips were sprung or bent so a vertically positioned bolt would slip between them to make a yoke(!). Rubberbands were then used as springs, and a piece of hard-rubber strip was used as a "thumb beater" (fingerpiece). Another strip of brass was bolted to the razor blade's remaining (far) end and fitted with a large bolt to act as a weight. The dash contacts were made using more screws in the brass strips, and mating screws were inserted through binding posts. The whole key was assembled on a wood board. Did it work? Assuming you could get the rubberband tensions half right and hold the base with a free hand, the contraption produced fairly readable Morse. Amazing, but true!

Looking back through the previous mixture of kit bugs, razor blades, and clothespins really brings those old-time rumors of avoiding fist-running keys into focus. Like many of you, I heard those tales but did not understand their meaning. My J-38 and Vibroplex worked fine, and swapping between them was no problem. Not knowing about "homebrewed specials" was a hidden blessing!

### Photo 7

This Japanese-made bug is named the Swallow, and it was manufactured by the Dentsuseiki Company in Tokyo during the late '40s and early '50s. The bug has a weighted plastic base with stopper-like feet that really hold to a desk, and all wiring is accomplished via the two outer metal strips above the base. Notice the speed-calibrated name tag and unusual curved fingerpiece. Despite its "basic construction" this bug is a real pleasure to operate, and it produces beautiful-sounding Morse. It's one of my favorite bugs to use on the air with old-time rigs because of its wide speed range and good feel. I also understand an American version of this key (without the Swallow name tag and curved fingerpiece) was made by The Skillman Company.

### Photo 8

As mentioned earlier in this article, every key collection is quite diverse in size and specialty according to each owner's interest. Some folks enjoy only very old bugs (relics), and others prefer new keys with exceptional workmanship (genuine modern classics). If your interest parallels the latter category, check out the new handcrafted Schurr "Champion" model hand key in Photo 8. All working parts are solid brass, diamond-polished to a gold-lustre finished. The fulcrum's pivot also includes permanently lubricated and sealed ball-bearing assemblies for the smoothest operation imaginable. Since

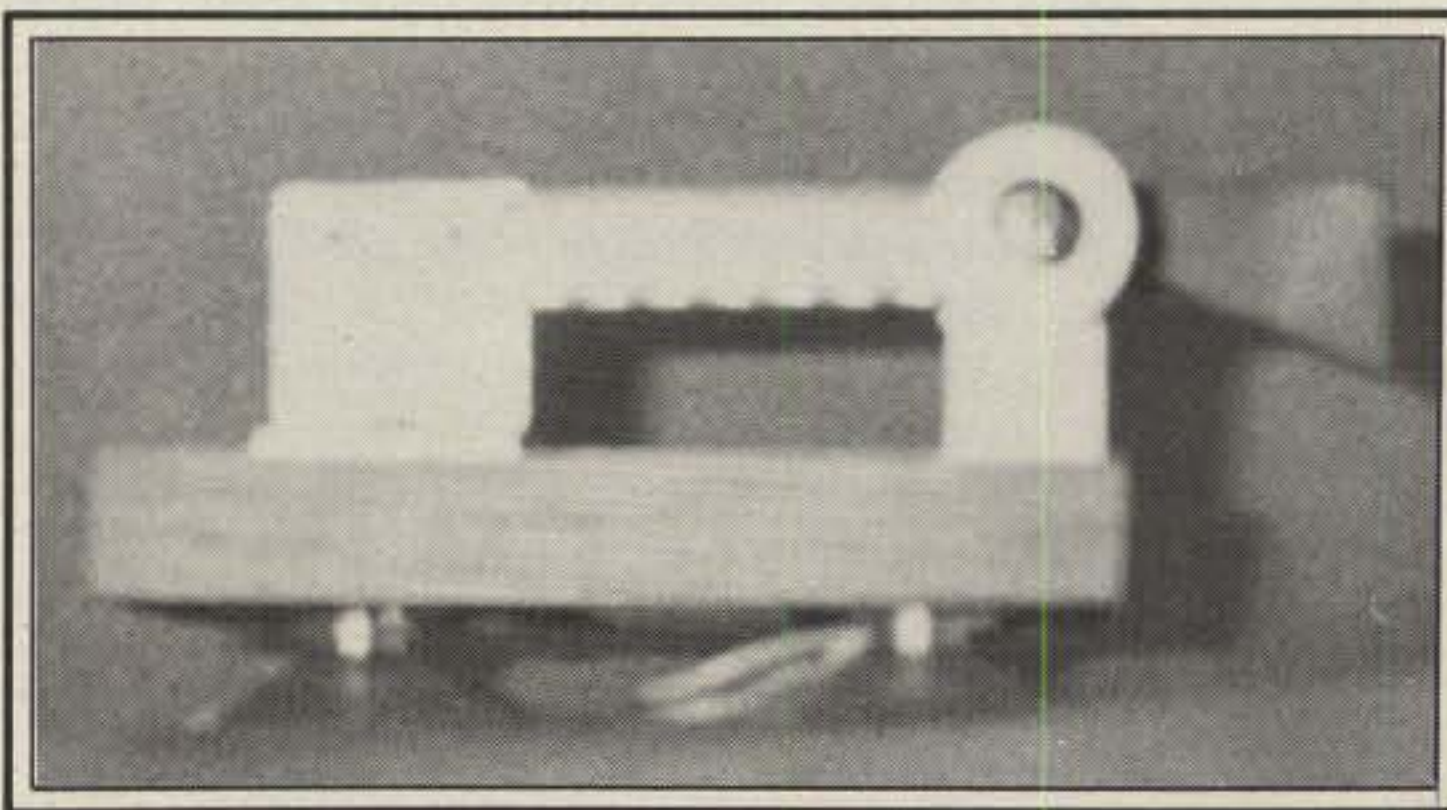


Photo 9— A "sideswiper" of recent vintage manufactured by Kungsimport of Sweden. It features the characteristic hacksaw blade used for a keying arm. (K2EEK collection.)



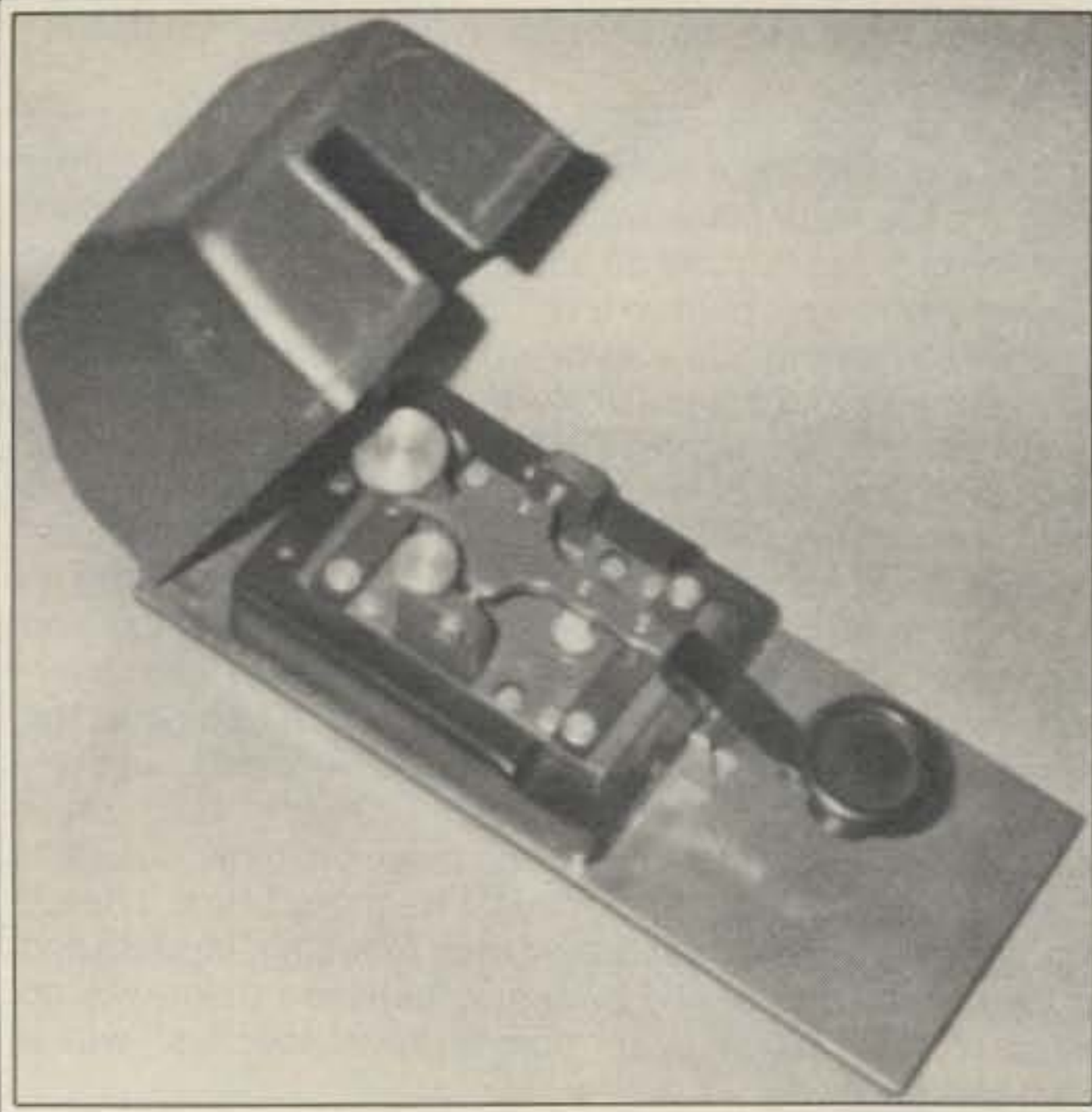


Photo 10— A German navy Junker key. This one has about 150 parts and is a machinist's delight with almost micrometer adjustments. It has a built-in spark suppressor and can send code on the make or break. It has a heavy base and heavy cast hinged top. It is blue in color. (K2EEK collection.)

these keys are custommade, three types of wood base and knobs are available to suit your preference. If you appreciate sheer luxury in a hand key—an absolute "Rolls Royce in Morse"—this is it! Schurr's "Champion" keys are available directly from his representative, Klaus Gramowski, DL7NS, Kaiserin-Augusta-Allee 91, D1000, Berlin 10, West Germany. Each key is handmade by Mr. Schurr, and there may be a waiting list, but it's definitely worth the effort and delay. A true collectible!

### Special Notes For Newcomers

Each of our "Keys Revisited" columns tends to inspire more amateurs to start their own mini collections of keys, and that always carries similar "how to" questions. Let's thus go over some of the most common areas of curiosity for your assistance.

First, there are no fixed sources or prices for keys. Finding personally attractive keys is the hard part, and their market value is strictly what the buyer will pay and the seller will accept. Money, however, has negligible "clout" between true key collectors. You simply must have appealing keys not in the other person's repertoire to swap for the items you desire. That's why collectors buy duplicates; they build "trading stock" (or repair parts!). Some possible sources of keys are hamfest flea markets, antique dealers, country emporiums, and old railroad depots. If you find two a month, you're doing well. Run ads in the amateur radio magazines. Build a good trading stock and send a list of your goodies to other collectors. Don't rush things. Take time to use and enjoy each new key.

Models of bugs are determined by their style and design, **not by serial numbers**. I can't overemphasize that point, or the advantages of looking at bug ads in old-time magazines so you can detect various models. Notice variations in size, yoke, and damper shapes and weight styles. Compare ad pictures with your bug(s) to determine the model. Finally, practice using your new bug until it's smooth and comfortable to operate, and then enjoy using it on the air (the ultimate reward, especially if it is teamed with a genuine old-time rig of your preference!).

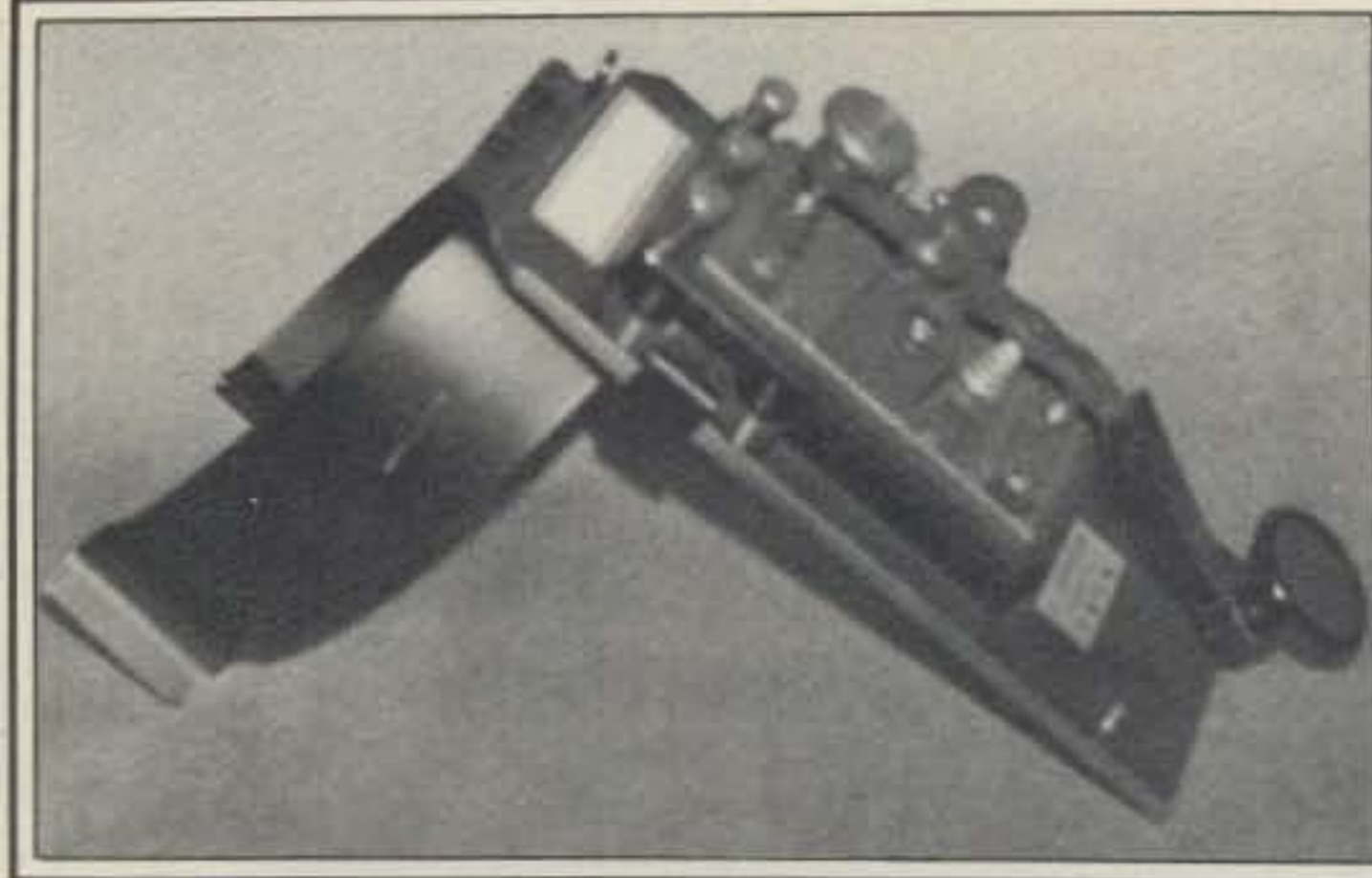


Photo 11— This is another variety of Junker key with a leg strap. Presumably it can be used mobile in a vehicle or plane. (K2EEK collection.)

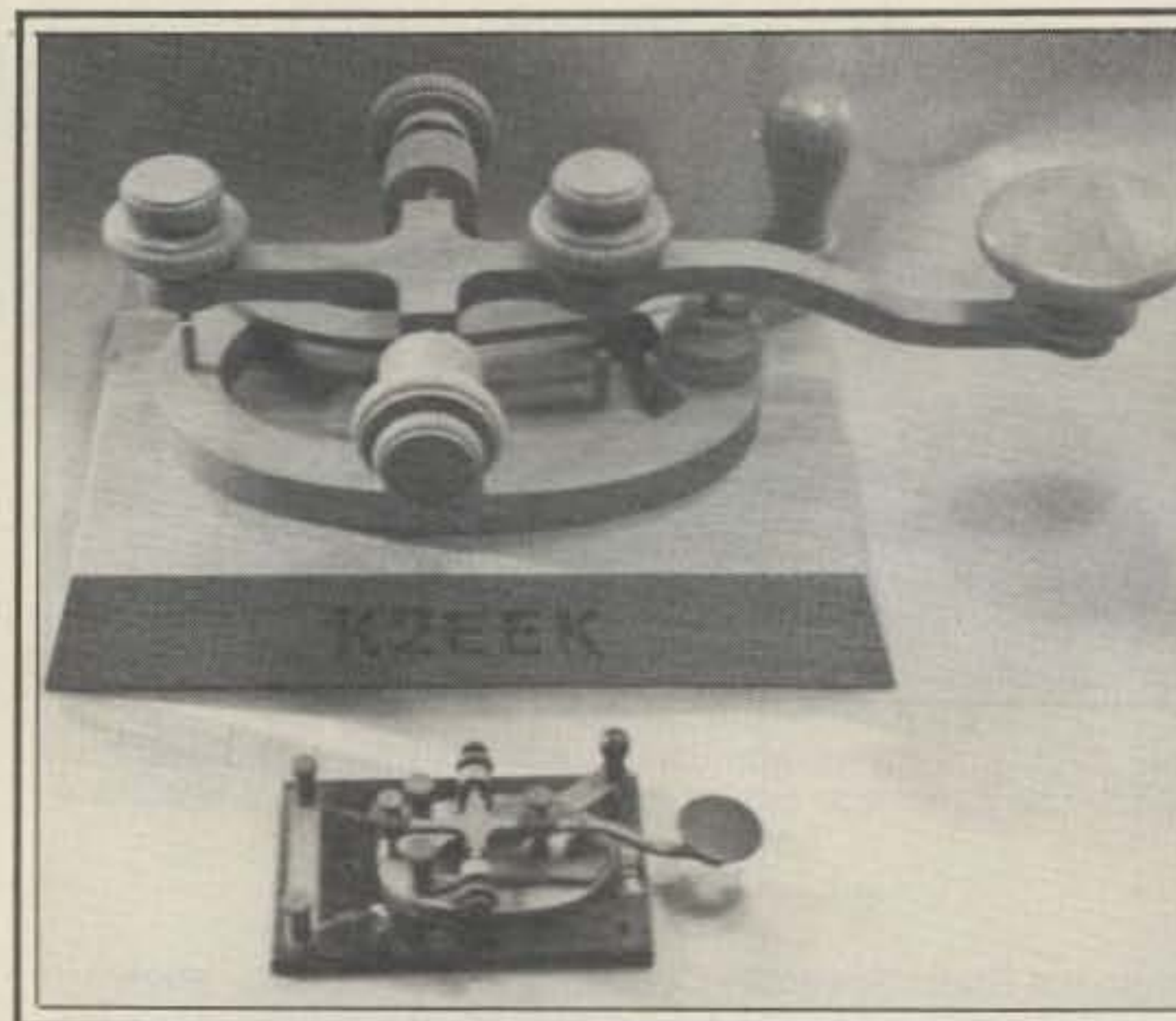


Photo 12— Here's a large carved-oak version of the famous J-38 key next to a real one. (K2EEK collection.)

### Taming A Wild Bug

Some bugs are a bit difficult to tame for sending beautiful CW, so here are a few hints.

Adding one or two extra weights to a bug's pendulum slows its dits to a casual 5 or 7 WPM speed. Alternately, you can insert screwstock into the bug's supplied weight and drop a PL-259 over that upright stem. After you have adjusted a bug for "usual" dot/dash lever travel, reset it for roughly one-half more spacing. Get your wrist action going rather than setting the bug so every little finger shake makes a CW mistake. That extra "travel allowance" also improves your Morse spacing. Adjust the bug's dash spring for slightly more tension than the dit's side, and then position the key "long ways" in front of you so your wrist curls around the fingerpieces and makes dashes (with exceptional ease). Practice simulating dashes like an electronic keyer's with heavy weighting, and then put your bug on the air and enjoy the results.

That winds down this "Keys Revisited" and raises the curtain on our next column featuring classic rigs (the perfect mate for your old-time keys!). We have a couple of real hummers lined up for your evaluation, so get ready for some genuine old-time amateur radio fun!

73, Dave, K4TWJ



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## CONNECTING YOU AND PACKET RADIO IN THE REAL WORLD

### Packet Duplexing

This month we will cover a project which can be handled at the single-user or group level. Read on and discover still another way to help move traffic on the LAN frequency and the through-put frequencies.

On our local 145.010 digi near Thomaston, Georgia we decided to add a second TNC running at 2400 BPS to the existing system already operating at 1200 BPS. This would aid the growing network of stations running 2400 BPS in the Georgia, Alabama, and north Florida area. The TNCs which we use are the MFJ-1270B models, with one of the TNCs supporting the add-on 2400 modem board from Kantronics (model TNC-2400). The current-production MFJ-1270B's do not require the modifications mentioned here. They only require the addition of the 2400 BPS modem and Net/Rom. They are now Net/Rom compatible and support features such as WEFAX and a very user-friendly mailbox (Easy-Mail) that will maintain the messages in the mailbox even if the power to the TNC is removed for extended periods.

I'm sure there are many of us who have upgraded to the all-mode, multi-mode, or dual-port, dual-bauds controller. In this case there is a good possibility that we may have a TAPR 1 and 2, MFJ-1270B, Heath HD-4040, Pac-Comm TNC-200, AEA PK-1, AEA PK-80, GLB TNC2A, or California Digital TNC-2 sitting there almost dressed with no place to go.

Note: The AEA PK-87 and PK-90 can be used with the Net/Rom system, but the modifications should be made in accordance with the AEA service bulletins. AEA offers both a parts kit and/or factory modification service.

This month's configuration will satisfy two applications, or to put it mildly, it can be used in a dual-task setup. I hope to describe the way to build a dual-port gateway which can be accessed from the LAN frequency and output to the through-put frequency via a two radio, two TNC setup, or it can be configured as a one radio, two TNC, dual-baud gateway.

506 Pheasant Ridge Drive, Warner Robins, GA 31088

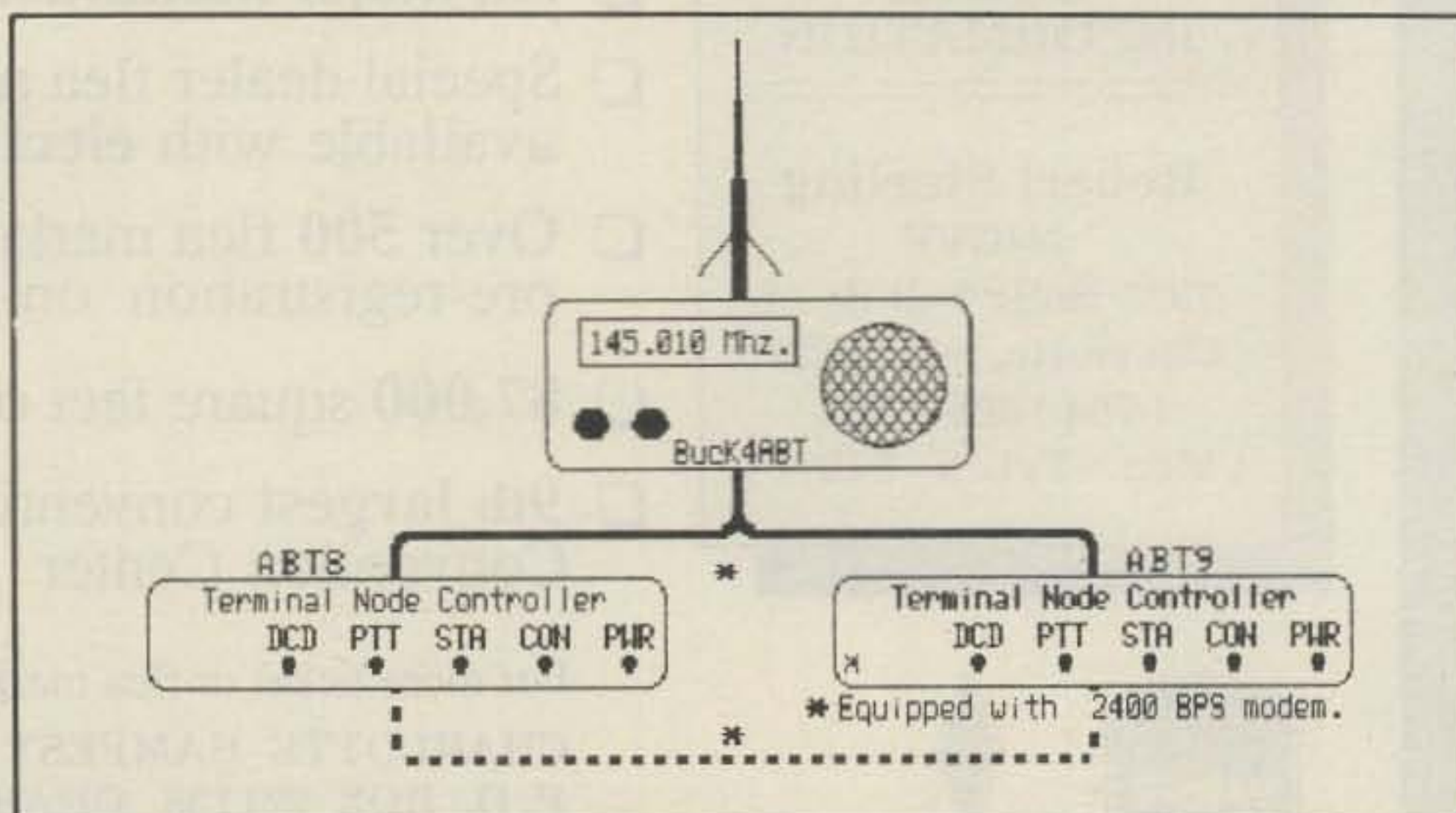


Fig. 1- This setup illustrates the dual-baud configuration. Note the special harness, both control \*\* and RS-232 \* cables.

### In Step With Time and Technology

Since we are defining two separate applications with the TNC2 clone, we will take them one at a time. First we will construct the dual-speed system (see fig. 1). This will provide node capabilities and digipeating at either 1200 BPS or 2400 BPS PSK. The 2400 BPS PSK add-on option should be installed into one of the TNC-2 clones while the other one is operated at 1200 BPS as designed. There are other manufacturers who make and distribute 2400 BPS PSK modems. However, the modems we use in this installation are available from Kantronics for \$69.95 each.

It is a good practice to test the modified 2400 BPS TNC before it is interfaced with the 1200-baud counterpart to be sure there were no installation problems resulting from the addition of the 2400 BPS add-on modem.

There is now widespread activity at 2400 BPS. To allow interconnecting to the other nodes and digis which are operating at 1200 and 2400 BPS over a large area of Georgia, Alabama, and North Florida, David, WD4JKH, decided to interconnect one of our better local digis into the 2400 BPS game plan. David used a different approach by connecting his TNC-2s in the manner shown in fig. 4.

Connecting both TNC-2s to one transceiver is accomplished by connecting Microphone audio pin 1, Receive audio pin 4, and Ground pin 2 in parallel with the respective pins on the other unit. A minor problem developed when the two TNCs "heard" a signal on either port, and one of the ports (TNCs) wanted to transmit/digipeat. David tried setting the DWait and several other parameters. This never solved the problem, although it may have

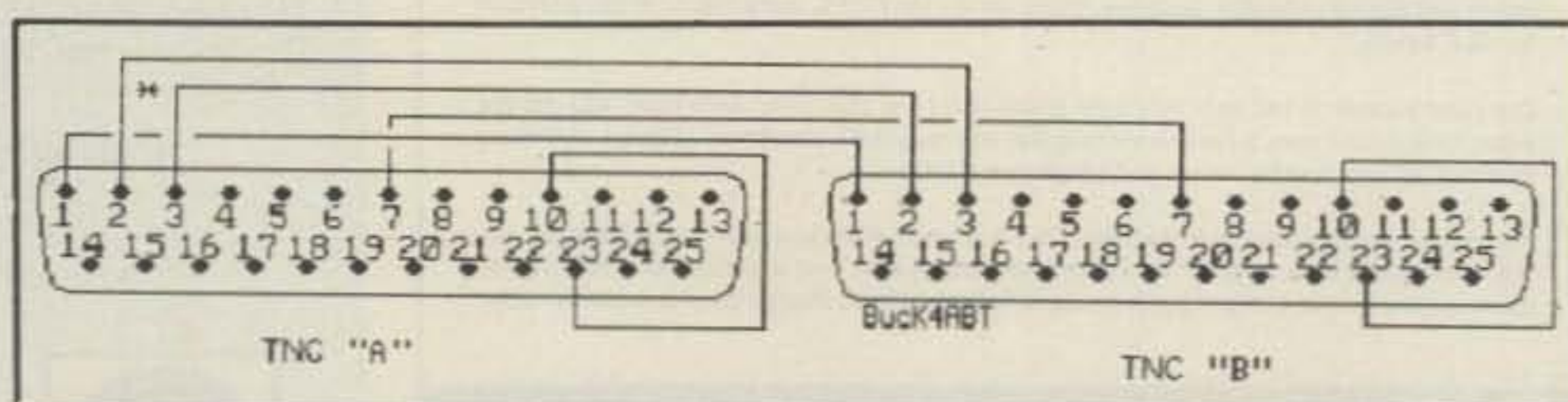


Fig. 2- Construct this RS-232 cable to use between the two TNCs. Note that pins 2 and 3 are rolled (X connected) as in a "null-modem" cable. Do not attempt to use a conventional 8-wire or 25-wire terminal cable.



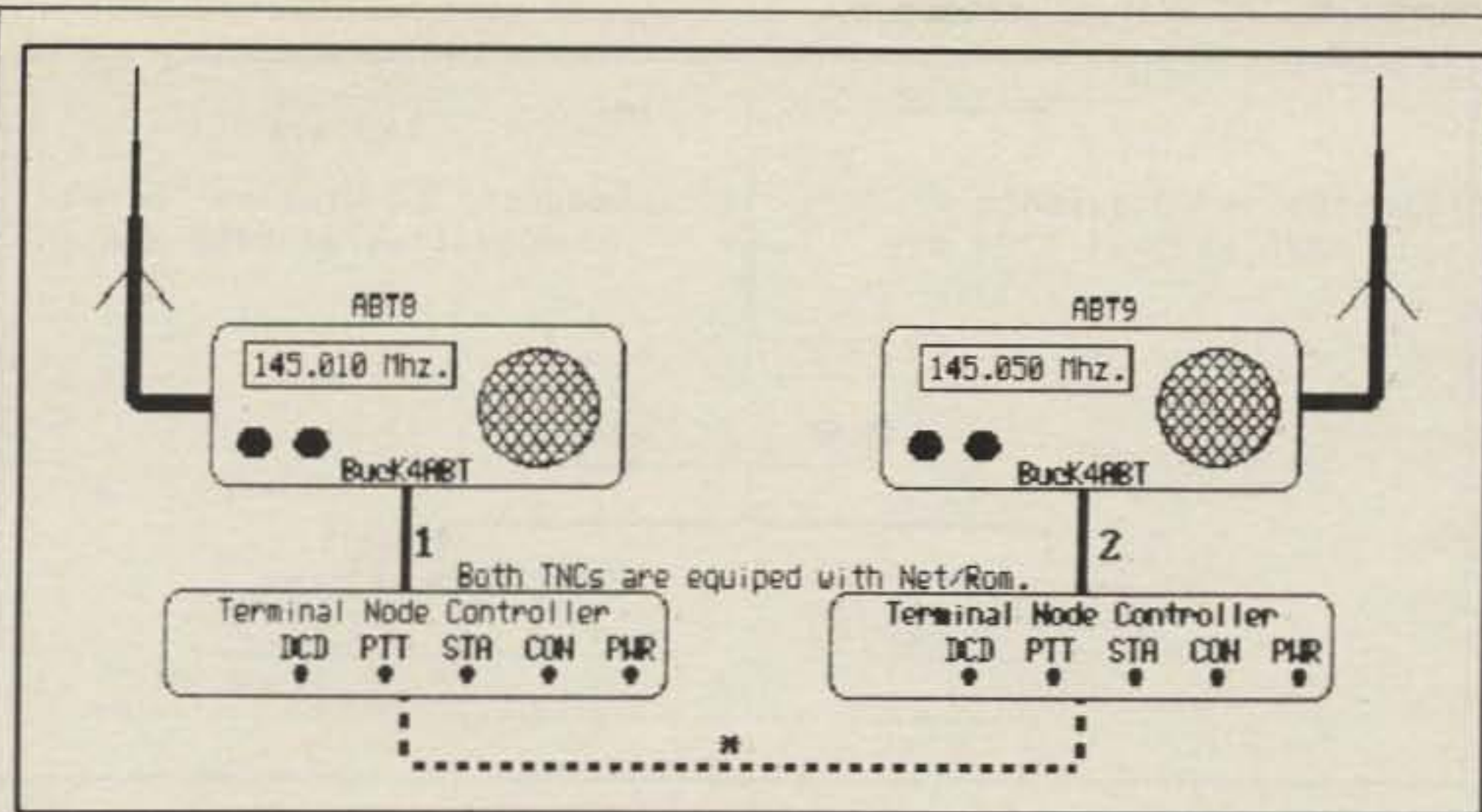


Fig. 3- This setup shows the two-radio, two-frequency configuration. Cables 1 and 2 are normal transceiver-to-TNC control harness. \* Denotes the specially constructed RS-232 cable (see text).

helped. During high-traffic activity there would be noticeable delays, and the assumption was that there were internal collisions occurring.

A confirmed "fix" for this problem is illustrated in fig. 4. To keep both TNCs from trying to "key up" the transmitter at the same time, this method was used to hold one TNC "OFF" while the other is transmitting. To make this happen, the Squelch input, pin 5 of each TNC, is cross-connected to the Push-To-Talk, pin 3 of the other TNC. (Thanks, TAPR, for looking ahead.) Both PTT lines were run through isolation diodes to a common point which was connected to the transceiver's PTT line. The theory behind this was that when TNC "A" transmitted PTT pin 3 goes low, the Squelch input pin 5 of TNC "B" would be pulled low also. This would make TNC "B" think it was "hearing a signal with data" and hold off transmitting until the channel was clear. Once TNC "A" stop-

ped transmitting, TNC "B" would be released to transmit any packets it had been saving.

This system works well even during heavy traffic periods on both speeds. The diodes used should be heavy enough to carry the current needed to key the transmitter. In our case, it was an older commercial unit with a hefty relay, so heavier diodes were used. Diodes of lower current rating will suffice with most modern amateur transceivers.

For the purpose of this article, I used two MFJ-1270Bs to develop the dual-baud system. They are available from MFJ Enterprises, Inc. for \$119.95 each. The current production 1270B comes with 32K RAM, the "Easy Mail," and WEFAX features. The MFJ-1270B is Net/Rom compatible and *does not* require the modifications which I describe here. I repeated this because I don't wish to see anyone go to more trouble than neces-

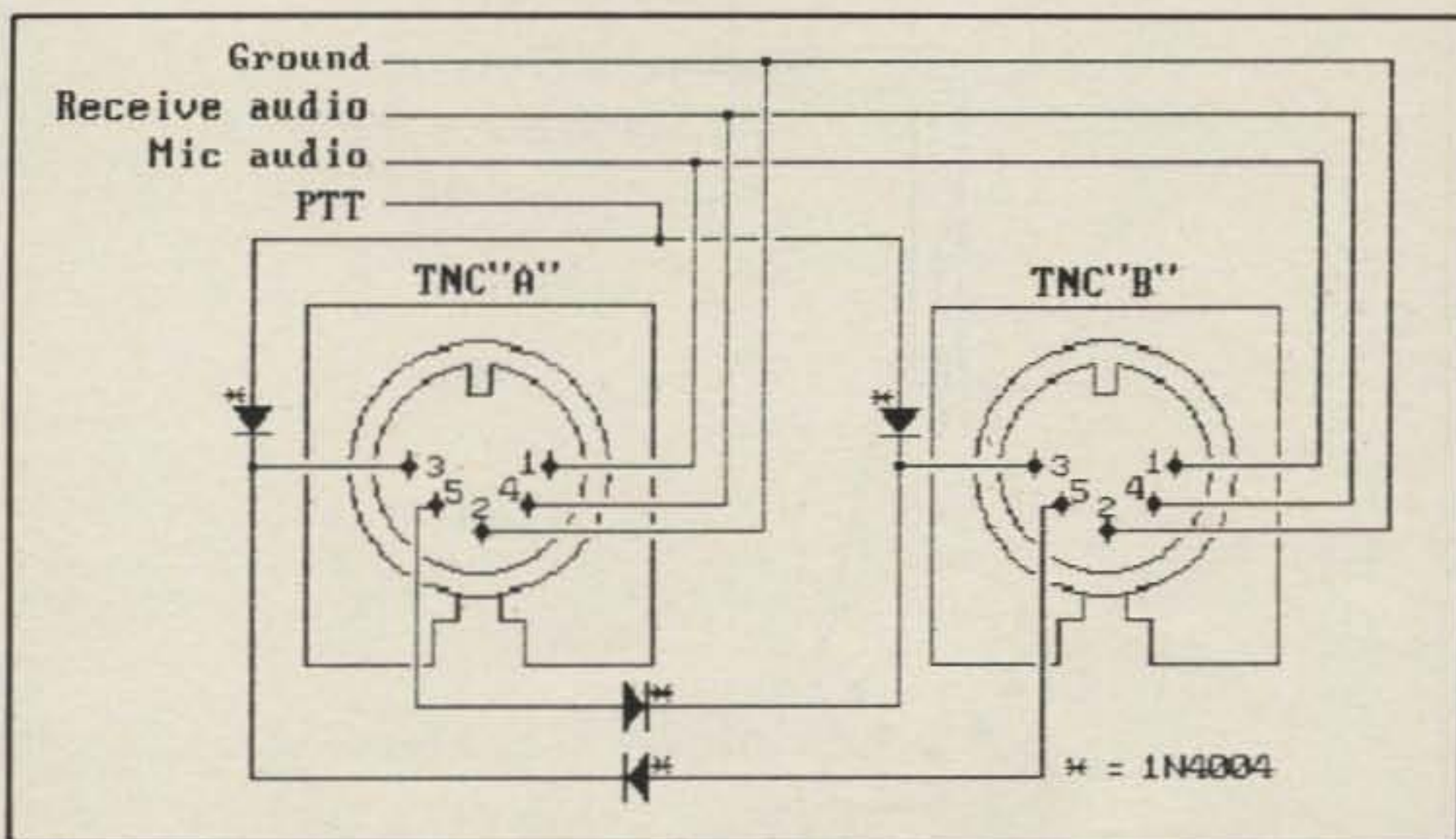


Fig. 4- The dual-port, dual-baud, single-radio control cable layout.

sary. Several other TNC-2 manufacturers are now making the modifications in their current production units.

The addition of Net/Rom is needed to complete the node configuration.

## Enter the Net/Rom Era

There are other node controllers which will allow us to perform this next application, but at this writing they do not yet support the Net/Rom (Software 2000) protocols. For this reason the description of the Node/Gateway this month will be constructed around the TAPR 2 and/or clone of the TAPR 2.

If you plan to use the TAPR 1, you may find it necessary to obtain the update kit which upgrades to version 2. The version 2 upgrade kit is available from TAPR. We are using the MFJ-1270B, since all the modifications are now a part of the current MFJ production models.

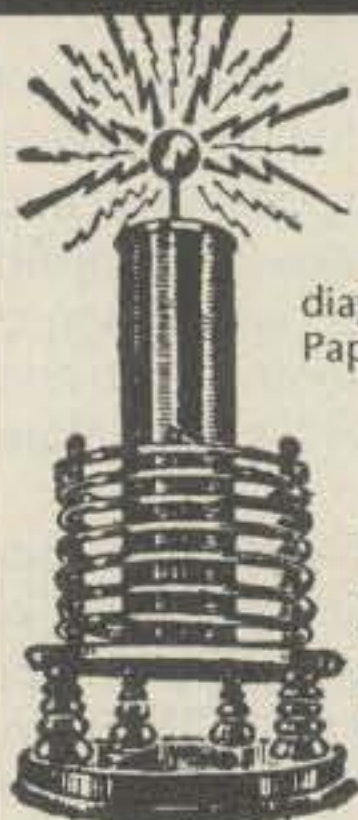
The Net/Rom will not function properly with only 16K of RAM, so let's begin our project.

## Increasing TNC Brain Power, Or "Adding 32K of RAM"

1. Remove all power from the TNC 2.
2. Remove the cover by removing the mounting screws on the side of the cabinets.
3. Remove JMP5 jumper. This disconnects the lithium battery.
4. Remove 8K RAMs at U24 and U25.
5. **For the MFJ-1270:** Remove the circuit board from the bottom plate. Cut the trace that is connected between the center pad and the pad closest to R29 of JMP 12. Connect a jumper wire between the center pad and the pad closest to C28 of JMP12. **For MFJ-1270B and MFJ-1274:** A removable jumper for JMP 12 is provided. Remove the jumper from pins 2 and 3 of JMP 12 and install it on pins 1 and 2 of JMP 12.
6. Install 32K RAM chip at U25 (U24 will be left empty). Some 32K RAMs which may be used are NEC 43256C-15L, Hitachi HM64456L-15 or HM62256L-15, and Toshiba 55257PL-15. (Note: If you purchased the MFJ-40C update, you must supply your own 32K RAM. The Net/Rom will not operate properly with only 16K RAM.)
7. Carefully remove the EPROM (U23, 27256) from the TNC 2 board. Make note of the orientation of the IC.
8. Install the new Net/Rom (27C256 EPROM) firmware on the TNC-2 board at U23. Make sure that *no* IC pins are bent under the IC or left outside the socket. Make sure that the notch on the IC is pointed in the same direction as the original EPROM.
9. CPU clock: In order for the system to operate properly, the CPU clock should be set to operate at 4.9152 MHz. If your TNC 2 has serial number 1013001 or greater, it is already operating at 4.9152



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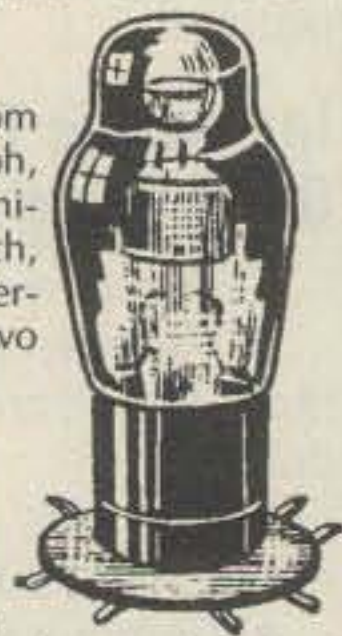
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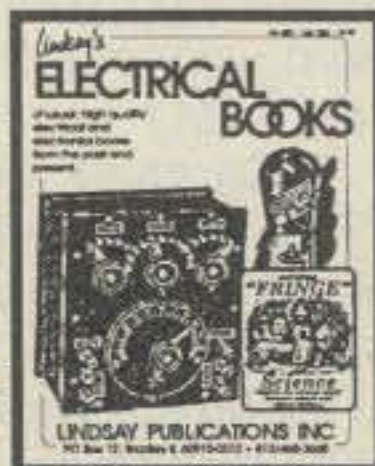


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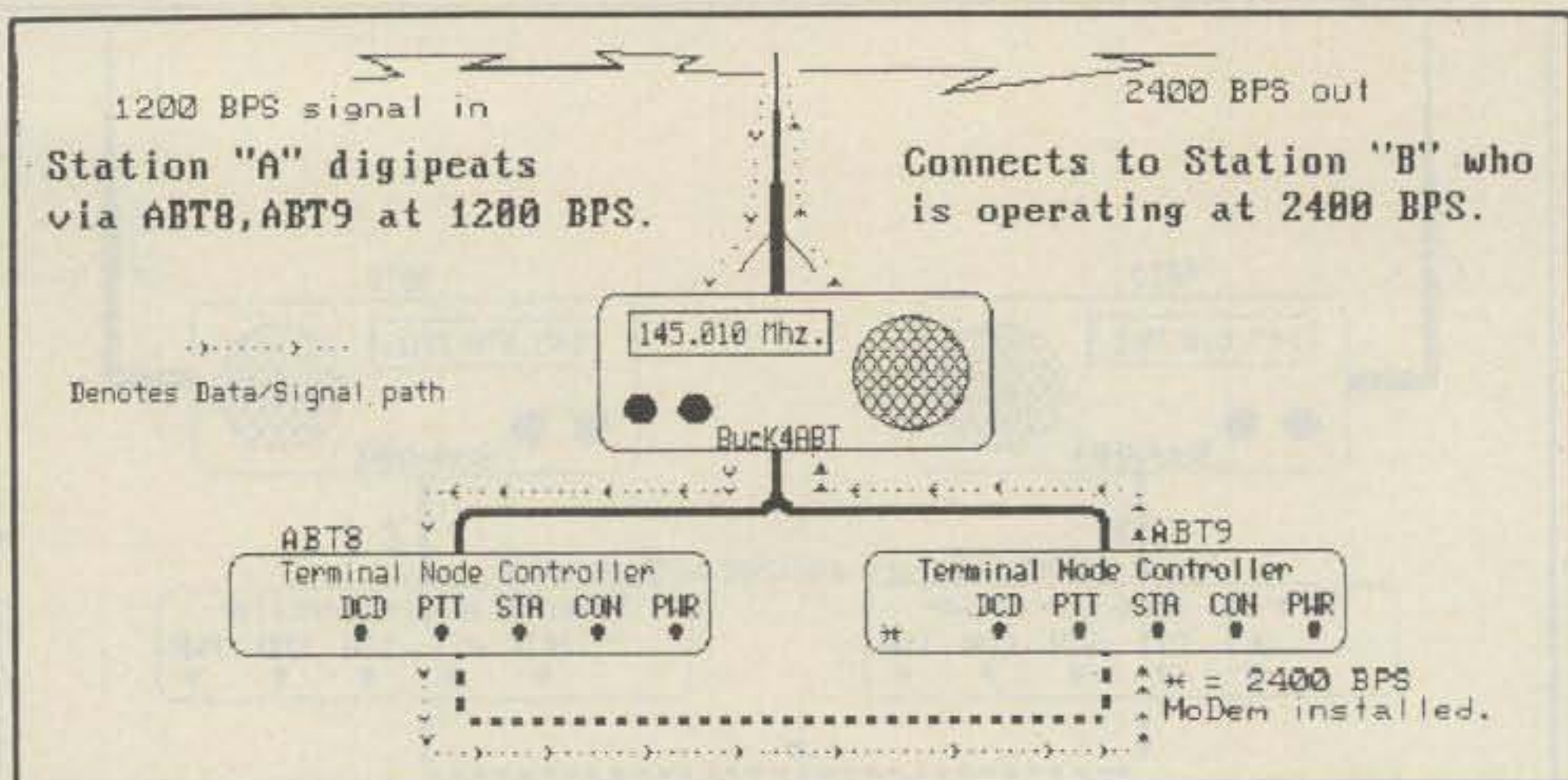


Fig. 5- Station "B" can connect to node ABT9, then connect to node ABT8, and finally connect to station "A," 2400 to 1200 BPS.

MHz. Go to step 10 and continue the installation. If your TNC 2 has no serial number or does not have the serial-number sequence mentioned above, you should modify it so the CPU clock is operating at 4.9152 MHz. The procedure is as follows:

- Remove the PC board from the case of the TNC 2.
- Locate JMP 2. JMP 2 is a 3-pin pad located close to a large electrolytic capacitor, C12.
- Cut the trace which joined two of the pads of JMP 2.
- Solder a jumper between the two outer pads of JMP 2.
- Re-install the PC board onto the TNC 2 case. Some older TNC 2s may use the center to outer pad nearest Q1 instead of the two outer pads. Verify clock speed. (See note below.)

(Note: The CPU clock frequency can

be verified at pin 20 of the SIO (U21) with a frequency counter.)

10. Install JMP5 jumper.

11. Replace the cover of the cabinet.

The fail-safe timer is modified to increase the allowed key-down time from 10 seconds to approximately 60 seconds. To make this mod, replace C31 with a 47 mFd/35V radial lead electrolytic capacitor; observe polarity.

Because you will be using your system as a two-port, two-frequency gateway, you should make this final modification to the TNC-2: Connect a wire from pin 1 of JMP 9 to pin 23 of the RS-232 connector. Be sure to construct the TNC-to-TNC cable as illustrated in fig. 2. Notice the jumper from pins 10 to 23 at each end of the RS-232 cable on the DB-25 connector. Net/Rom commands within the firmware will allow you to configure the TNCs as I will describe later in this article.

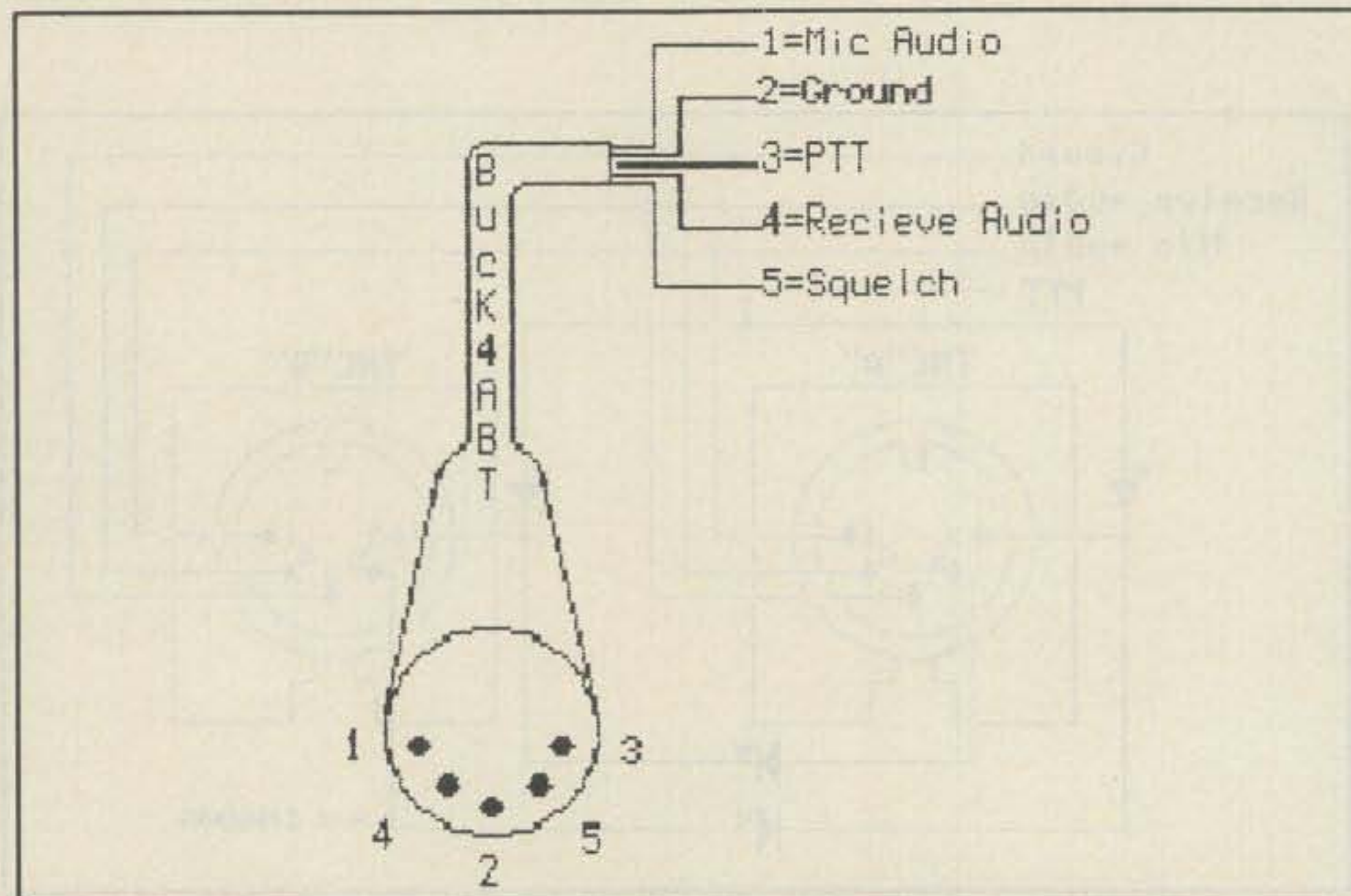


Fig. 6- "Normal" transceiver-to-TNC control harness (see fig. 3).



This addition to the TNC-2s (both will require Net/Rom) sets into motion a new era of packet communications for your LAN. Connect them together with the specially constructed RS-232 cable and let's make the initial tests of the system as a dual-port, dual-frequency, digipeating node and gateway (see fig. 3).

### Configuration

After you've made the necessary hardware modifications, connect the TNCs to a terminal and turn the power on. Be sure you get the proper Net/Rom sign-on message. Now verify the node's (or nodes') callsign(s). The callsign(s) (each TNC should have a different SSID) should be embedded within the sign-on message. Be sure the callsign is correct.

Next connect to the node using the **ESC-C** command and **<enter>**. The node should respond with "Connected to, etc. . . ." Now you will enter the node identifier using the **IDENT** command. Carefully follow the instructions in your Net/Rom manual.

You may wish to use the local airport identifiers or do as I have done and use a portion of my callsign—e.g., TNC A is **ABT8** and TNC B is **ABT9**. There are reasons for using separate callsigns on the nodes other than the obvious reasons. Even with the 1200/2400 BPS nodes you will want to be able to gateway between the nodes. As connected, configured, and with the applied callsigns, you will be able to do just that (see fig. 5).

Finally, set the password by executing the **ESC-P** followed by the password string. This string can contain up to 80 characters. There must *not* be any spaces, line feeds, or carriage returns. Only ASCII characters, and remember to use as many as you can, but stay within 80 characters or less. I am using the exact words from the manual when I repeat this next statement, for I have committed the wrong. "**You must remember the password string** in order to perform privileged control operator functions remotely. Don't forget it unless you enjoy trips to the site!"

### Tidying Up

Do an **ESC-D** to disconnect. Then **ESC-Y-0** will disable the host connections. And finally, remove the terminal. I would recommend operating the system you have configured in a "test" environment for a few days or until you are happy with the behavior and operation of your setup. Check and double check all wiring and connectors. I am not responsible for damage, errors, or mistakes. I have tried to follow the exact procedures which we used in the implementation of our nodes.

I've mentioned two ways to configure the nodes, but this is not to say these are the only ways in which a node can be put on the air. There is the single port, one node, one call, one radio configuration. It

is simplicity in itself. Now if you want to really get into the multi-port node configuration (more than two ports), then you have a treat awaiting when you read the Net/Rom manual, which describes ways to interface multiple channel systems that can cover many baudrates and frequencies. It is certainly apparent that Ron Raikes and Mike Busch have put many minds to work coming up with other ways to make Net/Rom work for them.

I wish to express my thanks for technical assistance in preparing this month's "Packet User's Notebook" to the following persons and manufacturers:

Mike Busch, W6IXU (concept and very well defined documentation for Net/Rom)

David Hopper, WD4JKH (assistance and implementation)

Ronald E. Raikes, WA8DED (author of Net/Rom)

Mack Reagan, KI4CG (assistance and implementation)

Glynn Rogers, Jr., WB4RHO (beta-testing and implementation)

AEA (P.O. Box C-2160, Lynnwood, WA

98036, phone 206-775-7373)

Amatech International, Paul Tift (6026 North Greenwood, Clovis, CA 93612, phone 209-299-8167). (Net/ROM is a trademark of Software 2000 and is distributed through Amatech International)

Kantronics Inc. (1202 E. 23rd St., Lawrence, KS, phone 913-842-7745)

MFJ Enterprises Inc. (P.O. Box 494, Mississippi State, MS 39762, phone 1-800-647-1800/601-323-5869)

Pac-Comm (3652 W. Cypress St., Tampa, FL 33607, phone 813-874-2980)

If your packet organization or group has a newsletter, please place me on your mailing list and send the newsletters with the items which you would like to mention in this column, and we will try to highlight some of these announcements. There are good things happening in packet radio in all parts of the country. Spread the word of your latest accomplishments. Packet club or group newsletters may be sent directly to my home address shown at the beginning of this column.

Until next month, de Buck4ABT

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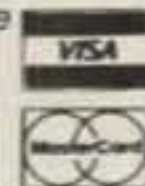
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## NEWS OF CERTIFICATE AND AWARD COLLECTING

The Story of the Month for February is:

**John R. Spark, W4LHP (ex-K3ORP)  
USA-CA All Counties #557, Mixed,  
12-7-87**

"6/23/66-12/7/87—These dates look like something you might see on a tombstone, but that is how long it took me to work all counties! While it may look like part of an epitaph, it is far from that!

"My first contact with the County Hunters was with Karl, W0KZZ, a member of the old CHC (Certificate Hunters Club). At that time I was mobile most every day as a result of my employment with the State of Maryland. Mobiles were few and far between in those days, and County Hunting was just starting to attract the interest of the ham fraternity. Consequently, when a mobile checked in, he needed to be prepared for lots and lots of activity.

"At that time I was satisfied to 'put out' the counties and had no interest in 'collecting' them! When I left Maryland and moved to Florida a few years later, my mobile activities almost came to a standstill! I then decided to get a map book and a county record book and go to work!

"One of the cards I most cherish verifies a contact with Cliff Corne, K9EAB, the first radio amateur to work all counties. Many changes have occurred over the years—most for the better. The minimum report was once 3 x 3! Also, when an operator decided to take a mobile rig along on a trip, it was necessary to send a notice to the FCC Engineer-in-Charge of each district from which he planned to operate! It was required that he state his itinerary, including routes of travel, dates, make and model of automobile, Tag number, and whom to contact in case of emergency! These requirements no doubt accounted for the scarcity of mobiles crossing the land!

"I treasure the friendships made by and with County Hunters. It would be impossible for me to name all those who were so helpful, but those who have been so dependable over the years include Arnie, K9DCJ; Cliff, WB4FBS; Paul, WA3TUC; Riley, W0CEL; Orv, VE3BFJ; Pauline, N9CLZ; George, K9CSL; and many others.

"Over the years County Hunting has provided many exciting and unforgettable incidents, but nothing to compare to that which developed working the last



John R. Spark (aka Sparky), W4LHP,  
USA-CA All Counties #557.

twenty! My own interest reached such a peak that I was hard to get along with. Each day was a countdown with queries as to 'How many now, Sparky?' When I finally got down to my last two, my good friend of many years, Arnie, K9DCJ, contacted me on the land line and inquired as to whether or not I still needed those two counties in Nebraska. When I replied in the affirmative, Arnie told me that Dave, N0GYN, would attempt to get them for me the next day. It was difficult to believe that my long search would soon be ended! I had actually been convinced that Arthur and Perkins counties in Nebraska were figments of my imagination! I had never heard anyone give them out! Anyway, after many anxious hours Dave finally contacted me from Perkins County and said it wouldn't be long until he would be in Arthur County—the last one at the end of a long trail! That final 5 x 9 exchange was truly beautiful music to my ears!

"So Sparky's saga ended after 22 years, 5 months, and 14 days! It was a wonderful experience, and I wish the same, or better, to those of you still trying.—7/3/88, Sparky, W4LHP."

### Awards Issued

John C. Talboys, N8CVP, submitted his full record book and received USA-CA All Counties #587, USA-CA 3000 #620, USA-CA 2500 #696, USA-CA 2000 #763, USA-CA 1500 #851, USA-CA 1000 #1037, and USA-CA 500 #2281, All SSB, dated 10-6-88.

Thomas J. Campbell, W2EZ, completed his quest by claiming USA-CA All Counties #588, Mixed; USA-CA 3000 #621, USA-CA 2500 #697, USA-CA 2000 #764, USA-CA 1500 #852, and USA-CA

### USA-CA Special Honor Roll

John C. Talboys, N8CVP  
All Counties #587, All SSB, 10-6-88

Thomas J. Campbell, W2EZ  
All Counties #588, Mixed, 10-22-88

### USA-CA Honor Roll

	3000		1000	
N8CVP	620	JF1SEK		1036
W2EZ	621	N8CVP		1037
		WB9ZHS		1038
		W2EZ		1039
	2500			
N8CVP	696			
W2EZ	697		500	
		KDX1A		2279
		W5FHL		2280
N8CVP	2000	N8CVP		2281
W2EZ	763	WB9ZHS		2282
	764	5B4MF		2283
		GM4PVC		2284
	1500			
N8CVP	851	JE1REU		2285
W2EZ	852	JA1NLX		2286

The total number of counties for credit for the United States of America County Award is 3076. The basic award fee for subscribers to CQ is \$4.00. For nonsubscribers, it is \$10.00. Initial application must be submitted in the USA-CA record book, which may be obtained from CQ Communications, 76 North Broadway, Hicksville, NY 11801, USA for \$1.25. To qualify for the special subscriber rate please send a recent CQ mailing label with your application. To be eligible for the USA-CA, applicants must comply with the rules of the program as set forth in the revised USA-CA Rules and Program dated April 2, 1985. A complete copy of the rules may be obtained by sending an SASE to Dorothy Johnson, WB9RCY, USA-CA Custodian, 333 South Lincoln Avenue, Mundelein, IL 60060, USA. DX stations must include extra postage for airmail reply.

1000 #1039, All CW, and all dated 10-22-88.

Hideo Takahashi, JF1SEK, received a gold seal for his certificate by claiming USA-CA 1000 #1036, Mixed, dated 10-3-88.

Joseph P. Miller, Sr., WB9ZHS, got off to a good start by claiming USA-CA 1000 #1038, and USA-CA 500 #2282, All SSB, dated 10-12-88.

USA-CA 500 certificates went to:  
David A. Glow, KDX1A, USA-CA 500 #2279, Mixed, 10-3-88.

Ruric "Doc" Mason, W5FHL, USA-CA 500 #2280, Mixed, 10-3-88.

John C. Talboys, N8CVP, USA-CA 500 #2281, All SSB, 10-6-88.

Joseph P. Miller, Sr., WB9ZHS, USA-CA 500 #2282, All SSB, 10-12-88.

Spyros Stavrinidas, 5B4MF, USA-CA 500 #2283, All SSB, 10-13-88.

Alexander C. F. Smith, GM4PVC, USA-CA 500 #2284, All SSB, 10-13-88.

Haruo Ishiba, JE1REU, USA-CA 500 #2285, All CW, 10-26-88.

Akira Yoshida, JA1NLX, USA-CA 500 #2286, Mixed, 10-29-88.

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Happy participants in the annual convention of the Mobile Amateur Radio Awards Club, Indianapolis, Indiana, July 1988. (Photo courtesy Herb Morgan, WD9GBH, convention host.)

## Awards Available

**Swedish Radio Society Awards.** The Official Diploma Program of the Swedish Radio Society, SSA, features six awards: Worked All Sweden Award (WASA), Heard All Sweden Award (HASA), Swedish Locator Award (SLA), Field Award (featured in this column, January 1989—ed.), Mobilen (only for SSA members), and SSA Activity Diploma (only for SSA members). (Note: The WASM and WASM II diplomas have been cancelled. Applications for those awards must be received by the SSA by 31 December 1989.)

**Worked All Sweden Award (WASA).** WASA will be issued to licensed radio amateurs for verified contacts with Swedish counties (lan) and callsign districts made after 1 January 1988. Swedish applicants shall be members of the SSA, and overseas applicants shall be members of their own country's IARU-affiliated radio society.

All contacts shall have been made with the same band and mode. The same station may be contacted on several different bands. All contacts shall be made with land-based stations. Contacts with earth-based repeaters are not permitted.

Separate diplomas will be issued for HF, 144 MHz, 432 MHz, 1296 MHz, and satellites. For HF, 1.8, 3.5, 7, 10, 14, 18, 21, 24, and 28 MHz are counted as separate bands. Within every group, separate diplomas can also be issued for the different classes. Stickers can be gained for

2 × CW, 2 × Phone, 2 × SSB, and 2 × RTTY.

All contacts shall be verified with QSL cards or the equivalent, on which there is sufficient information to accurately determine the lan/callsign district worked.

Applications shall consist of QSL cards and a list of these with the lan/callsign districts in alphabetical/numerical order. Instead of sending QSL cards, overseas applicants may get their cards checked by the Diploma Managers in their own countries, if such person exists.

The fee for each diploma is SEK 30 (\$5.00 US or 10 IRCs). Applications should be addressed to: WASA, Diploma Manager, SSA, Ostmarksgatan 43, S-123 42 Farsta, Sweden. Requirements are as follows:

**WASA—HF:** Class 3—For applicants in Europe, all lans on two different bands; for other applicants, all callsign districts (0-7). Class 2—For applicants in Europe, all lans on three different bands; for other applicants, all lans. Class 1—For applicants in Europe, all lans on four different bands; for other applicants, all lans on two different bands. Shield—For all applicants, all lans on five different bands.

**WASA—144 MHz:** Class 2—All callsign districts. Class 1—All lans. Shield—Five different stations in each lan.

**WASA—432 MHz:** Class 2—All callsign districts. Class 1: All lans. Shield—Three different stations in each lan.

**WASA—1296 MHz:** Class 1—All callsign districts. Shield: All lans.

**WASA—Satellite:** Class 2—All callsign districts. Class 1—All lans. Shield—All lans in two modes each.

**Heard All Sweden Award (HASA).** HASA will be issued by SSA to all shortwave listeners (SWLs) for verified reports of stations in Swedish lans and callsign districts for contacts made after 1 January 1988.

The diploma is issued in the classes and groups corresponding to the rules for the Worked All Sweden Award (WASA). However, no shields will be issued.

**Swedish Locator Award (SLA).** The SLA is issued by the SSA to licensed radio amateurs for verified contacts made with the various locator squares in Sweden, as defined by the Maidenhead system, for contacts made after 1 January 1988. The diploma is also issued to SWLs on the equivalent basis.

Swedish applicants shall be members of the SSA, and overseas applicants shall be members of their own country's IARU-affiliated radio society.

Contacts with earth-based repeaters are not permitted. All permitted amateur radio bands may be used.

Requirements: basic diploma 25 squares, sticker 35 squares, sticker 45 squares, sticker 55 squares, sticker 60 squares, sticker all squares. Endorsements can be obtained for individual bands and modes.

QSL cards shall have been received but do not need to be sent in. Applications shall be made by means of GCR list, verified by the applicant's national QSL manager.

The fee for the basic diploma is SEK 30 (\$5.00 US or 10 IRCs), and SEK 5 (\$1.00 US or 2 IRCs) for each separate sticker application. Applications should be sent to: SLA, Diploma Manager, SSA, Ostmarksgatan 43, S-123 42 Farsta, Sweden.

**Field Award.** Details and rules were published in the January 1989 issue of this column.

**Mobilen Award.** The Mobilen award is issued by the SSA to licensed radio amateurs who have activated squares, as defined by the Maidenhead system, while mobile in Sweden. Contacts made after 1 January 1988 are counted.

In order for a square to be considered as activated, at least 10 other stations must have been contacted from that square within a period of 24 hours.

**Requirements:** Basic diploma 25 activated squares. After this, individual stickers are issued for every new square. The diploma and stickers are issued free of charge.

Application shall be made by means of a verified extract from the station log book. Send application to Mobilen, Diploma Manager, SSA, Ostmarksgatan 43, S-123 42 Farsta, Sweden.

**SSA Activity Diploma.** SSA issues the Activity Diploma (A plus year) for each



calendar year in order to stimulate the activity of society members. Each year's activities are determined by the SSA's Committee by October of the previous year and are published in the QTC Diploma Column by the preceding December, at the latest.

The diploma costs SEK 10. The fee is sent without deduction to the WL fund (for disabled radio amateurs).

The application, in the form of a verified extract from the station log book, shall arrive at the SSA office by the last day of February in the following year.

**Mar del Plata To The World Award.** The Mar del Plata To The World Award is sponsored by the General Peyrredon Radio Club, LU9EP, and Mar del Plata City. Mar del Plata is the principal city in the municipality of General Peyrredon, and is noted for intensive economic and agricultural activities with major dependence on tourism.

The award is available to radio amateurs and SWLs who worked (heard) any two of the four stations (LU3EP, LU3DEF, LU4DUZ, and LU2EYD) on 29.000 MHz from 1600 to 2200 UTC, Oc-



Mar del Plata To The World Award from the General Peyrredon Radio Club, LU9EP, Mar del Plata City, Argentina.

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tober 1 through November 30. There is no charge. Send QSL cards to P.O. Box 20, Mar del Plata 7600, Argentina.

**The Kwajalein/Roi-Namur Commemorative.** The Kwajalein Amateur Radio Club will operate KX6BU from 0600 UTC January 27, 1989 until 0600 UTC February 6, 1989 to commemorate the 45th anniversary of the battle of Kwajalein and Roi-Namur. Frequencies will be: SSB 14.250, 21.350, 28.550 MHz; and CW 7.025, 14.050, 28.050 MHz.

For \$7.00 US KX6BU will issue a QSL, certificate, and 64-page book on the Battle of Kwajalein and Roi-Namur. Three dollars will bring the QSL and certificate. All requests should be sent to KX6BU, Box 444, APO San Francisco 96555-00081.

## DXNS USSR Oblast Guide

The "DXNS USSR Oblast Guide" is published by Geoff Watts, editor of the popular "DX News Sheet" from 1962 to 1982. Contents of the guide include outline maps of all 184 oblasts; list of oblasts (numerical); list of oblasts (prefix order); oblasts of three-letter-suffix calls; oblasts of two-letter-suffix calls; oblasts of one-letter-suffix calls; oblasts of active pre-1970 calls; pre-1970 club-station oblast list; pre-1984 club-station oblast list; "Victory-40" stations and their oblasts; R-100-0 Worked-100 oblasts Award; deleted oblasts that still count; future new USSR prefixes; USSR "CQ-M" annual contest rules; R-150-S USSR Countries List; CQ and ITU Zone List. The list, which runs to 13 pages, costs \$3.00 or 6 IRCs for airmail delivery. Orders go to Geoff Watts, 62 Belmore Road, Norwich, Norfolk NR7 0PU, England. (Thanks to "DX News Sheet," via W6ISQ and W4KA.)

## Notes

John L. Biester, KB9YY, points out that in the November 1988 column I accidentally "moved" him from 9-land to 2-land. John received USA-CA 500 #2265 under his correct call, KB9YY, not KB2YY. Sorry, John.

73, Dorothy, WB9RCY





# Washington Readout

a monthly feature by  
FREDERICK O. MAIA, W5YI

REGULATORY HAPPENINGS FROM THE WORLD OF AMATEUR RADIO

## Entry Into The Amateur Radio Service Is It Time For A Change?

**M**orse code, the cornerstone around which present-day amateur radio is built, has been around for more than 150 years. In 1895, and with the telephone not yet invented, Guglielmo Marconi developed a method to signal through space using a spark discharger and induction coil. It set the scene for the amateur radio operator to appear around the turn of the century. When licensing came about as a result of the Radio Act of 1912, it was decided that Morse proficiency was important since it was the primary means of wireless communication. Today, and with communications technology bearing little resemblance to that of yesteryear, the methods we use to become amateur radio operators are much the same. We still do it the old-fashioned way.

We know all the reasons why we need "the code"—among them it is recognized internationally, it is easy to copy through interference and therefore "it succeeds where other means fail," it is inexpensive, it uses less power, it is easy to build, it is effective during emergencies, it separates those who are motivated from those who are not, it keeps the amateur ranks low in number and less congestion results, "nothing is worthwhile that is obtained without effort," "I did it so you must, too," and on and on. We have heard them all.

Have we reached the point, however, whereby retaining the telegraphy examination requirement may be doing more harm than good to our nation and to the Amateur Radio Service? Many nations have eliminated the code testing requirement for VHF and higher frequency operation or have a mechanism whereby their citizens interested in other modes can obtain access to the amateur bands.

### Amateur Radio in The United States

Such an effort is underway in the United States by a coalition of amateurs and other interested individuals who wish to bring the entry-level amateur radio requirements more in line with the technology, interests, and operating habits of today. Events of the past couple of years indicate that a change may be needed.

Three facts are cause for alarm! Even though there are more examination opportunities than ever before and the Novice class privileges were recently enhanced, the Amateur Service is not growing significantly. As a result, our incredibly valuable frequencies are being reassigned to other services. The school amateur club has given way to kids playing with computers over the phone lines, when

they could be enjoying packet radio. Our nation's youth are not being influenced toward high-tech careers.

Computer analysis of the FCC amateur data base indicates that the average amateur now is 50 years old, born in 1938. Only 1.9% of our amateur radio population is under age 20. Let's face it. Amateur radio is an old man's hobby. Our youngsters need to be exposed to the many marvels of electronics that amateur radio offers.

What was once an analog world is now *totally* digital, and we don't mean dits and dahs. We mean ones and zeros. Think about it. Other nations seem to be making more high-tech progress than America. Most electronic goods and advances now have their origin off-shore. All amateur equipment is microprocessor based.

The Amateur Radio Service is just that, a service that provides for many of mankind's needs. Amateur radio has great potential to do far more. Something appears wrong with the system!

Back when I first became a ham as a teenager, amateur radio consisted of basically two emissions—AM phone and CW. Most equipment was homebrew or converted military surplus. "Status" was running an 813 instead of an 807. I still have the chirpy 6L6 junkbox rig I built as a kid, kept to remind me how things have changed. I remember how frustrating it was to tune the new-fangled "quacking duck" on my HQ-129X receiver and the pain of the transition to SSB.

VHF and the higher bands had yet to be explored. Anything above 50 MHz was experimental. Two meters was basically unused, and repeaters not yet thought of. Computers were around, but they were big, megabuck monsters that ate punch cards and were owned only by the largest of corporations and government. In our wildest dreams we never envisioned that one day they would be purchased inexpensively like toasters at discount stores. I paid more than \$100 for my first four-function calculator. Today they give them away with far more features.

### CB Boom and Amateur Radio Growth

I also was a licensed amateur before the birth of CB. I saw the old, unused ISM 11 meter amateur band given over to land-mobile operation so that small business mobiles could communicate with their home bases. The amateurs screamed bloody murder, but it was 10 and not 11 meters they used, since it wasn't so noisy. Citizens Band hobby operation was never intended by the Commission, but 27 MHz became a no-code amateur band eventually occupied in the seventies by the trucker looking for gasoline and "smokie."

"What you see is what you get," and without amateur courtesy and operation to follow, the unruly language of the road resulted. Good public service continues to be performed by CB groups such as REACT—often right alongside GMRS and amateur operations—but for all practical purposes, the CB balloon burst in the early 1980s.

The Citizen's Band craze of the 70s did help the Amateur Service in one respect, however. There is an incredibly close parallel between amateur growth and CB popularity. After years of stagnation, the Amateur Service grew more than 50% (from 260,000 licensees to 410,000) between 1972 and 1981. When CB died, so did amateur radio growth. The 4.7% Amateur Service growth rate of the 1970s became less than 1% in the 1980s. The reason? Less radio-hobbyist-oriented applicants. The pool simply dried up.

The electronic hobbyist of today seems to have interests more in tune with current technology. As far as they are concerned, Morse code is a relic from the past. They are into computer and satellite communications.

From the above you might think that I am an old, old timer, but I'm 53. Most of the advances in electronics have taken place within the last 10 or 20 years—within our lifetimes. Consumer-priced microprocessors weren't available 10 years ago.

My first computer (a \$600, 4K Model-1, caps only, and a \$50 cassette recorder for storage) was introduced by Radio Shack and purchased new as a toy in 1977. Today, I publish from the top of a small table using relatively inexpensive (although very sophisticated) software and hardware. Reasonably priced laser printers were not available even two years ago.

Today electronics has gotten so complex that few of us have the know-how to repair our microprocessor-based equipment, let alone build it. No longer can you smell out a burned out-tube or resistor. Today those who design, construct, or repair amateur gear almost always are—or were—professionals in some electronic field. One can only wonder what the future holds for us during the next 10 or 20 years. Tomorrow we will look back on today as we look back on yesterday, with awe and amazement. What will it bring. One thing for sure. It will be mind boggling.

### Morse Code Acts as a Filter

Our two most famous ham astronauts, Owen Garriott, W5LFL, and Tony England, W0ORE, hold doctorate degrees in electrical engineering. Owen has publicly credited amateur radio with getting him started early toward a high-tech career. Tony told me himself that he didn't think it was good for our nation to have its amateur radio program based on the

National Volunteer Examiner Coordinator,  
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Morse code. Both hold Advanced class licenses, and both needed code waivers (which the FCC claims they don't give) in order to operate amateur radio from space. (See §Part 97.407.) Tony is an acknowledged world-class radio-wave propagation expert, but his 20 WPM deficiency makes him less of an amateur than a code-proficient applicant who memorized the question pools. It doesn't make sense to me.

Don't get me wrong. I don't dislike the code. In fact, most of my HF work over my amateur radio career has been via Morse. I hold DXCC CW mode only. But I have a problem with our hobby being based solely on a mode that is totally archaic by today's communications standards. If we need a licensing basis to build on, let's make it packet, satellite, or computer technology. That's where the action is. Why learn horseback riding when you will fly a plane?

### Amateur Testing of Today

I volunteered to become a national VEC in 1984 when it appeared that license testing opportunities would be in demand. No one appeared willing to assist the government on a wide-scale basis so we said we would do it. Today the W5YI-VEC program conducts about one-third of all amateur radio operator license examination sessions held in the United States. It has been an eye-opener!

The truth of the matter is that practically no applicant these days wants to operate in the CW mode. If you don't believe it, just appear at some local testing session and do your own survey! They want to chat on VHF or HF, participate in emergency communications, and operate packet radio and computers. Amateur radio is controlled by the long-term amateur, so force-feeding code continues. The FCC has little funds (or the inclination) to resist even though every study they have ever done points to a needed change.

The greatest impact that "enhancement" has had on amateur growth is not in adding more Novices to the hobby but in making it easier for applicants to gain access to VHF. Today, after nearly two years of Novice Enhancement experience, we find no increase in Novices, but 20% more Technicians than in 1986. This is caused by the splitting of the old 50-question Technician examination into two elements, only one of which is required for the Technician class. Clearly newcomers are interested in VHF access.

I see a close parallel between the loss of 11 meters and 220-222 MHz. Both were shared bands, both were reallocated to business interests since it was perceived by the regulators that the frequencies could be better used by others. Of the 128.7 MHz of spectrum the Amateur Service utilizes between 50 MHz and 24 GHz, only a scant 8 MHz cannot be reallocated—at least not until the early 1990s, when the next general World Administrative Radio Conference takes place. Since radio waves do not respect international borders, it is at these WARC's that the nations of the world decide on how the radio spectrum will be used.

### Morse Code Signs Off at Sea

The ITU nations agreed to reduce the Morse code requirement for amateur operation above 30 MHz during the last World Administrative Radio Conference held in 1979. It is entirely possible that the code prerequisite could be totally abolished as an international re-

quirement for any Amateur Radio Service operation after the next WARC now scheduled for the early 1990s. The last Morse code stronghold, the Maritime Radio Service, recently abolished all Morse code capability as an international requirement for ships at sea. This happened in November when it was decided during the two week conference of the International Maritime Organization that it would implement the satellite-based Global Maritime Distress and Safety System, an automatic high-technology marine emergency plan.

The IMO represents 66 countries and 97% of the world's ships on the high seas. While admittedly romantic, the gallant radio operator sending off Morse distress calls as the ship sinks has become a thing of the past. Ships will also be required to carry a radio beacon which floats free to give a vessel's position to orbiting navigation satellites. While many of us are sad to learn of the demise of the maritime radio officer, it was inevitable.

The bottom line is that it is also time to go on to high-tech amateur radio. Amateur radio is the only internationally recognized electronic hobby and its entry requirements must be updated to reflect the technology changes that are taking place.

The 6 meter and 2 meter bands are the only VHF/UHF bands that are ITU allocated worldwide as "amateur exclusive." All other amateur spectrum above 220 MHz is shared with other services. These are all prime satellite, repeater, and short-range communications frequencies, and you can be certain that well-funded invasions of our real estate will continue.

Without a doubt, the most valuable resource the Amateur Service has is its spectrum. Some of our bands are used so little that they must be seen as "virgin territory." Retaining them in the face of a frequency grab will be difficult, particularly in view of our regulatory system, which caters to back-slapping lobbyists. When the chips are down, who do you think will win in a spectrum attack, amateurs or professionals?

### FCC Viewpoint: Amateur Radio Service

Back in 1981 the FCC's Office of Plans and Policy published OPP Working Paper No. 6 entitled "Deregulating Amateur Radio." It was authored by Alex D. Felker, N4LF (an electronics engineer and now a highly placed FCC Washington, D.C. bureau chief) and James A. Brown, Jr., W5DRP, a Ph.D FCC economist. They concluded that an analysis should be made to determine what motivates individuals to be more technically oriented. "The amateur service would probably be enhanced by an influx of computer hobbyists—individuals who have both the knowledge and desire to utilize the amateur bands for technically innovative communications, but who have no requirement to utilize Morse code."

In 1986 James E. McNally, Jr., WB3APV, FCC Senior Electronic Engineer, made the following observation in OPP Working Paper No. 20 entitled "Alternatives for Improved Personal Communications." "While some amateurs may view a minimal growth rate with satisfaction (since it tends to limit the amount of congestion), the potential effects of a relative decline in the number of amateurs relative to the overall population may be cause for concern over whether the public welfare is thereby being disserved, since amateur radio operators represent a significant public service and disaster relief communications capability."

McNally said that "... not all communica-

tions in the Amateur Radio Service must pertain to personal development. Recreational communications are permissible, as are many communications relating to matters of personal expediency and public welfare. The Commission's mandate to allocate frequencies in the public interest requires periodic re-examination of amateur radio regulations and policies to determine whether they continue to serve the public interest."

"The examination elements for each license class should be reviewed to ensure that required skills correlate with operating privileges. There have been many complaints over the years that Morse code proficiency requirements have constituted an unnecessary and artificial impediment to fuller use of the Amateur Radio Service. Many have questioned why a potential amateur with vast knowledge in the electronics field should be excluded from the service due to personal disinterest in the Morse code. . . . Any unnecessary requirements that may constitute a barrier to entry [in the Amateur Radio Service] should be eliminated."

The FCC has never been opposed to a beginning codeless amateur class for VHF and higher operation. The opposition has come from the organized efforts of long-licensed and in my view short-sighted, amateurs.

### "No Code" Comes To Canada

About three years ago, noting that most nations offer a "no-code" amateur license permitting VHF and higher frequency operation, the Canadian government offered for public comment a licensing structure that provided for entry-level testing in regulations, procedures, and basic theory, but without a requirement for Morse code. This past September, Communications Canada, their telecommunications regulatory agency, said they were indeed implementing the new amateur licensing structure.

It is expected that this summer entry-level Canadian amateurs will be granted access to all amateur bands (all modes and emissions) above 30 MHz using commercially available transmitters. Applicants who pass a 5 word-per-minute telegraphy examination will be given certain HF privileges.

### Letter Sent To Amateurs, Groups, and Industry

Ray Kowalski was an FCC official in the Private Radio Bureau for nearly two decades. He now is in private communications law practice in Washington, D.C. We wrote to him some time ago seeking information on what he thought it would take to get the requirements changed for entry into the Amateur Radio Service at the VHF and higher frequency level to reflect current technology and operation. He wrote us a four-page letter.

We sent his response to various prominent amateur operators, amateur and other hobby radio groups, and members of the amateur radio industry along with a cover letter to ascertain whether it was felt the time was appropriate to consider wider use of our valuable frequencies. "We are certainly not suggesting amateur radio without rules, without training, or without examinations. The testing function will control growth," I wrote.

I said, "I believe our nation, as well as our hobby, would benefit if we had more participation—particularly by our nation's youth—in



the world's greatest educational pastime." I asked for the views of the recipient, and whether they would lend their organizational and financial support to an all-out professionally orchestrated effort for a codeless entry-level license.

The reaction was immediate. We received many phone calls and letters. All but three felt a no-code beginning VHF/UHF amateur class had merit. We also received pledges of financial support.

One of the positive responses came from Don Stoner, W6TNS, of Mercer Island, Washington, who said he would assist in setting up an organization that would support expansion of the Amateur Radio Service at the entry level. Both Don Stoner and myself have submitted proposals to the FCC before. Ray Kowalski has been retained to assist us with the petition which will be filed on behalf of a coalition of concerned amateurs, people who might become amateurs, publishers, and members of industry.

The American Radio Relay League is an organization whose members are primarily long licensed amateurs, many of whom are opposed to amateur radio expansion, who fear congestion and uncontrolled growth. The National Amateur Radio Association has been chartered in the State of Washington and has applied to the IRS for tax exempt-status as a non-profit educational/scientific organization with myself as its Executive Director.

NARA will not compete with the ARRL. Its sole objectives will be amateur radio growth and publicizing the service to the public—particularly young people. We will continue this endeavor without regard to the outcome of a petition which will seek to update amateur radio entry requirements to include those individuals who would otherwise make good amateur candidates, but who have no interest in telegraphy. Our long-range goal is to achieve amateur radio growth equal to that of the 1970s and to bring the average age of an amateur down into the 30s.

All contributions received will be used solely for the legal effort to expand the number of licensed amateur radio operators. It is the belief of our attorney that all contributions will be tax deductible once tax-exempt status has been granted, which should be shortly. Checks should be made out to NARA Legal Fund and sent to P.O. Box 19111, Washington, D.C. 20036.

On December 2, 1988 Ray Kowalski made a formal presentation to the FCC Bureau on our behalf. He filed the following report on his presentation to Ralph Haller, N4RH, Chief of the Private Radio Bureau with us afterward.

**The Objective:** Growth of the Amateur Radio Service as a number one priority for the next decade.

**The Premise:** That the population of Amateur Radio licensees has not grown significantly, despite measures such as convenience of examination opportunities and voice privileges for entry level licensees.

**Argument:** That unless the Amateur Radio service attracts new licensees from all walks of life, but especially the young, the Service will shrivel to a mere remnant of its present scope in the face of continuing pressure for spectrum from all sides.

**The Evidence:** General Docket 87-14, the loss of operating privileges in 2 MHz of the 220-225 MHz band.

**Proposal:** To amend §Part 97 of the Com-



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mission's rules to create an operator license structure, modeled after that which has been developed in Canada, which is more in tune with the modern use of manufactured equipment to transmit an unlimited variety of telecommunication modes.

**Constraints:** That no presently licensed U.S. amateur should lose operating privileges and that new licensees should be integrated into the mainstream, to preserve courtesy and good operating practices.

**Observation:** The present license structure is exactly the reverse of what it should be. Instead of drawing in vast numbers of technically inclined enthusiasts and letting them follow their interests to those aspects of amateur radio that most attract them, the Service forces prospective licensees through the tiniest of filters and only then offers them the vast opportunities to be found in the Service.

**Payoff:** A rekindling of interest in technical education and careers as well as personal fulfillment in amateur radio.

### We Need Your Help!

Our activities seeking to realign the Amateur Radio Service have drawn much publicity. Our plans are to file a petition which has the Canadian Amateur Service restructuring as its basis. Frankly, we hesitate to call it a no-code proposal, since this has the implica-

Return To:  
National Amateur Radio Association  
P.O. Box 19111, Washington, D.C. 20036

Yes, I agree we need to bring the Amateur Radio entry requirements more in line with today's technology and operations. Count me in as a co-sponsor of the petition which will seek to require a written, but not a Morse code, examination for VHF and higher frequency amateur operation.

Signed: \_\_\_\_\_ Call Sign: \_\_\_\_\_

Print Name: \_\_\_\_\_

Address: \_\_\_\_\_

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tion of completely discontinuing the Morse code requirement. Our petition will not suggest abandoning the Morse code prerequisite for HF operation below 30 MHz. In fact, we do not anticipate that the General through Extra class requirements and privileges will be affected in any way.

There will be a written examination required to attain access to VHF and higher frequency amateur operation, but not a code examination. This examination will involve regulations, procedures, operation of VHF and higher frequency equipment, and some electronic theory.

Our belief is that we will once again see school amateur stations and our youth participating in amateur radio. At the very least, every school should have a packet station! Our primary objective is to see a revitalization of the Amateur Radio Service with its many side benefits, not the least of which is the eventual development of more engineers and technicians in the United States and the solidifying of the amateur's claim to our share of the spectrum.

Do you agree with the concept? If so, we wish to identify and document your support. Please complete and return the accompanying coupon to us so that we may show you as a co-sponsor of the petition that we plan to file with the FCC in early 1989. Better still, drop us a letter.



## A LOOK AT THE SHACK FROM BOTH ENDS OF THE COAX

### Reader Forum—Part II

**T**his month, still finding that our mailbox overfloweth, we'll again devote much of the column to a reader forum. We'll focus, in particular, on some technical aspects and user comments relating to the G5RV and the compact Bilal Isotron antennas. First, let's look at the G5RV.

#### Reader Forum

*G5RV: Update and Comment.* We've run descriptions and reader reports on the ever-popular G5RV multiband antenna in several past columns, notably in the June 1988 column. Almost without exception, reader response to this type of antenna—in terms of simplicity of construction, ease of tuneup and loading, and all-around performance—has been good. This is especially the case in the "clean" version, shown in fig. 1, which uses direct openwire or ladderline feed, rather than making use of a matching section, balun, and coaxial feedline.

However, our emphasis on this antenna's good features may have led some amateurs to think of the antenna as a very special design that can't be approached by any other dipole-like multibander. In particular, the view apparently is held by some readers that the 102 foot antenna results in a 1:1 SWR on all bands, even without using an antenna tuner.

Well, 'tain't so. While there is some significance to the G5RV's 102 foot length, at heart the antenna is really just a shortened dipole (on the lowest band, 75/80 meters, anyway), one that is fed with openwire or ladderline via a transmatch. This generic type of easy-to-use, no-frills multiband antenna has been with us for longer than almost any one of us has been a radio amateur.

Bob Eldridge, VE7BS, who offered some comments regarding his use of the T2FD antenna in last month's column, also had a few things to say about the G5RV:

"Don't forget that Louis Varney preferred openwire all the way in his original article, and devoted part of the article to the design of an antenna matching unit to go with it. He also did not claim it would match reasonably on all bands with a 33 foot length of ladderline and a length of coax . . . But somehow the story has developed that it will.

"However, I was not happy with his suggestion that it should be used as a top-loaded vertical on 160. I added 68 feet to each end, making the flattop 238 feet long, and it worked fine on 160 with the apex at 100 feet. For me 80 now became the difficult band to match, but it matched easily on all the other bands."

Bob adds that the "RSGB Bulletin" has run correspondence symposiums on the G5RV with many interesting comments popping up, much like the reader comments we've run,

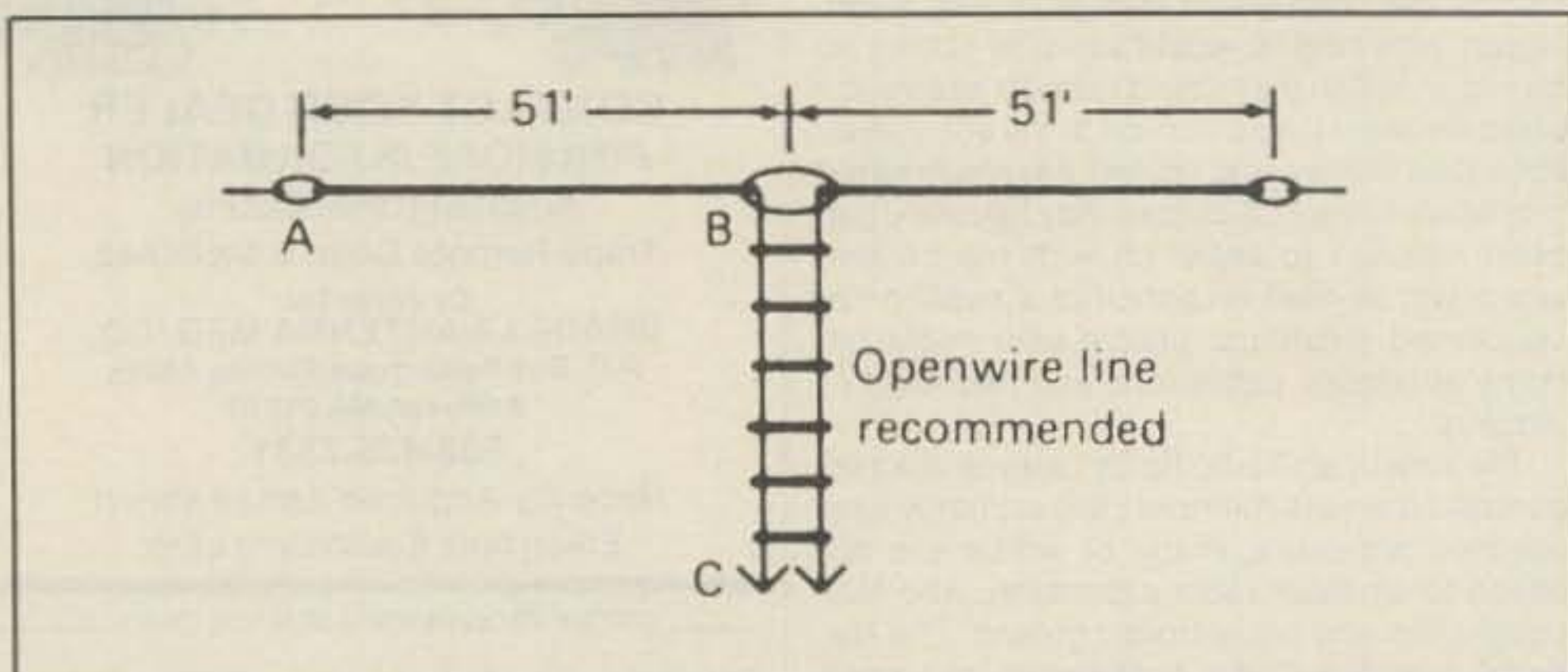


Fig. 1—Shown here is the basic, no-frills G5RV multiband antenna popularized by Louis Varney, G5RV. The 102 foot flattop is easily fed directly by openwire line or ladderline.

which typically consider impedance matching, balun, antenna current, and coax feed problems.

Where does all this leave us on the G5RV? In consulting with noted antenna authority and ARRL Technical Associate Walt Maxwell, W2DU, some very interesting points emerge about the G5RV's 102 foot flattop length and its theory of operation.

Walt's own involvement with the G5RV dates back to the early 1970s, when he and other amateur antenna experimenters and developers (including CQ's own technical representative Lew McCoy, W1ICP, then at the ARRL) were promoting the use of antenna tuners with openwire feedline with random-length flattops as a good method of achieving satisfactory all-band operation. Walt advises that the significance of the 102 foot length isn't well known, but there's no secret to it—and except for some 20 meter considerations, any random length of at least  $\frac{1}{4}$  wavelength at the lowest operating frequency will do. Writes Walt:

"Louis Varney, G5RV, designed the antenna to be a resonant three half-wavelengths on 20 meters; that length is 102 feet. He had two specific reasons for selecting three half-wavelengths on 20 [which goals he stated in the first edition of the *ARRL Antenna Compendium*]: he wanted a four-lobe radiation pattern and a low feedpoint impedance. The three half-wavelength was a clever choice. It is unique in that this length yields a four-lobe pattern with his desired low feedpoint impedance that can be line-transformer-matched to a 50 ohm line without requiring an antenna tuner. As Varney also intended, this 102 foot length is strictly a random length on all other bands, so except for the 20 meter considerations . . . there is no magic whatever to this length."

What about impedance matching? On 20 meters the antenna's input impedance is low because the feedpoint is at the center of the central half-wave portion. Adds Walt: "At mid-

band resonance the free-space feedpoint impedance is approximately  $100 + j0$  ohms, which reduces to around  $90 + j0$  ohms at a convenient spot above ground. This results in a mismatch of about 1.8:1 relative to 50 ohms. Varney's choice of the 34 foot matching section is a half-wavelength on 20 meters, making a 1:1 impedance-matching transformer that repeats the  $90 + j0$  antenna impedance at its antenna terminals.

"With a suitable choke balun to make a transition from a balanced to an unbalanced line, the low 1.8:1 mismatch makes connecting to a 50 ohm line feasible without requiring an antenna tuner. The SWR on a matching section of 300 ohms is around 3.3:1, while on a 450 ohm line it is about 5:1. On all other bands the antenna impedance is higher and reactive, making an antenna tuner necessary."

Walt also points out something about the lack of any magic to the so-called half-size G5RV, unless one wants to form a  $\frac{1}{2}$ -wavelength radiator on 10 meters: "Generally speaking, cutting the half-wavelength to precisely 25' 6" is ludicrous. For harmonic operation on 40, 20, 15, and 10 meters, a 33 foot half-length [66 feet overall] will yield better results from the viewpoint of matching, because the SWR on the openwire feedline will be lower, due to lower reactance in the antenna terminal impedance."

A great deal has been written regarding feedline lengths for the G5RV and other multiband antennas. Does it really matter? Walt takes the position that, as a rule, we are really free to use any convenient length between the antenna and the tuner, as long as the tuner has sufficient impedance matching range. In fact, cutting feeders to some specific lengths with the intention of avoiding feeder resonance to prevent "antenna currents" on the line isn't necessary, since transmission-line currents are caused by *other* factors: either by asymmetrical positioning of the feedline relative to



the antenna, or by unbalance in the antenna itself, or because of proximity to surrounding objects.

While some people are concerned with line lengths and may find that varying the line lengths does result in better and easier loading for them in their particular situation, the results obtained are probably coincidental, and are actually unrelated to antenna current on the feedline.

Walt adds that although we can use any feedline length we want to with the G5RV, the exception is on 20 meters: If we don't use an antenna tuner on that band, the feedline must be a multiple of a half-wavelength to obtain a "low" input impedance. According to Walt, the line may be trimmed to accommodate matching with a tuner of limited range, but it shouldn't be trimmed to avoid so-called "line resonances." Also, in the G5RV variation that uses a short length of openwire or ladder line connecting to coax, either directly or via a balun, Walt cautions that "there is also no reasonable justification for the 'requirement' of 68 feet of coax following the openwire line. The electrical length of 68 feet of coax having a 0.66 velocity factor is 103 feet, which doesn't appear to be relevant. However, an excellent way to develop [unwanted] antenna current on the outside of the coax is to connect it directly to the openwire line without a balun."

Amen. This latter type of G5RV installation has, indeed, caused endless, difficult matching problems among users, and unfortunately this design variation is featured in some of the commercial G5RV kits that are sold in the amateur marketplace.

We thank Walt for his personal observations and comments regarding the G5RV, and wish that space would allow us to print his very detailed technical explanation of how antenna currents are developed.

**Isotron Report.** Also in last June's issue we took note of the compact Bilal Isotron HF antennas, noting with some skepticism that we

had not tried the Isotrons ourselves but were interested in comments from space-constrained readers who had used them.

Well, we received a response from John J. Parrish, Jr., DA2AL/KE8RZ, an American servicemember who lives in an apartment in downtown Wiesbaden, West Germany. He thinks that the Isotrons are really slick for the situation in which he finds himself. We'll pass along John's comments for whatever they're worth to someone with severe antenna space problems:

"Our landlord was not very keen on [my] erecting 130 feet of antenna or putting up a beam. I was getting desperate. The local Air Force MARS meets on 75 meters and I couldn't get into the nets! I was skeptical about shelling out \$80 for an antenna that looks like a bird feeder, but I had to get on the MARS nets."

John advises that the materials used in the antenna are of high quality and well-designed. The antenna is made of stainless steel metal and hardware, PVC, and acrylic. The directions are fairly easy to follow, and setup for operation is straightforward. But tuning the antenna is "something to behold: depending upon which part of the band you want to operate, you add capacitive 'tuning elements' to the antenna and rotate them until you get the lowest SWR."

John advises of the problems of his particular installation in his top-floor apartment: "My antenna is mounted in the attic. This should have proven to be a real challenge, since there is a metal catwalk along the entire roofline, for chimneysweeps."

Upon initial 75/80 meter setup, "The SWR meter indicated 2:1. The directions indicated that a lower reading could be obtained by rotating the tuning element. I rotated it about 35 degrees . . . resulting in a 1:1 SWR reading. I called CQ and a station on the west coast of Britain gave me a 58 report. I told him I was running 100 watts with an attic-mounted an-

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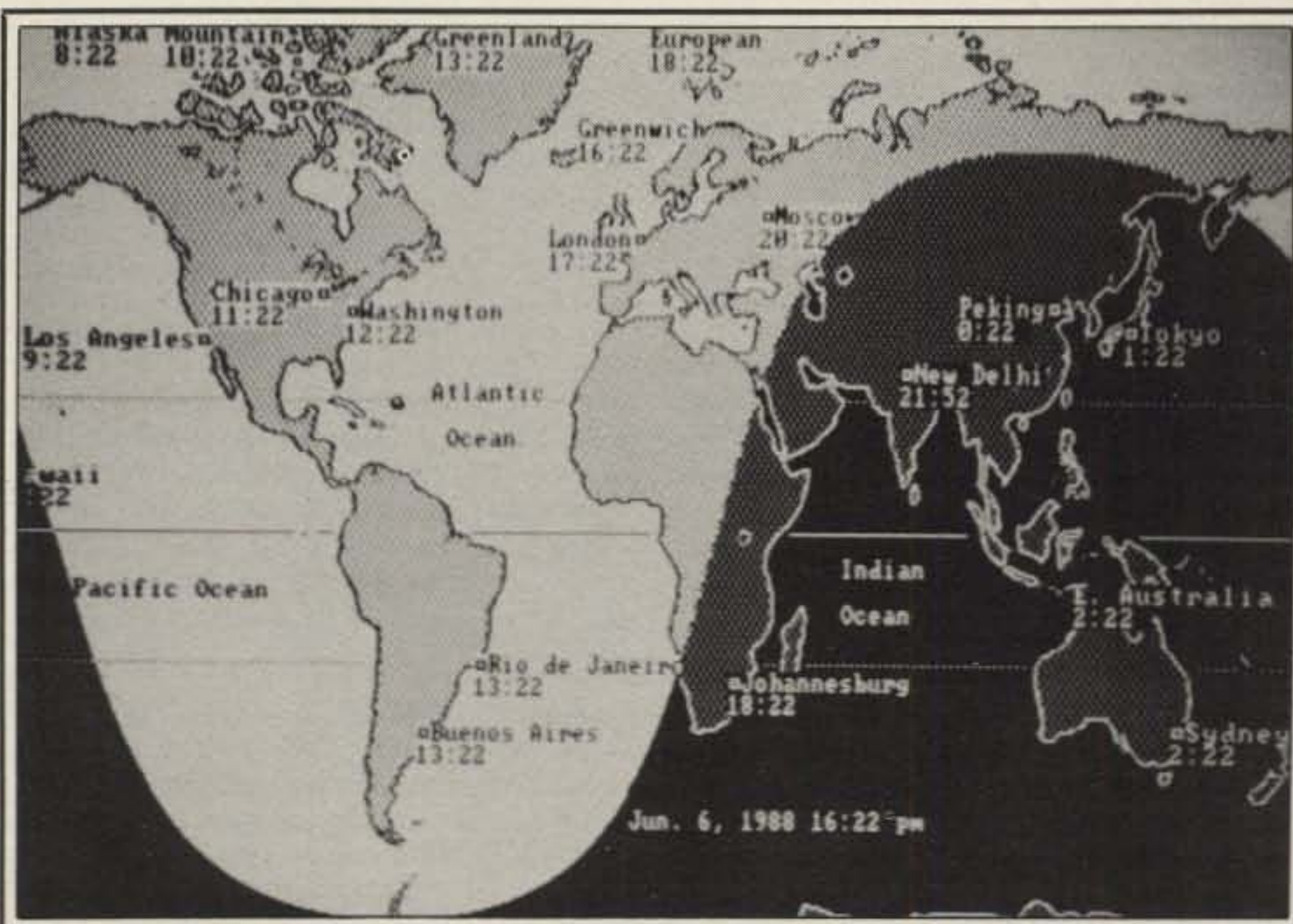
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The MFJ-1286 Gray Line DX Advantage is a computerized DXing tool that helps predict DX propagation with an accurate display of the gray line as a moving area of day and night that changes with time. A typical screen display is shown here. (Photo courtesy MFJ)



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We won't go over all of the MFJ-1286 program's features, since CQ's Pete O'Dell, WB2D, did a hands-on review in last July's issue (p. 60). Rather, we'll just synopsise some of the program's major features. Check out Pete's review for all of the details.

The MFJ program, which is designed for the IBM-PC world, works with several display adapters, including the Hercules, CGA, and EGA cards. The program presents a detailed world map on your computer's monitor screen. It shows the moving gray line (the day/night divider) and the position of the sun over the earth. Once started, the detailed world map tracks the movement of the earth, with the night portion being shaded, showing the gray-line and sun positions' change over time. The program can be customized to display any 24 locations on the globe and the correct 12- or 24-hour time at each location.

By switching to the high-speed display mode, you can set any date and time and watch solar and gray-line positions change in increments of 2 minutes, 6 minutes, 1 hour, 1 day, or 1 week. Toggles let you display (or not display, if you so choose) the local date and time, the time-zone display, the city display, and the sun position marker.

The MFJ program also offers you a choice of three maps: the default land-mass map; the time-zone map that displays the divisions of time zones throughout the world; and the latitude and longitude marker map. You can easily toggle between map displays.

The MFJ-1286 Gray Line DX Advantage is \$29.95 from MFJ Enterprises, Inc., P.O. Box 494, Mississippi State, MS 39762. It's also available at a slightly higher price from the original Terminator software publisher, Tridos Software, 4004 S.W. Barbur Blvd., Portland, OR 97201.

**QRZ Contest!** Chris Bay, N8GYE, and Terry Price, WD8ISK, have come up with a very specialized type of contest program. This one is designed especially with VHF and UHF contesting in mind, including the January Sweepstakes, June and September QSO Parties, Spring Sprints, WPX Prefix Contest, and the UHF Contest.

Some of the major features of QRZ Contest! include menu-driven operation; user-configurable color and setup options; online ability to view grids worked, sorted by band; display of all QSOs for a particular call (for tracking "rovers"); flexible multi-operator capabilities; ability to handle up to 4000 contacts with 512K computer memory; full dupe-checking of call-sign and extension; both an online "quick editor" and a comprehensive offline editing and utility program for post-contest reviews; and a log print feature.

Other features include manual time entry; optional ability to log each contact to printer; display of the number of contacts made on each band; and inclusion of the 70 cm European band. An HF version is promised and may be available as you read this. Fig. 2 shows the program's main menu.

QRZ Contest! requires an IBM-PC or compatible; an MDA, CGA, or EGA display card; at least one floppy drive; 256K of RAM memory; and a printer. The program is priced at \$39.95 postpaid, including the user's manual. A demo version is available for \$5.00; the price of the demo is refundable if the full program is purchased.

For more details, contact N8GYE at ATFAB Computers and Electronics, P.O. Box 4766, Maineville, OH 45039-4766.

#### Main Menu

- B -- Begin Contest Call Entry
- S -- Setup Program defaults
- E -- Call QRZED Program
- M -- Memory use statistics
- P -- Print Log File
- V -- Program Version
- X -- eXit Program
- F1 -- Help

Contest Type: VHF Jan. Sweepstakes

Fig. 2- Depicted here is the main menu from ATFAB's unique VHF/UHF contesting program for the IBM-PC. The menu-driven, user-friendly program covers a wide variety of VHF- and UHF-oriented contests with their special requirements. An HF version is promised.

**TAKE CHARGE!** Okay, I'll admit it: I'm a junkie for computer utility programs—those handy little gems that are supposed to take the drudgery out of day-to-day computer operations by the amazing DOS shortcuts they provide. I'm also always looking for "the ultimate" in DOS snells and comprehensive desktop organizers. I may have found all this and more in an unusually complete program known as TAKE CHARGE!

The program is a novel, integrated pop-up utility that offers you a broad selection of program tools ranging from desktop accessories, to file and directory services, to computer diagnostics. Though at heart it's a desktop utility that will certainly give Borland's Sidekick and Lotus' Metro a run for their money, it's actually much more than a simple desktop add-on. TAKE CHARGE! also includes a first class file manager and DOS shell with all the major bells and whistles; an automatic cardfile system with autodialer; a text editor that can handle up to 10 files at once; an ASCII table; an alarm clock and reminder utility; several different types of calculators; printer redirection to disk; a notepad; a cut-and-paste capability; a built-in communications terminal; disk diagnostics; a disk optimizer; and a security keyboard lock.

Other features offered include DOS command line and hex editors; a disk directory editor; a fast file locator; simplified "point-and-shoot" operation; keyboard speedup; a number of flexible and powerful programming tools; a stopwatch; an optional date and time display; and a flexible menu-creation system.

The latter feature is particularly nice for non-technically inclined users, who can easily set up custom, point-and-shoot menus of their most-used programs and display up to 26 selections on one screen, with an unlimited number of programs and menus nested inside. You can select a program by a single letter or point-and-shoot directly from the menu; the menu automatically reappears when you finish using the selected application program.

All these features are beautifully integrated and executed in TAKE CHARGE!, and most of the features are available from *within* your applications programs at the stroke of a "hot key" that you choose yourself. But what's really unique about the program is that it occupies much less online memory than other comparable "terminate and stay resident" (TSR) programs. In fact, it does its thing with only about 20K of RAM being required, by shuffling its more than 30 separate modules in and out of memory as they are needed.

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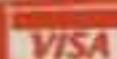
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There is some penalty for this saving in on-line memory in terms of costing more in storage space. As a practical matter, you almost have to use the program with a hard disk since all of the program's modules require about 600K of disk space, and there are some momentary delays as modules are "swapped out." These delays would probably become objectionable if a hard disk were not used and you were limited to floppies.

TAKE CHARGE! aims squarely at eliminating the need for a long list of desktops and other disk and file utilities, such as Sidekick, The Norton Utilities, PC Tools, Disk Optimizer, and the like. It probably comes closer to actually *doing* this than any competing program I've seen, and its smooth integration eliminates the need for you to buy a software package from each utility category and "put them together" yourself. In reviewing TAKE CHARGE!, the fact struck me that it's nice to find a program that delivers everything it promises, especially when its "do list" is so long.

While it's true that some of the high-priced specialized utilities may offer a few features not offered by TAKE CHARGE! for certain applications, I've found that I usually just load TAKE CHARGE! as my only memory resident utility, calling it up automatically in my AUTO-EXEC.BAT file. Since the program needs only about 20K to run, no longer do I worry about what combinations of memory-resident programs I can load before I bump up against my PC's 512K memory limit or crash with a memory space conflict.

About the only "negative" I've found to complain about is the price. At \$139.95 it's a little steep for some of us—though considering the unusually broad range of features it offers, the old truism that "you get what you pay for" certainly applies here in a positive sense. For more details on the TAKE CHARGE! package, contact Departmental Technologies, Inc., P.O. Box 645, Andover, NJ 07821.

**KeyNotes Writer's Handbook and AP Stylebook.** These programs, which I'll cover together due to their closely related purposes, are really wordprocessing utilities. As a writer and editor, I have come to appreciate the value of such programs as thesauruses, spelling checkers, grammar and writing analyzers, and online style aids. Admittedly, most amateurs probably have little need for such programs, though any amateur who does any degree of writing—especially business-oriented writing—can greatly benefit from using them. These programs should be especially useful to the many amateurs out there who are cranking out software programs for the rest of us to buy and use, and who "can use a little help from a friend" when it comes to wrestling with the English language in producing their programs' user's manuals and other documentation.

The KeyNotes Writer's Handbook is a slick little memory-resident utility for IBM PCs and compatibles. While it can be used with almost any application program, the Handbook is especially designed to be used in tandem with a wordprocessor. It offers a wide range of handy and useful reference information on grammar and usage rules, capitalization, punctuation, "nyms" (synonyms, homonyms, and antonyms), common abbreviations and rules, forms for correspondence, and a small dictionary of commonly misspelled words. The program also has a built-in mini-almanac, calendars showing dates and holidays, and sections that translate foreign phrases and computerese.

The companion program to the Writer's Handbook is the Associated Press Stylebook, the second in the series of writer's reference tools. While the former is a general-purpose writer's tool, the Stylebook constitutes an exhaustive list of particular style and usage points that's suitable for professional-level writers. It is the 1980s-style computer conversion of the authoritative *Associated Press Stylebook*, which has helped more than 700,000 writers struggling to "write right" since it was first published in 1953.

Also a pop-up utility waiting in the background while you're using another application, the Stylebook is about the closest you can come to a "journalistic Bible." It gives you instant access to numerous canons of grammar, style, and punctuation, along with special guides to business, computer, and sports terms and style. While it's true that a stylebook may not be something that you might use often, for those tricky style questions that come up while editing, it's nice to have a guidebook online to avoid breaking stride by having to search out a printed book. At least, that's the way I see it.

Both products require less than 35K of RAM when in operation, so they'll run comfortably on any DOS-based system with at least 128K memory. Each requires MS-DOS or PC-DOS 2.0 or higher. The Writer's Handbook is priced at \$39.95, and the AP Stylebook is \$59.95. A third program, KeyNotes Reference System, which we reviewed in our January 1988 column, is \$99.95; it's a product that allows one to create custom help and information files, or to customize the information contained in the two "handbook programs" we just described.

Contact Digital Learning Systems, 4 Century Drive, Parsippany, NJ 07054 for more information.

### Short Bursts

**C.A.T.S. Repair Update.** In last September's issue we took note of Craig Henderson, N8DJB's rotor parts and repair service, in which he reconditions large and small American-made rotors. We noted that his repair labor charge was \$10 and rebuilds were priced at \$25. Craig wrote to advise that he's had to increase his prices somewhat: basic repair service labor is \$15 excluding parts, complete reconditioning is \$35, and there's a schedule of rates for exchange of smaller rotors that ranges from \$20 to \$50. Craig also offers completely rebuilt rotors and can supply a variety of obsolete and hard-to-find parts.

For additional information and a repair price list, write to Craig Henderson, N8DJB, at C.A.T.S., 7368 S. R. 105, Pemberville, OH 43450.

### Wrapping It Up

That's about all there is for this month, gang. Next month, more Antennas & Accessories topics of current interest. See you then.

*Overheard:* Remember the six stages of a project? They are, of course:

1. Unbounded enthusiasm, followed by . . .
  2. Total disillusionment, resulting in . . .
  3. Complete panic, in turn followed by . . .
  4. A frantic search for the guilty, which results in . . .
  5. Punishment of the innocent, and ultimately . . .
  6. Promotion of the uninvolved.
- Sound familiar?

73, Karl, W8FX



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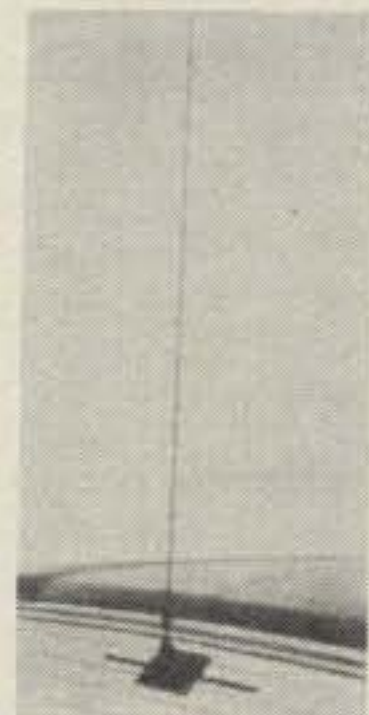
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# Contest Calendar

a monthly feature by  
FRANK ANZALONE, W1WY

## NEWS/VIEWS OF ON-THE-AIR COMPETITION

In his December 1988 Zero Bias editorial Alan, K2EEK, indicated that we were working on details of awarding additional plaques in our 160 Meter Contest. Alan and Bernie, W8IMZ, came up with the idea during the Dayton Hamvention last April. It was conceded that the East Coast has the advantage in making a winning score to receive the U.S. Plaque. (However, in last year's SSB section of the contest WB9HAD proved that it can be done from the Midwest.)

To equalize the participation and give each of the three areas in the U.S. a shot at a plaque, we came up with the following plan. CQ Zones 3, 4, and 5 in the U.S. will be the boundaries for this award. A plaque will be awarded to the single operator station making the winning score in each of the three areas, both on CW and SSB. This should give incentive to put in an extra effort and go for the "big prize." Stations on the West Coast will now have something to shoot for. The two-year eligibility clause will also apply for this award, and in case a station is a U.S. or world winner, the plaque will go to the runner-up in that area.

Unfortunately, final details were not worked out in time to be included in this year's rules announcement, but the award will be made in this year's contest. It is rather short notice, but this issue should be in the hands of stateside subscribers before the CW weekend of January 27-29. This announcement will also be sent to the major U.S. bulletins and clubs.

This is an excellent opportunity for future sponsorship by clubs in the above areas. Applications can be sent to Don McClenon, N4IN, the 160 Contest Director, 3075 Florida Ave., Melbourne, FL 32904.

The usual reminder: deadline for announcements of May activities is February 15th, and March 15th for the June issue.

73 for this time, Frank, W1WY

### Vermont QSO Party

0001Z Sat. to 2400Z Sun., Feb. 4-5

This event is again being sponsored by the Central Vermont ARC. The same station may be worked three times per band—once each on phone, CW, and RTTY—for QSO points.

14 Sherwood Road, Stamford, CT 06905

### Calendar of Events

- \* Jan. 27-29 **CQ WW 160 M CW Contest**
- \* Jan. 28-29 French CW Contest
- \* Jan. 28-29 YL-ISSB CW QSO Party
- \* Jn.28 - Fb. 5 ARRL Novice Roundup
- \* Jan. 29-30 Classic Homebrew Exchange
- Feb. 4-5 Vermont QSO Party
- Feb. 4-6 New Hampshire QSO Party
- Feb. 5 North America CW Sprint
- Feb. 11-12 QCWA CW QSO Party
- Feb. 11-12 Dutch "PACC" Contest
- Feb. 11-13 YLRL YL/OM SSB Contest
- Feb. 12 North America SSB Sprint
- Feb. 18-19 ARRL DX CW Contest
- Feb. 24-26 CQ WW 160 M SSB Contest**
- \* Feb. 25-26 French SSB Contest
- Feb. 25-27 YLRL YL/OM CW Contest
- Mar. 4-5 ARRL DX SSB Contest
- Mar. 11-12 QCWA SSB QSO Party
- Mar. 12 M-QRP-C Classic Sprint
- Mar. 18 YLRL "East Meets West"
- Mar. 18-19 Bermuda Contest
- \* Mar. 18-19 YL-ISSB SSB QSO Party
- Mar. 18-20 BARTG Spring RTTY Contest
- Mar. 19-20 Wisconsin QSO Party
- Mar. 25-26 CQ WW WPX SSB Contest**
- Apr. 12-14 YLRL DX-YL to NA-YL CW
- Apr. 15-16 IBM QSO Party
- Apr. 19-21 YLRL DX-YL to NA-YL SSB
- Apr. 29-30 Swiss Helvetia Contest

\* Covered last month.

**Exchange:** RS(T) and QTH. County for VT; state, province, or DX country for others.

**Scoring:** One point per phone QSO; 2 points if on CW or RTTY. VT stations multiply total by (VT counties + states + VE provinces + DX countries) worked. All others use VT counties for their multiplier (maximum of 14). Work the club station W1BD and add 20 bonus points on each band to your score. VT counties: AN, BN, CA, CN, EX, FN, GI, LA, OG, OL, RU, WA, WM, WR.

**Frequencies:** Phone—25 kHz up from the beginning of the General phone bands. Novice—10 meter phone portion. And 50110, 144.2 (no repeaters). CW—3540, 3720, 7040, 7120, 14040, 21040, 21140, 28040. RTTY—3620 and 90 kHz from lower edge of other bands.

**Awards:** Certificates to the top-scoring station in each state, VE province, and DX country, and each Vermont station submitting a log. There is an annual plaque to the highest scoring Vermont station. Special certificates to the top-scoring stations on CW, RTTY, HF Packet, SSTV, etc.

The W/VT Award is available to sta-

tions working 13 of the 14 Vermont counties.

Official log forms and results are available by sending a large SASE to WA1PDN.

Mailing deadline for party entries is March 1st to: D. Loverin, WA1PDN, 50 Liberty Street, Montpelier, VT 05602.

### New Hampshire QSO Party

1900Z Sat. to 0700Z Sun., Feb. 4-5  
1400Z Sun. to 0200Z Mon., Feb. 5-6

The New Hampshire ARA is again sponsoring this year's party. The same station may be worked on each band and mode for QSO points, but the multiplier is counted once only. NH to NH contacts are permitted for QSO and multiplier credit.

**Exchange:** RS(T) and QTH. County for NH stations; state, VE province, or DX country for others.

**Scoring:** One point per phone QSO, 2 points per CW/RTTY, 5 points per Novice/Tech.

NH stations multiply total QSO points by number of NH counties, states, provinces, and DX countries worked (U.S., Canada, Alaska, and Hawaii not DX countries).

Others use NH counties for their multiplier (maximum of 10).

Add 20 bonus points to final score for each QSO with a NHARA member station: WB1CAG, N1BYQ, W1FN, WB1GXM, N2BD, W1GUA, W1WQM (maximum of 140).

**Frequencies:** CW—1810, 3535, 7035, 14035, 21035, 28035. Phone—1875, 3935, 7235, 14280, 21380, 28380, 50115, 144205 (no repeaters). Novice—3735, 7135, 21135, 28135, 28380.

**Awards:** Certificates to top scorers in each NH county, each state, province, and DX country (5 QSO minimum).

Mailing deadline for logs is March 10th to: Mount Moriah Repeater Society, c/o Bud Valcount, N1BYQ, 19 Teague Drive, Salem, NH 03079. Include a large SASE for a copy of the results.

Contest forms are available from KI1M, 10 Haverhill St., Hudson, NH 03051-4015. Include a large SASE.

### North American "Sprint"

CW: Feb. 5 SSB: Feb. 12  
Sunday 0000Z to 0359Z (Sat. night)

This is the spring edition of the "Sprint" run by the National Contest





Two prominent YU DX contesters. Left to right YU2AA, top man in the WPX Honor Roll, and YU2TW, also in the top group.

Journal. As the name implies, it's a shorty, only four hours long.

North Americans will be contacting other North American stations as well as stations in other countries, single operator only. North American boundaries are as defined by the rules used in the CQ WW DX Contest.

**Exchange:** Call, QSO no., name, and QTH (state, Canadian area, or country).

**Scoring:** Multiply total QSOs by the sum of states, Canadian areas, and other North American countries worked for your final score (U.S. and VE not countries; KH6 not a state). There are eight Canadian multipliers: VE1/VO1/VO2, VE2-VE7, VY1/VE8. Non-North American countries do not count as a multiplier.

**Frequencies:** Three bands only: 80, 40, and 20 meters. CW—3540, 7040, 14040.

SSB—3850, 7225, 14250. (Plus or minus QRM.)

**Awards:** A trophy to the highest scoring entrant. Certificates to the top scorer in each U.S. call area, Canada, and North American country. Also to the ten top scores, to each member of the winning team, and the highest scoring entrant on each team.

Team competition is limited to a maximum of 10 operators as a single unit. Pre-contest registration is required for each team before the start of the contest—with WN4KKN for the CW and K7GM for the SSB.

There are other detailed rules, a special QSY rule, disqualifying penalties, etc. I suggest you write to WN4KKN or K7GM if you do not have a copy of the *Contest Journal*.

Entries must be received no later than 30 days after the end of each "Sprint."

The CW go to: Trey Garlough, WN4KKN, 7609 Hardy Drive, Austin, TX 78757.

SSB go to: Rick Niswander, K7GM, 910 W. Claremont, Phoenix, AZ 85013.

### QCWA QSO Party

CW: Feb. 11-12 SSB: March 11-12  
0001Z Sat. to 2400Z Sun.

This is the 32nd annual QSO Party for the Quarter Century Wireless Association. It's a closed, fun party open to

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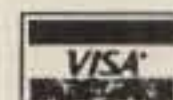
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QCWA members only to renew old friendships and meet new members. Rules are the same as those used last year and were given in detail in the QCWA News. Following is a brief summary.

CW and SSB are separate activities and require separate log entries. The same member may be contacted on each band for QSO points, but the chapter multiplier is counted once only. The "AL" multiplier can be used once for each state, province, and DX country worked.

**Exchange:** QSO number, name, chapter (name or number), and state. If no chapter affiliation use "at large," or "AL."

**Points:** One point for each QCWA member worked on each band.

**Multiplier:** Each new chapter and one AL contact for each state, province, or DX country worked.

**Score:** Total QSOs multiplied by the sum of the different chapters and AL multiplier (counted once only).

**Frequencies:** CW—3545, 7045, 14045, 21055, 28055. SSB—3915, 7245, 14295, 21365, 28615. Plus or minus 15 kHz. Also 160 meters and 6 and 2 meters simplex.

**Awards:** Both for CW and for SSB. Plaques to the top world-wide scorers. Certificates to the next four runnersup, and in each of the 6 continents.

Party QSOs can be applied for the many QCWA awards. Make your request on the summary sheet of your entry.

The standard QCWA log form has 20 contacts to the page. If you prepare your own, have columns for time in GMT, station worked, QSO number sent and received, name, chapter, state, band, RS(T) points, and multiplier.

Mailing deadline for both CW and SSB is March 27th. This year they both go to: Bob Bloor, W8LYD, 24338 Smith Ave., Westlake, OH 44145.

## Dutch "PACC" Contest

1200Z Sat. to 1200Z Sun., Feb. 11-12

It's the world working The Netherlands on all six bands, 1.8 through 29.7 MHz, in the band sections recommended for contest operation by the IARU. The same station may be worked on each band, but on one mode only, phone or CW, for QSO and multiplier credit.

**Categories:** Single operator, multi-operator, and SWL.

**Exchange:** RS(T) plus a QSO number starting with 001. Dutch stations will add two letters to identify their province. There are 12 provinces: DR, FR, GD, GR, LB, NB, NH, OV, UT, FL, ZH, and ZL.

**Scoring:** Each QSO with a PA/PB/PI station counts one point. DX stations determine their multiplier by the number of provinces worked on each band (maximum of 72).

**Final Score:** Total number of QSO's times the number of provinces worked on each band.

## Dutch "PACC" Contest 1988 North American Results

USA	W8VSK	300
<b>W1FJ</b>	<b>330</b>	W8BYTM 66
<b>K2LE</b>	<b>1026</b>	<b>K80C</b> 20
KA2PHQ	360	
KE2CG	163	Bahamas
<b>W3ARK</b>	<b>495</b>	<b>N4RP/C6A</b> 20
KZ3B	390	
<b>K4MF</b>	<b>1300</b>	Canada
WK4F	4	<b>VX3FGL</b> 2112

Certificate winners boldface.

**Awards:** Certificates to the top scoring station in each category in each country and call areas of JA, LU, PY, UA9/0, VE/VO, VK, W/K, ZL, and ZS. Also second- and third-place awards if returns justify.

SWL's must log the call of the Dutch station as well as the station being worked and both serial numbers. Scoring same as above. Indicate the multiplier in a separate column in your log only the first time it is worked on each band. Include a summary sheet showing the scoring, your name and address in block letters, and the usual signed declaration.

Mailing deadline is March 31st to: PACC Contest, Att: F. Th. Oosthoek, PA0INA, P.O. Box 499, 4600 AL Bergen op Zoom, The Netherlands.

## YL-OM Contest

SSB: Feb. 11-13 CW: Feb. 25-27  
1400Z Sat. to 0200Z Mon.

It's the YLs working the OMs in this annual activity organized by the YLRL. All bands may be used, but cross-band contacts or contacts with stations on net frequencies do not count.

Phone and CW are separate contests and require separate logs. The same station may be worked once on each band. Use only 24 hours out of the 36-hour contest period and indicate breaks in your log.

**Exchange:** QSO number, RS(T), and state, province, or country.

**Scoring:** Each QSO is worth 1 point. Multiply total by the number of US states, VE provinces, and DX countries worked.

There is also a power multiplier of 1.50 for stations running 100 watts or less on CW, and 200 watts PEP on SSB. Multiply your final score by the above factor if you qualify.

There is a penalty of three contacts for each duplicate contact removed from the log by the contest committee.

**Frequencies:** CW—3555, 7055, 14055, 21135, 28195. SSB—3955, 7255, 14265, 21395, 28395. Plus or minus 15 kHz.

**Awards:** First-place cups to both YL and OM winners in each contest; second- and



third-place winners will receive certificates. Top scorers in each US and VE call area and each DX country will also receive certificates, provided there are at least two logs from that area or country with a minimum of ten contacts.

All entries must be postmarked no later than March 15th. This year they go to: Carol Shrader, WI4K, 4744 Thoroughgood Dr., Virginia Beach, VA 23455.

### ARRL International DX Contest

CW: Feb. 18-19 Phone: March 4-5  
0000Z Saturday to 2400Z Sunday

Rules are the same as last year. However, I strongly recommend that you study the announcement in the December issue of QST for more details. Also send a large SASE (2 IRCs for DX) for sample log and entry forms.

All bands may be used, 1.8 through 28 MHz, but not 10, 18, or 24 MHz. Aeronautical or maritime mobile stations cannot be worked for contest credit. Following is a brief outline.

**Categories:** Single operator, both single and all band. Multi-operator, one transmitter and two transmitters. Also multi-operator, multi-transmitter. Also QRP, all band only (5 watts or less output). Multi one and two transmitter stations must remain on a band at least 10 minutes once a contact is made. Multi-transmitter stations no limit, but only one signal per band.

**Exchange:** RS(T) and state or province for WVE; RS(T) and power input for DX stations (three-digit number).

**QSO points:** WVE stations earn three points for each DX contact. DX get three points for each WVE contact.

**Multiplier:** Each DXCC country worked on each band for WVEs. DX stations use US states (48), District of Columbia (DC), and VE districts VE1-8, plus VO and VY1 for their multiplier (10). (Maximum multiplier of 58 per band.)

**Final Score:** Total QSO points times the sum of the multiplier from each band. Entries with 500 or more QSOs must include a QSO check sheet.

**Awards:** Certificates given in each category, in each country, and in each ARRL section, plus a wide selection of plaques. Also certificates to DX stations making over 500 QSOs.

Disqualification regulations will be strictly enforced and are listed in the official rules. Mailing deadline for all entries is April 4th, and they go to: ARRL DX Contest, 225 Main Street, Newington, CT 06111.

### CQ WW 160 Meter SSB Contest

2200Z Fri. to 1600Z Sun., Feb. 24-26

Just a reminder that the SSB section of our 160 Meter Contest will be coming up

the last full weekend of this month.

Extensive coverage has been given to this event, with complete rules in the November issue and a briefing in last month's Calendar. Therefore, it would serve no purpose to repeat them again. They are the same rules that have been used these past many years and are well known worldwide.

Mailing deadline for your entry in last month's CW contest is February 29th, and March 31st for this month's SSB section.

They can be sent directly to the 160 Contest Director, Donald McClenon,

N4IN, 3075 Florida Ave., Melbourne, FL 32904. And, of course, they can always be sent to the CQ office. CQ 160 Meter Contest, 76 North Broadway, Hicksville, NY 11801. (Be sure to indicate CW or SSB on the envelope.)

### Erratum

The 1987 CQ WW Phone Contest results showed G3FXB's score as a Phone entry. This was in error. G3FXB's 610,426 points on 14 MHz was a CW entry. This makes Al a winner for England and number 2 for Europe.

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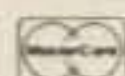
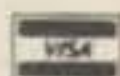
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# Propagation

a monthly feature by  
GEORGE JACOBS, W3ASK

## THE SCIENCE OF PREDICTING RADIO CONDITIONS

The present solar cycle continues its unprecedented increase. The Royal Observatory of Belgium reports a monthly mean sunspot number of 125 for October 1988. The level was fairly constant throughout the month, without the wide variations noted during previous months. The high value for October occurred on the 12th with a count of 156. A low of 104 was reported on the 23rd. The monthly mean number for October results in a smoothed sunspot number of 77 centered on April 1988. A smoothed sunspot number in the range of 135 is forecast for February 1989.

According to daily 10.7 cm solar flux measurements made at the Algonquin Radio Observatory, Ottawa, Canada, the median level for October 1988 was 170.

### Great Conditions During 1988 Phone DX Contest

Propagation conditions observed during the CQ Phone Contest weekend of October 29-30, 1988 were considerably better than the "fairly good weekend" forecast in this column. In fact, contest scores may show this to be a record-breaking contest weekend. Conditions on the 29th ranged between High Normal and Above Normal. The solar flux level topped 158, and the geomagnetic field was exceptionally quiet, with A-indices of 1 reported at mid-latitudes and 6 at high latitudes.

Conditions on the 30th were much the same, with a solar flux level of 157 and A-indices of 3 and 10. The 10 meter band opened worldwide from sunrise to well past sunset on both days. Much the same occurred for 15 meters, which remained open considerably longer than 10 meters. Twenty meters remained open for DX almost around the clock during the contest weekend. At times during the daylight hours all three bands (10, 15, and 20 meters) remained open simultaneously to the same area of the world. Similar patterns were observed during the hours of darkness with 20, 40, and 80 meters. Even the 160 meter band came in for its share of DX openings! It was a great weekend. We will review conditions during the November 26-27 CW Contest weekend in next month's column.

### February Conditions

DX propagation conditions will contin-

11307 Clara Street, Silver Spring, MD 20902

### LAST MINUTE FORECAST

Day-to-Day Conditions Expected for February 1989

Propagation Index . . . . .	Expected Signal Quality			
	(4)	(3)	(2)	(1)
Above Normal: 10, 13, 17, 19	A	A	B	C
High Normal: 3, 11-12, 14-15, 18, 23-24	A	B	C	C-D
Low Normal: 4-5, 8-9, 16, 22, 25-26	A-B	B-C	C-D	D-E
Below Normal: 1-2, 6, 20-21, 27-28	B-C	C-D	D-E	E
Disturbed: 7	C-E	D-E	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 S0 and S3, and with considerable fading and noise.  
E—No opening expected.  
3dB per S-Unit.

### HOW TO USE THIS FORECAST

1. Find propagation index associated with particular band opening from 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 band opening for any day of the month. For example, an opening shown in the charts with a propagation index of 3 will be fair-to-poor (C-D) on February 1 and 2, good (B) on the 3rd; good-to-fair (B-C) on the 4th and 5th; fair-to-poor (C-D) on the 6th, etc.

ue to be excellent on *three* bands during the *daylight* hours of February. *Fifteen* meters is likely to be the best band from shortly after sunrise until just after sunset, with 10 and 20 meters not far behind. The 6 meter band should be an extra DX bonus this month during the hours of daylight. Be sure to check this band for unusual DX openings, particularly when conditions are expected to be High Normal or better. Look for openings towards Europe and the east before noon, towards the South Pacific and the west during the late afternoon, and towards Central and South America throughout most of the daylight hours. The best times to listen for 6 meter DX openings are shown in the DX Propagation Charts by a \*\*.

During the period from sundown to midnight as many as *five* bands may be available for DX. *Fifteen* meters should hold up well past sundown for DX openings towards Central and South America, the Pacific area, and the Far East and Asia. *Twenty* meters should remain open to most areas of the world during this period, but with signals strongest from southerly and westerly directions. Good

February 15 - April 15, 1989  
Time Zone: EST (24-Hour Time)  
EASTERN USA TO:

	10 Meters	15 Meters	20 Meters	40/80 Meters
Western & Central Europe & North Africa	08-09 (1)	06-07 (1)	00-03 (1)	17-18 (1)
	09-10 (2)	07-08 (2)	03-06 (2)	18-19 (2)
	10-12 (3)	08-11 (3)	06-09 (3)	19-22 (3)
	12-13 (4)	11-15 (4)	09-11 (2)	22-01 (4)
	13-14 (2)	15-16 (3)	11-13 (3)	01-02 (3)
	14-15 (1)	16-17 (2)	13-18 (4)	02-03 (2)
	09-11 (1)**	17-18 (1)	18-22 (3)	03-04 (1)
			22-00 (2)	19-21 (1)*
				21-00 (2)*
				00-02 (1)*
Northern Europe & European USSR	08-09 (1)	07-08 (1)	00-02 (3)	17-19 (1)
	09-10 (2)	08-09 (2)	02-03 (2)	19-22 (2)
	10-11 (3)	09-12 (3)	03-05 (1)	22-01 (3)
	11-12 (2)	12-13 (2)	05-07 (2)	01-02 (2)
	12-13 (1)	13-14 (1)	07-09 (3)	02-03 (1)
		09-14 (2)	20-01 (1)*	
		14-18 (3)		
		18-21 (2)		
		21-00 (1)		
Eastern Mediterranean & Middle East	08-09 (1)	07-08 (1)	04-06 (1)	18-20 (1)
	09-11 (2)	08-09 (2)	06-08 (2)	20-23 (2)
	11-12 (3)	09-10 (3)	08-12 (1)	23-00 (1)
	12-13 (1)	10-13 (4)	12-14 (2)	20-23 (1)*
		13-14 (2)	14-15 (3)	
		15-17 (4)		
		17-20 (3)		
		20-22 (2)		
		22-02 (3)		
		02-04 (2)		
Western Africa	07-10 (1)	06-09 (1)	02-06 (2)	18-20 (1)
	10-12 (2)	09-11 (2)	06-13 (1)	20-22 (2)
	12-13 (3)	11-14 (3)	13-15 (2)	22-00 (3)
	13-15 (4)	14-17 (4)	15-17 (3)	00-02 (2)
	15-16 (3)	17-18 (3)	17-00 (4)	02-03 (1)
	16-18 (2)	18-19 (2)	00-02 (3)	22-02 (1)*
	18-19 (1)	19-21 (1)		
	08-12 (1)**			
Southern Africa	07-08 (1)	06-10 (1)	05-07 (2)	18-20 (1)
	08-10 (2)	10-12 (2)	07-14 (1)	20-23 (2)
	10-11 (3)	12-14 (3)	14-15 (2)	23-00 (1)
	11-13 (4)	14-17 (4)	15-17 (3)	21-23 (1)*
	13-14 (2)	17-18 (2)	17-20 (4)	
	14-15 (1)	18-19 (1)	20-21 (2)	
	11-13 (1)**		21-23 (1)	
			23-02 (3)	
			02-03 (2)	
			03-05 (1)	
Eastern & Central Africa	09-11 (1)	07-09 (1)	12-14 (1)	19-23 (1)
	11-13 (2)	09-11 (2)	14-16 (2)	23-01 (2)
	13-15 (4)	11-13 (3)	16-18 (3)	01-02 (1)
	15-16 (3)	13-17 (4)	18-23 (4)	23-01 (1)*
	16-17 (2)	17-18 (3)	23-02 (3)	
	17-18 (1)	18-19 (2)	02-03 (2)	
	09-11 (1)**	19-20 (1)	03-05 (1)	
Central & South Asia	08-11 (1)	07-08 (1)	06-07 (1)	19-22 (1)
	19-21 (1)	08-09 (2)	07-09 (2)	04-06 (1)
		09-11 (3)	09-11 (1)	
		11-12 (2)	17-19 (1)	
		12-13 (1)	19-21 (3)	
		19-20 (1)	21-22 (2)	
	20-21 (2)	22-00 (1)		
	21-22 (1)			
Southeast Asia	10-13 (1)	07-08 (1)	05-07 (1)	05-07 (1)
	18-20 (1)	08-10 (2)	07-09 (2)	
		10-12 (1)	09-11 (1)	
		12-14 (2)	14-17 (1)	
		14-18 (1)	19-20 (1)	
		18-21 (2)	20-23 (2)	
		21-22 (1)	23-01 (1)	
Far East	09-11 (1)	07-08 (1)	06-07 (1)	05-08 (1)
	18-20 (1)	08-10 (2)	07-09 (3)	
		10-12 (1)	09-11 (2)	
		15-16 (1)	11-13 (1)	
		16-17 (2)	17-19 (1)	
		17-19 (3)	19-22 (2)	
		19-21 (2)	22-00 (3)	
		21-22 (1)	00-02 (2)	
			02-03 (1)	
South Pacific & New Zealand	08-12 (1)	07-08 (1)	11-19 (1)	00-01 (1)
	12-14 (2)	08-10 (2)	19-21 (2)	01-02 (2)
	14-16 (3)	10-13 (1)	21-23 (3)	02-05 (3)
	16-18 (4)	13-16 (2)	23-03 (4)	05-07 (2)
	18-19 (3)	16-19 (3)	03-05 (3)	07-08 (1)
	19-20 (2)	19-21 (4)	05-07 (2)	01-03 (1)*
	20-21 (1)	21-22 (3)	07-09 (3)	03-06 (2)*
	16-18 (1)**	22-23 (2)	09-11 (2)	06-07 (1)*
		23-00 (1)		
Australasia	09-11 (1)	08-09 (1)	06-08 (2)	02-04 (1)
	14-15 (1)	09-12 (3)	08-10 (4)	04-05 (2)
	15-16 (2)	12-15 (1)	10-12 (2)	05-06 (3)



**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. Time 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 standard time is used, not GMT. To convert to GMT, add to the times shown in the appropriate chart 8 hours in PST Zone, 7 hours in MST Zone, 6 hours in CST Zone, and 5 hours in EST Zone. For example, 13 hours in Washington, D.C. is 18 GMT. When it is 20 hours in Los Angeles, it is 04 GMT, etc.

5. The charts are based upon a transmitted power of 250 watts c.w., or 1 kw. p.e.p. 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 10dB 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.



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Caribbean, Central America & Northern Countries of South America	07-08 (1) 08-09 (2) 09-16 (4) 16-18 (3) 18-19 (2) 19-20 (1) 09-11 (1)**	05-06 (1) 06-07 (2) 07-11 (4) 11-13 (3) 13-19 (4) 19-21 (3) 21-22 (2) 22-00 (1)	03-05 (2) 05-06 (3) 06-09 (4) 09-10 (3) 10-14 (2) 14-16 (3) 16-00 (4) 00-03 (3)	18-19 (1) 19-20 (2) 20-03 (4) 03-05 (3) 05-06 (2) 06-07 (1) 20-22 (1)* 22-03 (2)* 03-05 (1)*
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina & Uruguay	07-08 (1) 08-10 (3) 10-13 (2) 13-15 (3) 15-17 (4) 17-18 (2) 18-19 (1) 09-12 (1)** 15-17 (1)**	06-07 (1) 07-10 (2) 10-13 (1) 13-15 (2) 15-16 (3) 16-20 (4) 20-22 (3) 22-23 (2) 23-00 (1)	15-16 (1) 16-17 (2) 17-18 (3) 18-02 (4) 02-03 (3) 03-04 (2) 04-05 (1) 05-07 (2) 07-09 (1)	19-21 (1) 21-00 (2) 00-03 (3) 03-04 (2) 04-06 (1) 21-05 (1)*
McMurdo Sound, Antarctica	16-17 (1) 17-19 (2) 19-20 (1)	12-16 (1) 16-18 (2) 18-21 (3) 21-22 (2) 22-23 (1)	18-20 (1) 20-22 (2) 22-00 (3) 00-05 (2) 05-06 (1) 06-08 (2) 08-09 (1)	23-01 (1) 01-05 (2) 05-06 (1)

**Time Zones: CST & MST (24-Hour Time) CENTRAL USA TO:**

	10 Meters	15 Meters	20 Meters	40/80 Meters
Western & Central Europe & North Africa	08-10 (1) 10-12 (2) 12-13 (1)	07-08 (1) 08-09 (2) 09-11 (3) 11-13 (4) 13-14 (3) 14-15 (2) 15-16 (1)	00-06 (1) 06-09 (2) 09-11 (1) 11-13 (2) 13-15 (3) 15-17 (4) 17-20 (3) 20-00 (2) 00-01 (1)*	17-19 (1) 19-22 (2) 22-00 (3) 00-01 (2) 01-02 (1) 20-22 (1)* 22-00 (2)* 00-01 (1)*
Northern Europe & European USSR	08-09 (1) 09-11 (2) 11-12 (1)	07-08 (1) 08-09 (2) 09-12 (3) 12-13 (2) 13-14 (1)	07-10 (2) 10-13 (1) 13-15 (2) 15-18 (3) 18-20 (2) 20-22 (1) 22-02 (2) 02-07 (1)	19-22 (1) 22-00 (2) 00-02 (1) 22-01 (1)*
Eastern Mediterranean & Middle East	09-10 (1) 10-11 (2) 11-12 (1)	07-08 (1) 08-09 (2) 09-12 (3) 12-13 (2) 13-14 (1)	05-06 (1) 06-08 (2) 08-12 (1) 12-14 (2) 14-18 (3) 18-20 (2) 20-23 (3) 23-01 (2) 01-02 (1)	19-22 (1) 20-22 (1)*
Western Africa	08-09 (1) 09-11 (2) 11-12 (3) 12-14 (4) 14-16 (3) 16-17 (2) 17-18 (1) 08-10 (1)**	06-08 (1) 08-10 (2) 10-13 (3) 13-16 (4) 16-17 (3) 17-19 (2) 19-20 (1)	04-06 (2) 06-12 (1) 12-15 (2) 15-17 (3) 17-23 (4) 23-01 (3) 01-02 (2) 02-04 (1)	18-20 (1) 20-23 (2) 23-01 (1)* 21-00 (1)*
Southern Africa	07-08 (1) 08-10 (2) 10-11 (3) 11-12 (4) 12-13 (2) 13-14 (1) 11-13 (1)**	07-09 (1) 09-11 (2) 11-12 (3) 12-16 (4) 16-17 (2) 17-18 (1)	05-07 (2) 07-13 (1) 13-15 (2) 15-16 (3) 16-19 (4) 19-20 (3) 20-22 (2) 22-00 (3) 00-02 (2) 02-05 (1)	19-20 (1) 20-21 (2) 21-22 (1) 20-21 (1)*
Eastern & Central Africa	09-11 (1) 11-13 (2) 13-16 (4) 16-17 (2) 17-18 (1) 13-15 (1)**	08-09 (1) 09-12 (2) 12-16 (3) 16-18 (4) 18-19 (2) 19-20 (1)	12-14 (1) 14-16 (2) 16-19 (3) 19-21 (4) 21-22 (3) 22-23 (2) 23-00 (1)	19-20 (1) 20-22 (2) 22-23 (1) 20-22 (1)*
Central & South Asia	07-09 (1) 18-20 (1)	07-08 (1) 08-10 (2) 10-11 (1) 18-19 (1) 19-21 (2) 21-22 (1)	06-07 (1) 07-09 (2) 09-11 (1) 16-18 (1) 18-19 (2) 19-21 (3) 21-23 (2) 23-02 (1)	05-07 (1) 18-20 (1)
Southeast Asia	09-10 (1) 10-12 (2) 12-14 (1) 16-17 (1) 17-19 (3) 19-20 (2) 20-21 (1)	08-09 (1) 09-10 (2) 10-12 (3) 12-13 (2) 13-17 (1) 17-21 (2) 21-22 (1)	06-07 (1) 07-08 (2) 08-10 (3) 10-12 (2) 12-18 (1) 18-21 (2) 21-23 (1)	04-07 (1)
Far East	15-16 (1) 16-17 (2) 17-18 (3) 18-19 (2) 19-20 (1)	09-11 (1) 14-16 (1) 16-17 (2) 17-19 (4) 19-20 (3)	06-07 (1) 07-08 (2) 08-10 (3) 10-12 (2) 12-16 (1)	02-04 (1) 04-06 (2) 06-08 (1) 05-07 (1)*

		20-21 (2) 21-22 (2)	16-20 (2) 20-22 (1) 22-00 (3) 00-02 (2) 02-03 (1)	
South Pacific & New Zealand	10-12 (1) 12-14 (2) 14-16 (3) 16-19 (4) 19-20 (2) 20-21 (1) 11-14 (1)** 17-19 (1)**	08-12 (1) 12-14 (2) 14-16 (1) 16-18 (2) 18-19 (3) 19-22 (4) 22-23 (3) 23-01 (2) 01-02 (1)	17-19 (1) 19-21 (2) 21-23 (3) 23-04 (4) 04-05 (3) 05-07 (2) 07-09 (4) 09-10 (3) 10-11 (2) 11-12 (1)	22-00 (1) 00-01 (2) 01-06 (3) 06-07 (2) 07-08 (1) 00-02 (1)* 02-05 (2)* 05-07 (1)*
Australasia	09-11 (1) 14-15 (1) 15-16 (2) 16-18 (4) 18-19 (3) 19-20 (2) 20-21 (1) 16-18 (1)**	07-08 (1) 08-11 (3) 11-14 (1) 14-16 (2) 16-18 (1) 18-19 (2) 19-21 (3) 21-23 (2) 23-00 (1)	05-07 (2) 07-08 (3) 08-10 (4) 10-12 (2) 12-14 (1) 14-16 (2) 16-21 (1) 21-23 (2) 23-01 (3) 01-04 (4) 04-05 (3)	02-04 (1) 04-06 (3) 06-07 (2) 07-08 (1) 04-05 (1)* 05-06 (2)* 06-07 (1)*
Caribbean, Central America & Northern Countries of South America	07-08 (1) 08-09 (2) 09-10 (3) 10-16 (4) 16-18 (3) 18-19 (2) 19-20 (1) 09-11 (1)**	06-07 (1) 07-08 (2) 08-10 (4) 10-13 (3) 13-19 (4) 19-20 (3) 20-21 (2) 21-23 (1)	06-09 (4) 09-11 (3) 11-15 (2) 15-17 (3) 17-23 (4) 23-02 (3) 02-05 (2) 05-06 (3)	18-19 (1) 19-20 (2) 20-00 (3) 00-02 (4) 02-03 (3) 03-04 (2) 04-06 (1) 19-21 (1)* 21-03 (2)* 03-05 (1)*
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina & Uruguay	07-08 (1) 08-10 (3) 10-12 (2) 12-14 (3) 14-16 (4) 16-17 (3) 17-18 (2) 18-19 (1) 09-11 (1)** 14-16 (1)**	06-07 (1) 07-10 (2) 10-13 (1) 13-14 (2) 14-16 (3) 16-20 (4) 20-22 (3) 22-00 (2) 00-01 (1)	13-15 (1) 15-16 (2) 16-18 (3) 18-01 (4) 01-03 (3) 03-05 (2) 05-07 (3) 07-08 (2) 08-09 (1)	19-20 (1) 20-00 (2) 00-02 (3) 02-03 (2) 03-04 (1) 21-03 (1)*
McMurdo Sound, Antarctica	14-16 (1) 16-19 (2) 19-20 (1)	13-16 (1) 16-18 (2) 18-21 (3) 21-22 (2) 22-23 (1)	16-19 (1) 19-20 (2) 20-04 (3) 04-05 (2) 05-07 (1) 07-08 (2) 08-10 (1)	22-02 (1) 22-04 (2) 04-06 (1)

**Time Zone: PST (24-Hour Time) WESTERN USA TO:**

	10 Meters	15 Meters	20 Meters	40/80 Meters
Western Europe & North Africa	08-09 (1) 09-11 (2) 11-12 (1)	07-08 (1) 08-10 (2) 10-12 (3) 12-13 (2) 13-14 (1) 14-16 (3) 16-19 (2) 19-21 (1)	00-06 (1) 06-09 (2) 09-11 (1) 11-14 (2) 14-16 (3) 16-19 (2) 22-00 (2)	19-20 (1) 20-22 (2) 22-00 (1) 20-22 (1)*
Central & Northern Europe & European USSR	08-09 (1) 09-10 (2) 10-11 (1)	07-08 (1) 08-09 (2) 09-11 (3) 11-12 (1) 19-21 (1)	05-06 (1) 06-09 (2) 09-12 (1) 12-14 (2) 14-16 (3) 16-17 (2) 17-18 (1)	19-21 (1) 21-23 (2) 23-00 (1) 21-23 (1)*
Eastern Mediterranean & Middle East	08-09 (1) 09-10 (2) 10-11 (1)	07-08 (1) 08-09 (2) 09-11 (3) 11-12 (1) 20-22 (1)	05-06 (1) 06-09 (2) 09-12 (1) 12-16 (2) 16-18 (1) 18-22 (2) 22-02 (1)	18-21 (1)
Western & Central Africa	08-10 (1) 10-12 (2) 12-14 (3) 14-15 (2) 15-16 (1)	07-10 (1) 10-12 (2) 12-14 (3) 14-16 (4) 16-17 (3) 17-18 (2) 18-19 (1)	01-06 (1) 06-08 (2) 08-12 (1) 12-15 (2) 15-17 (3) 17-21 (4) 21-00 (3) 00-01 (2)	18-22 (1)
Eastern Africa	09-12 (1) 12-14 (2) 14-15 (1)	08-11 (1) 11-14 (2) 14-16 (3) 16-17 (2) 17-18 (1)	06-08 (1) 12-14 (1) 14-16 (2) 16-20 (3) 20-22 (2) 22-23 (1)	18-20 (1)
Southern Africa	07-08 (1) 08-11 (3) 11-12 (2) 12-13 (1)	06-09 (1) 09-12 (2) 12-15 (3) 15-16 (2) 16-17 (1)	04-06 (1) 06-08 (2) 08-13 (1) 13-15 (2) 15-18 (3) 18-19 (2) 19-21 (1) 21-23 (3) 23-00 (2) 00-02 (1)	18-21 (1)
Central & South Asia	07-09 (1) 17-18 (1) 18-19 (3) 19-20 (2) 20-21 (1)	07-08 (1) 08-10 (2) 10-11 (1) 18-19 (1) 19-21 (2) 21-22 (1)	06-07 (1) 07-08 (2) 08-10 (3) 10-12 (2) 12-18 (1) 18-21 (2) 21-23 (1)	05-07 (1) 18-20 (1)



		19-20 (3) 20-21 (2) 21-22 (1)	05-07 (1) 07-09 (3) 09-10 (2) 10-12 (1)	
Southeast Asia	08-09 (1) 09-11 (2) 11-12 (1) 14-15 (1) 15-16 (2) 16-18 (4) 18-19 (2) 19-20 (1) 16-18 (1)**	07-08 (1) 08-10 (4) 10-12 (3) 12-17 (1) 17-20 (3) 20-21 (2) 21-22 (1)	23-01 (1) 01-03 (2) 03-06 (3) 06-07 (2) 07-09 (3) 09-11 (2) 11-14 (1)	00-02 (1) 02-05 (2) 05-07 (1)
Far East	14-15 (1) 15-16 (2) 16-18 (4) 18-19 (2) 19-20 (1) 15-17 (1)**	08-10 (2) 13-14 (1) 14-15 (2) 15-17 (3) 17-20 (4) 20-21 (3) 21-22 (1)	04-06 (2) 06-07 (1) 07-08 (3) 08-09 (4) 09-10 (3) 10-11 (2) 11-19 (1) 19-21 (2) 21-23 (4) 23-00 (3) 00-03 (2) 03-04 (3)	00-02 (1) 02-05 (2) 05-06 (3) 06-07 (2) 07-08 (1) 02-04 (1)* 04-06 (2)* 06-07 (1)*
South Pacific & New Zealand	09-10 (1) 10-12 (3) 12-16 (2) 16-20 (4) 20-21 (3) 21-22 (1) 10-12 (1)** 18-20 (1)**	07-08 (1) 08-09 (2) 09-11 (3) 11-17 (2) 17-18 (3) 18-22 (4) 22-23 (3) 23-01 (2) 01-02 (1)	06-07 (3) 07-09 (4) 09-10 (3) 10-11 (2) 11-17 (1) 17-19 (2) 19-20 (3) 20-01 (4) 01-04 (3) 04-06 (2)	19-21 (1) 21-22 (2) 22-23 (3) 23-05 (4) 05-06 (3) 06-07 (2) 07-08 (1) 22-01 (1)* 01-05 (2)* 05-06 (1)*
Australasia	11-13 (1) 13-14 (2) 14-16 (3) 16-19 (4) 19-20 (3) 20-21 (1) 16-18 (1)**	06-07 (1) 07-09 (3) 09-11 (2) 11-13 (1) 13-15 (2) 15-17 (1) 17-18 (2) 18-21 (4) 21-22 (2) 22-23 (1)	12-20 (1) 20-22 (2) 22-00 (3) 00-04 (4) 04-06 (3) 06-08 (4) 08-10 (3) 10-12 (2)	00-01 (1) 01-02 (2) 02-06 (3) 06-07 (2) 07-08 (1) 02-04 (1)* 04-06 (2)* 06-07 (1)*
Caribbean, Central America & Northern Countries of South America	07-08 (1) 08-09 (2) 09-10 (3) 10-16 (4) 16-17 (3) 17-18 (1) 09-11 (1)**	05-06 (1) 06-07 (2) 07-09 (4) 09-14 (3) 14-17 (4) 17-18 (3) 18-20 (2) 20-21 (1)	05-07 (4) 07-09 (3) 09-14 (2) 14-16 (3) 16-22 (4) 22-00 (3) 00-03 (2) 03-05 (3)	18-20 (1) 20-01 (3) 01-04 (2) 04-06 (1) 19-21 (1)* 21-03 (2)* 03-04 (1)*
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina & Uruguay	07-08 (1) 08-09 (3) 09-11 (2) 11-14 (3) 14-17 (4) 17-18 (2) 18-19 (1) 09-11 (1)**	06-07 (1) 07-09 (2) 09-12 (1) 12-14 (2) 14-15 (3) 15-20 (4) 20-23 (3) 23-00 (2) 00-01 (1)	12-14 (1) 14-16 (2) 16-18 (3) 18-01 (4) 01-02 (3) 02-06 (2) 06-08 (1)	19-21 (1) 21-23 (2) 23-01 (3) 01-02 (2) 02-03 (1) 22-02 (1)*
McMurdo Sound, Antarctica	13-14 (1) 14-18 (2) 18-19 (1)	14-16 (1) 16-17 (2) 17-19 (3) 19-21 (4) 21-22 (3) 22-23 (2) 23-00 (1)	16-18 (1) 18-19 (2) 19-21 (3) 21-02 (4) 02-04 (3) 04-05 (2) 05-07 (1) 07-08 (2) 08-09 (1)	22-02 (1) 02-04 (2) 04-06 (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.  
\*\*Indicates best times to listen for F-2 layer openings on 6 Meters.

DX towards the east and the south should also be possible on both 40 and 80 meters, with some openings in the same directions also possible on 160 meters.

Between midnight and the sunrise period it should be a toss-up between 20 and 40 meters for worldwide DX honors. Good DX openings to most areas of the world should also be possible on 80 meters. Be sure to also check 160 meters for some unusual DX openings during this period.

Beginning late in February and continuing through March and early April, expect considerable improvement in DX conditions between the northern and southern hemispheres. This will result from the effects of the spring equinox period, as the sun crosses the equator in its apparent travels toward northern skies.

These improved inter-hemispheric conditions should be noticeable on all bands 6 through 160 meters, and on circuits mainly between the United States and South America, southern and central Africa, Australasia, Antarctica, and parts of Asia. Equinoctial propagation conditions tend to maximize during the sunrise and sunset periods, and over both short- and long-path openings.

This month's Propagation Charts contain band-opening predictions for major DX paths for the period February 15 through April 15, 1989. A short-skip propagation forecast for February appeared in last month's column.

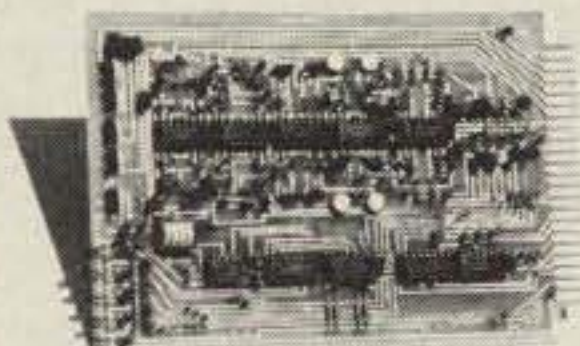
### VHF Ionospheric Openings

As mentioned earlier in this column, expect unusually good DX conditions on the 6 meter band during the hours of daylight, with F-layer openings to many areas of the world from the United States. An-

other form of 6 meter propagation, *trans-equatorial scatter (TE)*, usually peaks during the equinoctial period. Some TE openings should be possible during February between the southern tier states and South America. The best time to check for such openings is between 7 and 10 p.m. local time. Some TE openings may also be possible on 2 meters at the same time.

No significant meteor showers are expected during February. Radio storminess expected during the month should produce some widespread auroral activity, with increased chances for short-skip openings on both 6 and 2 meters, for distances up to approximately 1300 miles. Check the Last Minute Forecast at the beginning of this column for those days during February that are expected to be Disturbed or Below Normal. These are the days on which unusual ionospheric short-skip openings on the VHF bands are most likely to occur. 73, George, W3ASK

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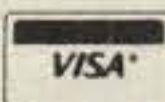
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## NEWS OF COMMUNICATION AROUND THE WORLD

*I'd love to roll to Rio  
Someday before I'm old.  
I'd love to hear Bouvet again  
Before the bands grow cold.*

Often one learns that the burden of being one of the Deserving is to have to put up with the Inquiring DXer. At times one must wonder if before they learned the code they learned about Kipling's Elephant Child and his six honest serving men—What and Why and When, and How and Where and Who. There has even been speculation that these honest six men are the ones publishing the DX bulletins these days. But one has to understand that these questions asked by the Thinkers are often about matters other than DXpeditions and the DXCC. Some even worry about posterity—posterity and whether their noble DXCC record and achievements will be forever remembered. And for some just being on the DXCC Honor Roll is not enough.

Here in the hills on the western edge of the continent February always brings spring. The wild acacia shows first, the yellow blossoms dotting the hillsides. The fruit trees leaf out; the bees are out foraging on the new blossoms. And the days can be warm. On a clear day we can see 40 miles down the bay to the far bulk of Mt. Hamilton and the domes of the Lick Observatory. We have often wondered what might be beyond that utmost purple ridge. Every spring we sit and discuss the possibilities with the Old Timer. Every spring our deep thinking is interrupted by one of the Locals up out of the village. This one came with a question, possibly one that has been asked by more than one of the Deserving "How come I am not in the DX Hall of Fame? Certainly I am one of the Deserving!" It is always a good question, possibly more so to those who come asking. It is a good question an deserves a good answer.

The DX Hall of Fame Award was first announced in July 1967, the announcement right at the start stating that it would not be readily available to a comparatively large number of DXers—"comparatively" meaning it would not be issued in the numbers equal to other awards such as WAZ or WPX. It was intended to be a top award recognizing DXers who have made major contributions, both as a DXer and for DXing. Initially there was the requirement that any nomination for the award must have ten endorsers, each of whom would have to be a holder of either the WAZ or WPX Award. To get the DX picture in perspective, the DXCC Honor Roll listing issued in July 1967 had a total of 266 listed—220 for a Mixed-Mode Honor Roll and 46 for the Phone Honor Roll. As some DXers held both awards, the total number of DXers on the Honor Roll then was well below the 250 mark. The DXCC Honor Roll listing last June showed over 2500 and should top the 3000 mark this year.

77 Coleman Drive, San Rafael, CA 94901



*Here are a couple of European DXers who have often been found far from the familiar skies. On the left is Franz Langner, DJ9ZB. Behind that DXer T-shirt on the right is Justino Ramirez M. Santos, CT1UA. Both of these DXers never pass up a DX convention if possible. They are true-blue DXers for sure.*

At the end of 1988 there were but 29 in the CQ DX Hall of Fame. The first member, Gus Browning, W4BPD, was inducted back in November 1967. The most recent inductee is John Troster, W6ISQ, in April 1988, he being the 29th DXer honored—honored not only as a DXer, but for significant contributions to the DX world and the always Deserving DXer.

While we could run all of this through our memory banks, it would not do anything to satisfy the Local who had things on his mind other than enjoying the fresh, clear, warm February day. We waited for the Old Timer to step forward. He always has been a self-starter where DXing is concerned. He ran true to form.

"Tell me why you are qualified," was his question, and the Local had to stop to think things over. Finally he shrugged his shoulders and said, "Well, I have worked a lot of countries. Actually, I'm on the lower part of the DXCC Honor Roll. I always have a big signal in the pile-ups, and I have been on some contest efforts down to Mexico and the Caribbean. When I jump into the contests at the home rig, my score is always right up there in the upper quadrant. Isn't that enough?" Actually, we could have answered his question rather easily. There are a lot of top-notch DXers these days, not only here in the States but throughout the world. As noted, there are several thousand DXers on the DXCC Honor Roll, and in these days of jet travel to the lands of the exotic call signs, the simple DXpeditions so often enjoyed by the enterprising DXer these days are hardly a big notable DX happening. There has to be more. While we maintained our silence, the Old Timer moved with a gentle explanation.

"You have to remember," he started in, "that a couple of decades back in the mid-sixties the DX world that was known then is hardly the one you know now. In some ways there

was a lot more of certain DX available, South-east Asia and the Middle East being a couple of good examples. Vietnam, Laos, and Cambodia were frequently available, and Afghanistan, Iran, and east Pakistan were often heard in contests. But on the other hand, DXpeditions were not as plentiful as they are these days. One of the problems was the size of the gear and the added costs of carrying excess weight when all the absolutely needed equipment was airlifted. And in those days the Honor Roll, after some 30 years of existence, was hardly big with just over 200 call signs.

Big-gun operators with big signals were then considered as logical ones to be nominated to the Hall of Fame. Definitely they were DXers who drew a lot of water. Persistent DXpeditioners were also revered and considered worthy of honor. Maybe you remember some of their names—Danny Weil, Ted Thorpe, Chuck Swain. Surely you remember Ernst Krenkel who was not only a DXer but also a hero of the Soviet Union." The Local had to admit that he did not. We had a feeling that the Old Timer expected such a reply, but he gave no sign of it. He went on.

"The Hall of Fame Award is usually given annually but this is not a set procedure. For example, no award was given in 1971 or in 1975. However, in two instances there were joint-awards, these being to Ted Thorpe, ZL2AWJ, and to Chuck Swain, K7LMU, a couple of DXers who were lost in a storm out on the Pacific on a return from a DX effort. Another was to Lloyd and Iris Colvin, undoubtedly the longest running DX team ever, and who have put an incredible number of DXCC countries on the air, including some new ones. There is even one in the Hall of Fame who was a SWLer rather than a licensed amateur. This is Geoff Watts, long the publisher of the "DX News Sheet" in Norfolk, England, who back in the fifties became dissatisfied with the quality of DX news available and started publishing his own news sheet. It gained a worldwide list of subscribers and was the top DX bulletin for years. In recent years his eyesight failed, and his XYL was in poor health. These days the bulletin is published by the RSGB."

The Old Timer paused at this point, certainly to give the Local a chance to think things over and perhaps to get some little understanding that the philosophy of the Hall of Fame selection committee went a good deal beyond just the DXCC total. Often it is necessary to offer something additional, this perhaps being a good and lengthy service in other fields for DXers. The DXCC totals are important; additional significant contributions are equally as important. Possibly in the last decade there has been an increasing search for DXers who either hold significant positions in the DX world or whose work on behalf of DXers is not only significant but also important to DXing in general. We realized that at times this concept is a bit difficult to comprehend and especially in an endeavor where numbers and a loud signal are considered, the epitome of DXing. But usually, when a considered study is made, the validity of such an approach is realized. Possibly it is



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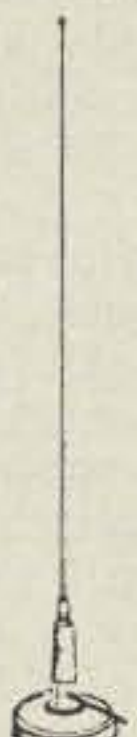
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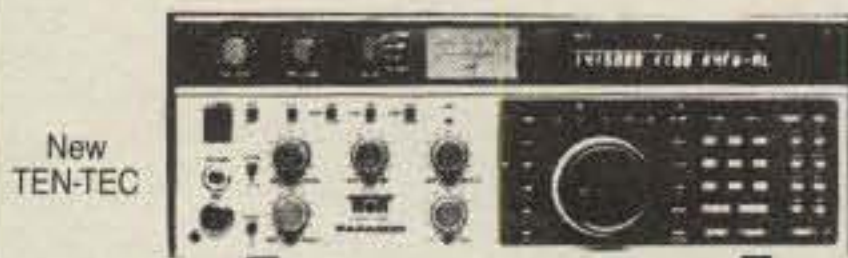
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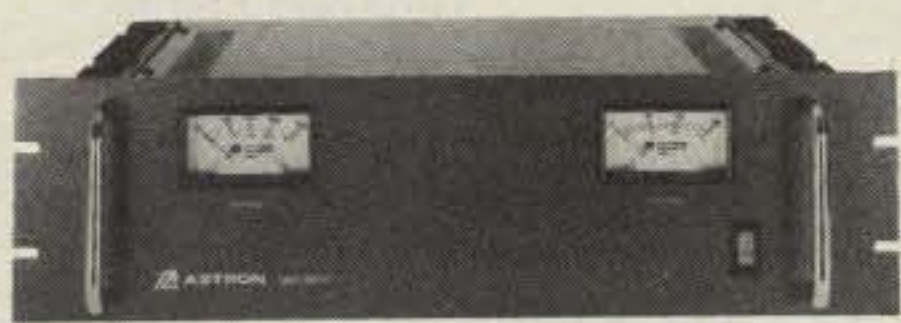

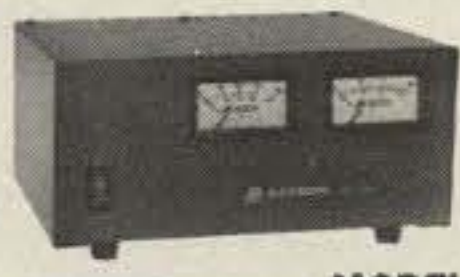


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<p><b>RM-A SERIES</b></p>  <p><b>MODEL RM-35M</b></p>	<p><b>19" X 5 1/4" RACK MOUNT POWER SUPPLIES</b></p> <table border="1"> <thead> <tr> <th>MODEL</th> <th>Continuous Duty (Amps)</th> <th>ICS* (Amps)</th> <th>Size (IN) H x W x D</th> <th>Shipping Wt. (lbs.)</th> </tr> </thead> <tbody> <tr> <td>RM12A</td> <td>9</td> <td>12</td> <td>5 1/4 x 19 x 8 1/4</td> <td>16</td> </tr> <tr> <td>RM-35A</td> <td>25</td> <td>35</td> <td>5 1/4 x 19 x 12 1/2</td> <td>38</td> </tr> <tr> <td>RM-50A</td> <td>37</td> <td>50</td> <td>5 1/4 x 19 x 12 1/2</td> <td>50</td> </tr> </tbody> </table> <p>• Separate Volt and Amp Meters</p> <table border="1"> <tbody> <tr> <td>RM-35 M</td> <td>25</td> <td>35</td> <td>5 1/4 x 19 x 12 1/2</td> <td>38</td> </tr> <tr> <td>RM-50 M</td> <td>37</td> <td>50</td> <td>5 1/4 x 19 x 12 1/2</td> <td>50</td> </tr> </tbody> </table>	MODEL	Continuous Duty (Amps)	ICS* (Amps)	Size (IN) H x W x D	Shipping Wt. (lbs.)	RM12A	9	12	5 1/4 x 19 x 8 1/4	16	RM-35A	25	35	5 1/4 x 19 x 12 1/2	38	RM-50A	37	50	5 1/4 x 19 x 12 1/2	50	RM-35 M	25	35	5 1/4 x 19 x 12 1/2	38	RM-50 M	37	50	5 1/4 x 19 x 12 1/2	50										
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\*ICS—Intermittent Communication Service (50% Duty Cycle 5 min. on 5 min. off)



## The WPX Program

### Mixed

1367	KU0A	1369	F6BVB
1368	UP1BZZ	1370	NX9H

### SSB

2017	A4XJV	2020	EA4JX
2018	KU0A	2021	EA5AL
2019	GM4PVD	2022	YB1BI

### CW

2544	N7JXS	2548	KL7UR
2545	DL2MBW	2549	IK2FSS
2546	WM5G	2550	DE0DAO
2547	LA3GI	2551	KK0V

### Endorsements

Mixed: 450 KU0A, UP1BZZ, F6BVB, NX9H, 500 KU0A, DE0DAO, UP1BZZ, F6BVB, 550 DE0DAO, UP1BZZ, F6BVB, 600 KU0A, UP1BZZ, F6BVB, 650 KU0A, K4MEF, TF5BW, F6BVB, 700 WB2PCF, UP1BZZ, TF5BW, LU1DOW, F6BVB, 800 W1DOW, WA4WIN, UP1BZZ, F6BVB, 850 UP1BZZ, LU1DOW, F6BVB, 900 UP1BZZ, LU1DOW, F6BVB, 950 UP1BZZ, LU1DOW, 1000 5H3RB, UP1BZZ, F6BVB, 1050 JA1WJ, 1100 JA1WJ, 1650 KL7AF, 2250 N9AF.

S.S.B.: 350 A4XJV, IK7DBB, YC7DF, IT9JKY, VE6SH, GM4PVC, VE7EOA, EA4JX, YB1BI, 400 IK7DBB, YC7DF, GM4PVC, VE7EOA, EA4JX, 450 IK7DBB, YC7DF, GM4PVC, VE7EOA, EA4JX, 500 IK7DBB, G4POF, YC7DF, GM4PVC, VE7EOA, KA0ZFX, 600 YC7DF, KU0A, 650 YC7DF, K3ZPG, 700 TF5BW, 750 EA3AAY, WA4WIN, 800 EA3AAY, IK8GCS, WA4WIN, 850 I2IAU, 900 I2IAU, 1000 KE6KT, IT9CUE, 1050 AC3T, I8WYD, 1100 AG2K, I8WYD, 1200 IK5ACO, 1250 WE2L.

CW: 350 IS0NE, KL7UR, KK0V, 400 IS0XIE, KL7UR, KK0V, 450 IS0XIE, KL7UR, KK0V, I1EOW, 500 IS0XIE, LZ1HY, KL7UR, 550 KL7UR, 700 IK3GER, 850 IK5DEY, G4SSH, 900 IK5DEY, 950 K4MF, IK5DEY, 1000 K4MF, IK5DEY, 1650 W3TVB, 1750 WF4V, 2450 N6JV.

10 Meters: I2EOW, UP1BZZ, EA7OH

15 Meters: I2IAU, UP1BZZ, EA7OH

20 Meters: I2IAU, UP1BZZ, EA7OH

40 Meters: KU0A, I2EOW, UP1BZZ, EA7OH, AA4LB

80 Meters: I2EOW, UP1BZZ, EA7OH

160 Meters: UP1BZZ

Asia: YC7DF, Y8IZN, UP1BZZ, TF5BW, I2IAU, EA7IO

Africa: UP1BZZ, EA7OH

No. America: KU0A, IK8GCS, KK0V, UP1BZZ, IT9CUE, TF5BW, EA7OH

So. America: UP1BZZ, EA7OH

Europe: YC7DF, Y8IZN, GM4PVC, UP1BZZ, EA7OH, WA8SXM

Oceania: YC7DF, UP1BZZ, EA7OH

Award of Excellence: K2SHZ, UP1BZZ

160 Meter Endorsement: UP1BZZ

**Award of Excellence Plaque Holders:** W8RSW, WA4QMQ, WB1LC, VE7DP, K9BG, W1BWS, G4BUE, N3ED, LU3YL/W4, NN4Q, KA3A, VE7WJ, VE7IG, N2AC, W9NUF, N4NX, SM0DJZ, DK5AD, WD9II, W3ARK, LA7JO, VK4SS, K6JG, N4MM, I8YRK, W4CRW, SM0AJU, K5UR, K6XP, N5TV, K2VV, VE3XN, W6OUL, DL1MD, DJ7CX, DL3RK, WB4SIJ, SM6DHU, N4KE, I2UIY, DL7AA, ON4QX, WA8YTM, YU2DX, OK3EA, I4EAT, OK1MP, N4NO, ZL3GQ, VK9NS, DE0DXM, DK4SY, UR2\*\*, AB90, FM5WD, I2DMK, W4BQY, I0JX, SM6CST, VE1NG, I1JQJ, WA1JMP, PY2DBU, H18LC, KA5W, K0JN, W4VQ, KF2O, K3UA, HA8UB, W8CNL, K7LJ, W1JR, F9RM, W5UR, WB8ZRL, SM3EVR, CT1FL, K2SHZ, UP1BZZ.

**Award of Excellence Plaque Holders with 160 Meter Endorsement:** OK1MP, N5TV, W8CNL, W1JR, W6OUL, W4BQY, W5UR, N4NO, W8RSW, N4KE, I2UIY, W8ILC, W1BWS, NN4Q, G4GUE, LU3YL/W4, I4EAT, VE7WJ, W9NUF, N4NX, VK9NS, DE0DXM, VE7IG, K9BG, AB90, FM5WD, SM0DJZ, DK5AD, SM6CST, I1JQJ, W3ARK, H18LC, KA5W, UR2\*\*, VE3XN, K6XP, LA7JO, W4VQ, K6JG, K3UA, HA8UB, W4CRW, N4MM, K7LJ, SM0AJU, KF2O, SM3EVR, K5UR, UP1BZZ.

Complete rules and application forms may be obtained by sending a business-size, self-addressed, stamped envelope (foreign stations send extra postage if air-mail desired) to CQ WPX Awards, P.O. Box 1351, Torrance, CA 90505-0351 U.S.A.



Here are a number of familiar Lesser Antilles callsigns and the faces behind them. On a visit to St. Maarten's Amateur Radio Club five FG5s greeted two FS5s. What did they talk about? You guessed it . . . nothing else but. From the left are Emile, FG5BT; Andre, FG5BP; George, FG5BG; Mort, FS5UQ; Claire, FS5YL; Germain, FG5CK; Jean, FG5CI; and Joe, FG5CA. The FG5s were testing their mobility in case of emergencies. They went 300 miles north to do it. FG5BG is head of ADRASEC, the amateur emergency corp on Guadeloupe.

the overall impact of a nominee that is important, as a DXer and as a significant worker in another field affecting DXing.

"Let me give you an example," the Old Timer continued. "Jack Troster, W6ISQ, was inducted into the DX Hall of Fame at the last International DX Convention a year ago in April. Let us look at his resume. Undoubtedly you will recall his writings on DX in QST over the years, these often with a different spin on DXing. Along the way he was president of the Northern California DX Club and served a long period of time as the president of the Northern California DX Foundation." The Old Timer paused a moment to slip in a query of his own. "You do understand that these are two separate organizations?" he asked. The local admitted that he was not quite clear on that point.

"These two organizations share a similar name but are totally independent of each other," the Old Timer explained. "However, you will find the same people serving in both groups, and this at times does add a bit of confusion. But W6ISQ has served in both areas and in a couple of others, and during his tenure as head of the Northern California DX Foundation there not only was a lot of support for DX and DXpeditions, but Jack Troster brought up the idea of establishing a network of beacon stations around the world, this giving readily available clues to propagation conditions and to openings and band conditions. This has been most successful.

To give one more example, in 1987 Dr. John Allaway, G3FKM, was inducted into the DX Hall of Fame. Check any DXCC Honor Roll listing for the last 20 years or longer and you will find G3FKM right at the top rung, consistently. But he has also served two terms as the president of the Radio Society of Great Britain, as the IARU Secretary for Region 1, and in other high-level positions within the IARU. He has been active in the ITU WARC conferences and definitely one in a position to offer and support the DXer's viewpoint when these plenipotentiary meetings are held.

There are others on the DX Hall of Fame roster. Study them and you will find that not only

are top DXers there, but so are a good number of those who have contributed significantly to DXing. Often their efforts are not readily recognized, nor even understood, but they are so significant that the selection committee finds merit in their efforts, and this is the way it should always be, right?"

It must have been, for the Local jumped to his feet and presented a snappy salute. "You have convinced me," he told the Old Timer, "and I salute them. Every one of them. And with that he was prepared to go, apparently having some of his questions answered. But the Old Timer was not ready to turn him loose . . . yet.

"Let me tell you something," the Old Timer added. "Never hesitate to advance your own cause. And any time you have in mind someone who you believe merits consideration for the DX Hall of Fame, don't ask questions. Take the time to present the case. Tell what the nominee has done, both as a DXer and for DXing. The resume must be considered important, as it is the basis for the committee's consideration. It must have solid factual support for the nomination, and anyone or any group can submit a nomination. Just keep in mind what attracts the attention of the committee these days. They are looking for the exceptional DXer, and there are a lot of them yet to be recognized. Maybe even yourself."

## The WAZ Program

### 15 Meter Phone

260	K0QQ	261	KA0IQR
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### 20 Meter Phone

700	XE1JIW	703	LU1HGN
701	KA5RNH	704	WA4ETN
702	JE3NWQ	705	A0AMI

### 40 Meter Phone

47	JA2QPY
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### 15 Meter CW

132	K3UA
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### 20 Meter CW

312	WP4D	314	JA8DJY
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### 80 Meter CW

19	SM5BHW
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### All Band WAZ

#### SSB

3242	LU1JDL	3248	OA4ED
3243	N5ITG	3249	JA1DJO
3244	JA1EPL	3250	HK3HFO
3245	KB1HC	3251	IK1HSR
3246	KB2WN	3252	K4DSE
3247	SM7MPM		

### Phone/CW

6402	SP8UFO	6411	DL2NCL
6403	WA8SXM	6412	YU2GIJ
6404	JA1AZS	6413	SM0DZH
6405	SM6NJK	6414	WQ6X
6406	SM6AHS	6415	I3ZRL
6407	SM6MCW	6416	UC2ACZ
6408	SM0NFA	6417	W8NDP
6409	OK2KOD	6418	JF1RDC
6410	HA0NNN		

Applications and reprints of the latest rules may be obtained by sending a self-addressed stamped envelope (39 cents) size 4 1/2 x 9 1/2 to the WAZ Manager, Leo Haijman, W4KA, 1044 S.E. 43 Street, Cape Coral, Florida 33904. Applicants forwarding QSL cards either direct to the WAZ manager or to a check point should include sufficient postage for safe return of their QSL cards. The processing fee for all C.Q. awards is \$4.00 for subscribers and \$10 for non-subscribers. In order to qualify for the subscriber rate, please enclose your latest CQ mailing label with your application.



## 5 Band WAZ

As of November 1, 1988, 195 stations have attained the 200 zone level.

New recipients of 5 Band WAZ with all 200 Zones worked:

F6BLP  
DJ2YA  
W8UVZ

The top 8 contenders for 5 Band WAZ are:

- |               |                |
|---------------|----------------|
| 1. N4WW, 199  | 5. SP6JCY, 199 |
| 2. SP9PT, 199 | 6. W2YY, 198   |
| 3. K6YRA, 199 | 7. W7UR, 198   |
| 4. K9GX, 199  | 8. KB0U, 198   |

508 Stations have attained the 150 Zone level.

Applications and reprints of the latest rules may be obtained by sending a self-addressed stamped envelope (45 cents) size 4 1/2 x 9 1/2 to the WAZ Manager, Leo Haijsman, W4KA, 1044 S.E. 43 Street, Cape Coral, Florida 33904. Applicants should include sufficient postage for safe return of their QSL cards. The processing fee for all CQ awards is \$4.00 for subscribers and \$10 for non-subscribers. In order to qualify for the subscriber rate, please enclose your latest CQ mailing label with your application.

these being a Drake TX4C, an FT101, an FT707, and a TS440. The linears were loaded for maximum output and tested for five bands, the 813 linear also being tested on 160 meters.

Now the W4 claims he is clean. If he could not find any flat-tops on his scope at the transmitting end, how could there be anything noted at the receiving end? If you wonder, he also has his own explanation. Citing his own experiences as a former OO, he declared that often the problem is an overdriven receiver. Inferring that the problem stems from the receiver RF gain being wide open, he states very diplomatically, "Every single case I investigated as an OO turned out to be a receiver overdriven into catatonic cackling by an exceptionally strong input signal!"

How would you, as an amateur, cope with such an argument? Before exposing your expertise, note that the one receiving the OO notice is a graduate electrical engineer licensed as an amateur for a half century, and worked in RCA's communication laboratory. Now, we would like to hear *your* explanation. But be careful. Watch out for those strong signals!

### Marion Island

Another hope for Marion Island has risen, and ZS6PT is advising that he will start a year's tour on the island starting in April. While ZS2MI has been the often-used callsign on the island, the word was that ZS8MI might be used this time.

### Albania

Someday Albania will come and every DXer with a paid-up utility account will be waiting. Peter Vekinis, SV0GV/EI4GV/ON9CGV, is working for a possibility towards the end of the coming summer.

Peter is the European Bureau Chief of *NEWSBYTES*, a syndicated computer news-weekly in Europe, and his present base is in Brussels. He has been working with a couple of SV amateurs. Peter himself is a Greek citizen, and if things go well they will be putting



*For as long as most DXers can remember 9N1MM was the only hope for Nepal, there being few other operations there for decades. Father Moran was home visiting last year and at a meeting of the South East Michigan DX Assn. Here he is with Ted Drake, W8JBI. If ever you get a chance to meet Father Moran, don't miss it. He is a DX legend!*

their plans together starting in late July with a target date in late August. One of the plus items in their planning is the Greek nationality of the crew and the usual practice of allowing the Greeks a wide freedom of movement within Albania.

For sure, someday Albania will come because there are DXers who never stop trying. Nothing lasts forever, though it may seem at times like it will with the opposition to amateur radio in Albania. Some fine day someone will find the solution. It may be this summer.

Peter was out during the week between Christmas and New Years and was signing EJ0GV, this being similar to his EI4GV call. QSLs go to KB1XN, and this will be the route for any future DX efforts.

### Grupo Argentino Morse

This is a new Argentine DX group recently organized, and their official publication is "73 LU." The club is interested in exchanging bulletins or hearing from any DXer who might be interested in getting a South American Spanish-language bulletin. Should you be interested in a DX bulletin with a different perspective, drop a line to Dr. Dante Pellegrinet, LU2FFV, Grupo Argentino Morse, Casilla de Correos 70, (2451) San Jorge, Santa Fe, Argentina.

### 17 Meters

The FCC a month or so back initiated a rule-making aimed at permitting the use of the 17 meter band by the Amateur Radio Service. This is Docket 88-647. If the band is not familiar, yet, it is one gained at the 1979 WARC meeting and covers from 18.068 to 18.168 MHz. The proposal by the FCC would open the band to General, Advanced, and Extra class licensees. There would be the usual power limitations. If that 100 kHz of frequency looks a bit narrow, they also propose a subband of 42 kHz for CW/digital from 18.068 MHz to 18.110 MHz, with the remainder of the band available for phone, ATV, or facsimile.

All of the above follows the line of the proposals made by the ARRL and filed back in July 1986. Previously two other bands gained at the last WARC gathering have been authorized in the U.S., these being the 10 MHz (30 meter)

band and the 24 MHz (12 meter) band. The North Florida "Balanced Modulator" speculates that there might be early action on the proposal possibly to try to soothe some of the frayed feelings left from the 220 MHz happening. The bulletin notes that though the band is only 100 kHz wide, it is expected that the propagation characteristics will show longer signal paths than 20 meters and longer path openings than are found on 15 meters.

### The Colvins

Lloyd and Iris Colvin departed in late fall on another leg of their everlasting DXpedition, operating first from Cyprus. They will be active until April in Africa or the Middle East, easily recognized with the "KG" or "QL" suffix from their home calls. At each stop one of the DX-Duo usually seeks to work a DXCC, and they do show on some of the SSB nets.

QSLs continue to be handled by the YASME Foundation, Box 2025, Castro Valley, CA 94546. Should there be any wonder about the name "YASME," that was the name of the small sailing craft that Danny Weil sailed to a number of exotic DX spots back some 30 years or so. Along the way he found a couple of rocks to test with the prow of the boat, and often the rock won. Many of the current DXers may find the name of Danny Weil unfamiliar, but it was no so back in the late fifties. Little has been heard of Danny in recent years. He has been living in Texas and reportedly doing little except to keep a few schedules with some old friends. Last summer he alerted the Colvins that he was headed for California in his recreational vehicle, but nothing further developed.

While you may not hear much about Danny these days, you will hear of the Colvins. Have

### CQ DX Awards Program

#### SSB

1638	YU2GIJ	1642	EA5AL
1639	HP8BSZ	1643	LU1HGN
1640	NX0I	1644	K8YVI
1641	LU1BAB	1645	K4POV

#### CW

733	YU2GIJ	735	NX0I
734	SM6JWW	736	LU1HUC

#### SSB Endorsements

310	YU1HA/319	275	KB1JU/276
310	YV1KZ/318	250	NX0I/266
310	YU1AB/317	250	WA4WIN/250
310	N4WF/317	200	HK6BER/240
310	K6JG/315	200	K8YVI/217
310	I4EAT/311	150	LU1BAB/170
300	WZ4I/309	150	YU2GIJ/157
300	IT9TGO/308	28 MHz	N6CGB
300	W6BCQ/306	3.5/7 MHz	N6CGB
300	W4UW/304		

#### CW Endorsements

310	K2TOC/319	150	YU2GIJ/190
310	K6JG/317	150	NX0I/167
310	K6JG/317	3.5/7 MHz	YU2GIJ
275	NS7Z/276		

Total number of active countries is 319. The basic award fee for subscribers to CQ is \$4. For non-subscribers, it is \$10. In order to qualify for the reduced subscriber rate, please enclose your latest CQ mailing label with your application. Endorsement stickers are \$1.00. Updates not involving the issuance of a sticker are made free when an s.a.s.e. is enclosed for confirmation of total. Rules and application forms for the CQ DX Awards Program may be obtained by sending a business size, No. 10 envelope, self-addressed and stamped, to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. DX stations must include extra postage for air-mail reply. Please make all checks payable to the awards manager.



After the Local left we continued to sit under the oak tree, noting that while we talked with the Local a big EXXON tanker had come out from behind San Quentin Point and was making its way up the bay, looking a half-mile long, and it probably was close to that. Then we asked the Old Timer, "Do you really think that these Locals take the award seriously?" Our answer was a quick nod of his head.

"Most everyone thinks of his place in posterity," he said, "perhaps even to the extent of wondering if there will be any who even might remember them. But there are a lot of exceptional DXers. You have said that yourself. And there is yet to be made a good, comprehensive history of DXing. The Hall of Fame is a step to remember. DXers may live in the present world, but our present has been and will be greatly influenced by many who worked for DXing in the past. They should be remembered."

We think that most DXers will find agreement in the Old Timer's words, especially the more mature DXer, long in memory, stout in girth, and wise with the years. If you remember the tune, write your own lyrics to a Hall of Fame nomination. No exceptional DXer should be forgotten. Many of them helped make DXing what it is today—the best ever!

### John Attaway, K4IIF

Since 1967 John Attaway has been involved in writing the DX Column for *CQ* magazine. A few months back, with more than 21 years of working in the DX vineyards, John decided to relinquish the duty and retire from an active participation.

Taking over the DX column in March 1967, John came from being the editor of the "Florida DX Report," the monthly publication of the Florida DX Club and one of the sources for DX information that was available to DXers back in those days. John succeeded Urb LeJeune, W2DEC, who had handled the column since 1959. Prior to Urb LeJeune, the DX Column was handled by Don Chesser, W4KVV. Many DXers from back in those days will remember Don Chesser, many often asking whatever became of him. Don started writing in December of 1957, being preceded by Dick Spenceley, KV4AA.

During his years of covering the DX scene John Attaway promoted many of the awards issued by *CQ* magazine. He has also been on the far end of some pile-ups, often showing from the Caribbean or a Gulf of Mexico spot. He has also operated from Europe.

John holds a management position with the Florida Citrus Commission and also has an interest in several Florida orange groves. He has not lost any of his long interest in DXing, but did feel that the pressure of other business and obligations was putting a burden on his limited time. Many DXers will continue to remember K4IIF and the years he devoted to DXing.

### Too Broad?

Recently, we came across a case of indignation, righteous and explosive, when one of the Deserving got a notice from an OO that his signal was too broad. Perhaps there is nothing unusual about that except for the always injured innocence. In this case the object of the OO's report bit back. Frankly, we don't know how the matter ended, but it might still be rumbling around. But the counter argument was thought interesting.

## 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 CQ master prefix list. Scores are based on the current prefix total regardless of an operator's all-time count. Honor Roll must be up-dated annually by addition to, or to confirm present total. If no up-date, file will be placed into "inactive" until next up-date. Lifetime Honor Roll fee \$2.00 (U.S.) for each mode, with no fees required for up-dates.

### MIXED

3488	YU2AA	2082	N2AC	1600	KL7AF	1216	AI8S	944	G4OKB
3460	F9RM	2056	PA0SNG	1565	N6JM	1203	YU1GR	933	I2EAY
3103	K2VV	2055	W9NUF	1555	K8LJG	1195	JA6GWU	900	K1BAZ/DV1
2946	W2NC	2019	YT7DX	1549	IT9QDS	1188	K7CU	872	W2XQ
2778	K6JG	2014	I6SF	1527	K2POF	1172	KC8CC	869	I5ZTC
2754	VE3XN	1920	PY4OD	1505	I1EEW	1161	YT7WW	835	OE1KJW
2659	YU2TW	1899	K9BG	1470	NN4Q	1148	AI6Z	809	W5ASP
2564	W4BOY	1865	IN3ANE	1467	DK5AD	1146	NE6I	798	WA4WIN
2521	N4NO	1842	W0SFU	1458	W8UMR	1138	DF6EX	787	W9IAL
2502	K6XP	1828	4X4FU	1441	W6OUL	1116	I0AOF	787	YU1PJ
2493	W9DWQ	1825	YU7SF	1418	YU2CQ	1102	VE5FX	773	YU3PG
2355	N4MM	1802	KF2O	1414	SM0AJU	1101	W9IL	773	KS3L
2411	N6JV	1799	CT1LN	1381	YU1SZ	1096	HA8XX	750	F1HWB
2256	I2PJA	1797	HA0DU	1352	SM6CST	1094	PY2DBU	750	KI8B
2255	N9AF	1793	SM3EVR	1350	AC2J	1080	K3UA	750	KC7EM
2234	WA8YTM	1736	IS0LYN	1337	WB8ZRL	1050	KS0Z	747	YU7RU
2201	YU1AB	1736	I2MQP	1334	WE2L	1031	YU7DR	729	W4WKQ
2184	PY1APS	1703	N5TV	1333	W4UW	1008	W0JIE	719	KY3V
2181	EA2IA	1701	I2UIY	1329	W7CB	1001	5H3RB	697	N3KR
2159	YU7BPO	1699	YT3AA	1316	K2OLG	1000	NV9S	648	IK2BHX
2131	I8YRK	1654	KA5W	1309	YU2TY	998	SP5AA	647	RB5MP
2128	N6CW	1631	N6AW	1278	3A2LF	986	G4SDJ	641	JE2GMO
2103	SM7TV	1602	YU2NA	1273	N8BJO				

### SSB

3386	F9RM	1742	WF4V	1305	I8KCI	1067	I2TZK	797	KC2FC
2964	I0ZV	1736	I4CSP	1305	EA3AQC	1050	F6BVB	790	K9BQL
2659	K2VV	1728	ZP5JCY	1290	PY4OD	1034	W0ULU	785	IK8GCS
2576	ZL3NS	1682	NJ0C	1272	W2NC	1012	KD9OT	783	K3UA
2482	K6JG	1655	CT1LN	1257	KK0L	1010	K8LJG	781	IK2DUU
2452	K2POA	1616	W9NUF	1251	KL7AF	1008	KE6KT	759	N6CGB
2391	CT1UA	1608	EA2IA	1248	YU2NA	997	HA8XX	750	F1HWB
2268	K6XP	1583	WA4QMO	1244	CT1BY	983	G4SDJ	747	AI6Z
2253	I2PJA	1531	CT1FL	1228	IK5ACO	972	WA2FKF	731	W5ILR
2238	I0AMU	1529	KF2O	1205	N2CIC	963	CT1AHU	712	VO1AW
2162	VE1YX	1516	W3ARK	1166	N6FX	947	I2WZX	698	I7UNX
2140	W0YDB	1474	G4CPJ	1162	NN4Q	938	PY4OY	697	YU2SMN
2124	N4MM	1451	G4CHP	1156	AB9O	904	YB3CEV	681	YC7DF
2101	WD8MGQ	1431	EA8AKN	1141	KC8CC	885	W6OUL	678	KB4HU
2033	CT4NH	1415	KC8YM	1140	I2EOW	877	KB0C	669	CX6BZ
2007	I4ZSQ	1397	I2UIY	1129	N2AC	860	K8ZZU	664	G4MVA
1957	W4BQY	1393	AC2J	1114	I8WXD	859	KK5P	657	W5AWT
1915	N4NO	1375	N5TV	1110	EA4KK	831	I3ZSX	649	DJ0AF
1906	OZ5EV	1375	I5ZJK	1110	LUBESU	825	LU1VK	636	LU8DWN
1861	I8YRK	1375	I1EEW	1100	PY4VX	805	IT9ONV	631	YV1CP
1816	W9DWQ	1340	CT4UW	1099	AG2K	803	IT9JKY	618	CT1DIZ
1801	PA0SNG	1338	W4UW	1097	SM0AJU	800	NE6I	613	NM5Y
1781	WA8YTM	1315	KA5W	1083	WB8ZRL	799	NK2H	608	IK0EIM
1744	I2MQP	1312	K5RPC						

### CW

2688	W2NC	1745	EA2IA	1188	KF2O	1025	LA9XG	796	NE6I
2565	K2VV	1729	LZ1XL	1142	F6HKD	1024	NN4Q	763	OE1KJW
2426	WA2HZR	1641	PY4OD	1138	I2UIY	1018	W6OUL	762	WB8ZRL
2397	N6JV	1628	WA8YTM	1137	EA7OH	1017	HA5LZ	750	W0JIE
2199	N4NO	1622	I1YRL	1124	KA5W	1010	KN7K	729	K1BAZ/DV1
2193	ON4QX	1613	N4MM	1117	I7PXV	999	YU2NA	715	W2XQ
2103	VE7CNE	1605	VO1AW	1114	W1WAI	969	G4FAM	711	JA2GCW
2074	K6JG	1595	4X4FU	1099	AK2H	967	SM5DAC	705	KA1CLV
2072	W9DWQ	1583	W9NUF	1090	W9PWW	943	I8YRK	694	W5AWT
2029	W3ARK	1400	N5TV	1082	K8LJG	920	AI6Z	667	YU3PG
2003	W4BQY	1398	I2DMK	1074	VE1ACK	866	K3UA	659	ACSK
1970	G2GM	1394	KATT	1068	TI4SU	852	G4SSH	651	G4UOL
1927	K6XP	1358	IT9VDO	1056	YU3NU	849	CT1LN	649	HA8XX
1851	N2AC	1252	N6FX	1055	YU2CQ	849	G3VOO	639	KU9S
1836	YU7SF	1223	SM6CST	1052	DJ1YH	835	I2EAY	622	LZ2VP
1779	OZ5EV	1220	K2POF	1038	SM0AJU	821	KQ3S	609	IS0FIC
1762	I6SF	1200	KL7AF	1034	I2IWM	806	OZ5UR	605	K7DBV

The OO notice cited "Broad Signal" with the added comment "audio products detectable  $\pm 15$  kHz. Sounds like overdriven rig or amplifier." If you got such a notice, what would you do? Back down? The linear or the driver? Not this W4. He ran a number of tests and fired back. Never cross an unreconstructed W4!

First the tests. He lined up three linears. The

first was a commercial piece of gear with a pair of 500Zs in grounded grid. Number two was another item of commercial gear, also with a pair of 500Zs in grounded grid. The third piece of gear was a homebrew linear with a pair of 813s connected as a triode in grounded-grid. A Heath SB610 scope was used to check the signal. Four exciters were used in this setup,



# Yaesu's FT-736R. Because you never know who's listening.

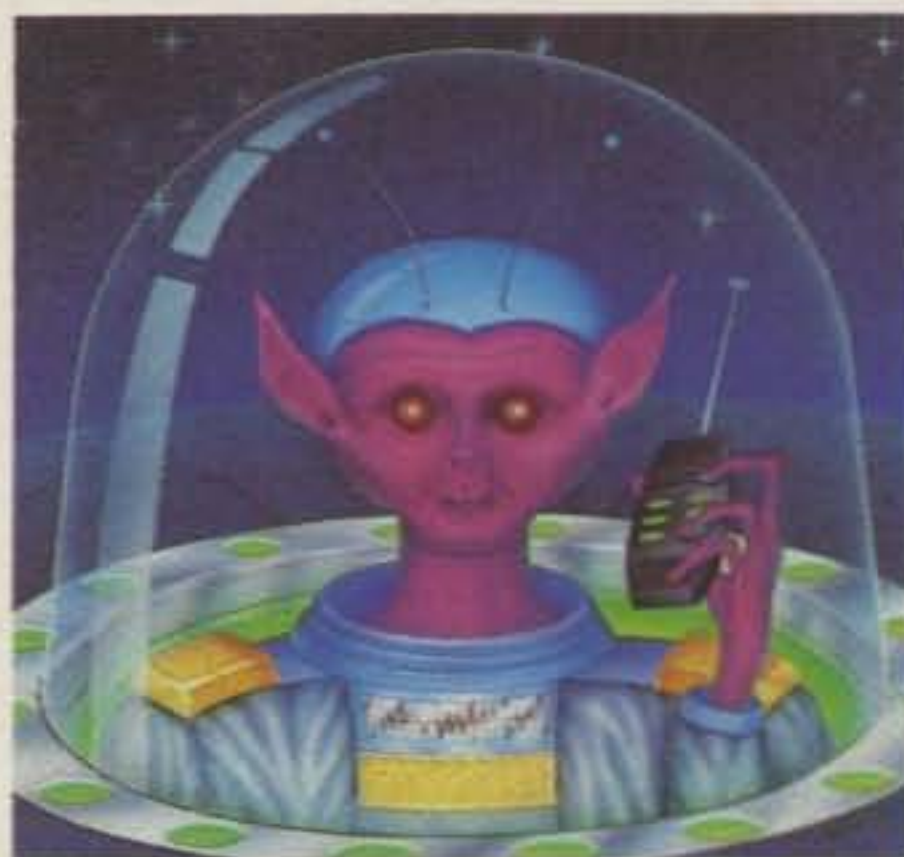
Why just dream of talking beyond earth?

With Yaesu's new FT-736R VHF/UHF base station, you can discover some of the best DX happening in ham radio. Via moonbounce. Tropo. Aurora. Meteor scatter. Or satellites.

You see, the FT-736R is the most complete, feature-packed rig ever designed for the serious VHF/UHF operator. But you'd expect this of the successor to our legendary FT-726R.

For starters, the FT-736R comes factory-equipped for SSB, CW and FM operation on 2 meters and 70 cm (430-450 MHz!), with two additional slots for optional 50-MHz, 220-MHz, or 1.2-GHz modules.

Crossband full duplex capability is built into every FT-736R for satellite work. And the satel-



lite tracking function (normal *and* reverse modes) keeps you on target through a transponder.

The FT-736R delivers 25 watts RF output on 2 meters, 220 MHz, and 70 cm. And 10 watts on 6 meters and 1.2 GHz. Store frequency, mode, PL frequency, and repeater shift in each of the 100 memories.

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tower-mount preamplifier. Even an offset display for measuring observed Doppler shift on DX links.

And to custom design your FT-736R station, choose from these popular optional accessories: Iambic keyer module. FTS-8 CTCSS encode/decode unit. FVS-1 voice synthesizer. FMP-1 AQS digital message display unit. 1.2-GHz ATV module. MD-1B8 desk microphone. E-736 DC cable. And CAT (Computer Aided Transceiver) system software.

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## YAESU

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no doubt. Their records in DXing and DXpeditions will be remembered for a long time. Work them every time you can.

## West Siberia DX Club

Things are changing a bit around the world. Even the solar flux keeps moving in the right direction. And in Omsk City the locals have formed a DX club complete with awards and stringent standards for admittance.

To gain admittance you must have at least 100 different awards or diplomas, including DXCC or the Soviet R-150-S Award, which is equivalent to the DXCC. You must also have at least 200 countries confirmed and three awards from the Western Siberia DX Club, and international members must come up with 20 IRCs. That will get you membership, a certificate, and the club roster, plus a ready welcome from other DXers when you are in Omsk. The club was formed by UA9MC, UA9MA, and UA9MD. Mail can be sent to: Western Siberia DX Club, Box 386, Omsk-99, 644099 USSR. The awards? Check with Dorothy, WB9RCY, in the Awards column next month. She will have all the information that there is space to print.

## Taxes

If you listen carefully, you might hear a discussion as to just what is a "tax." But in Brasil you do not have to listen. The discussion comes with a high decibel level. PY1EQR, whose QTH is at Niteroi across the bay from Rio, passes along some of the bite in the PY-DXer's pocketbook.

Keep in mind that Brasil does have economic problems with a very high cost of living, a foreign debt problem, and even a low market for the coffee crop. In 1982 the government increased the radio tax, which was an additional burden to the DXer and which brought increasing clandestine operations. Heitor, PY1EQR, estimates that this unlicensed operation increases every year with an estimated 90% of the Brazilian CBers unlicensed and the government unable to do anything about the problem.

With 1989 at hand, the government has proposed to raise the fees charged amateurs. In 1988 the fee was \$20 (U.S.) for each station, base or mobile. It is proposed to raise this fee to \$40 yearly. This will be levied for new licenses, address changes, or class of license change. To continue the licenses, half the charge is collected in each year. If you have gotten this far, maybe you should consider that the cost of living in Brasil goes up about 25% a month, while the wages go up about 20%. This proposal went to the Brazilian Congress back in October. If you hear a DXer howling from the south, it may not be because he missed a needed one.

Some years back similar thinking in the U.S. brought a fee for an amateur license. The matter wound up in court and the fees were ruled invalid. Thus, today you pay no fee here in the U.S. Somehow such a line of tax thought spreads rapidly. PY1EQR is a bit upset over the local situation in Icarí, Niteroi. It is not hard to understand.

## 75th ARRL Anniversary

Though it may seem like yesterday, this year marks the 75th anniversary of the founding of the League. This will be noted at the 10th General Assembly of Region 2 of the IARU, which will meet in Orlando, Florida, starting October 16th. The 75th anniversary will be noted at the Friday evening, October 20th ceremonies.



*Could DXing be just too stressful? No true-blue DXer would ever admit that. Look at this picture to see how DXers thrive on pile-ups. Leaning over to check things is Ezzat Sayed Ramadan, SU1ER, who once signed SU1ES. At the desk is Ahmed Hassan, SU1AH. DK7PE took the photo while operating from SU1AH some months back.*

For some DXers it may seem that the 50th anniversary was just celebrated, but that was held back in 1964. Going all the way back, it was on May 14, 1914 that the Hartford Radio Club was organized with Hiram Percy Maxim and Clarence Tuska the big pushers. Considering how these two got acquainted, it is perhaps worth mentioning that Maxim was a distinguished inventor a bit beyond his fortieth year, while Tuska was a school boy who built a receiver to improve his cash flow, putting it in a local toy shop on consignment. When Maxim tried it and did not think it fitted his needs, Tuska thought he was belittling the rig and took it as a blot on the family escutcheon. When Maxim explained things and then ordered an "improved" version, a long and notable association began.

The ARRL came from that original Hartford Radio Club, this coming about 12½ years after Guglielmo Marconi copied the Poldhu station in Cornwall, sending "S" in the trans-Atlantic tests. The "improved" receiver that Tuska constructed for Maxim had a loose coupler, a variable condenser, a crystal detector, and a pair of Brandes phones—no tubes, no IC boards, and no dials.

Long after the Poldu tests Guglielmo would often say "The first DX I ever worked was an 'S.' I remember it well. It was just before lunch on December 12th and the band was dead. Then I heard this fuzzy signal down in the mud . . ." One always remembers their first real DX contact. That is one of the Eternal Truths.

## Some Short Notes

G3FKM, long a top DXer and a heavyweight in the IARU circles, notes that at a recent meeting of the NRRL, the Norwegian national amateur radio society, there was an extended discussion of the 10 MHz band and the possibility of its "gross" underutilization. Concern was voiced that unless something develops in future amateur use of the band, the lack of activity being not only on the 10 MHz band but also on the 18 and 24 MHz bands, amateurs and DXers are likely to come away from the next WARC conference with a bit less frequency and even less of an inclination to sing Hallelujah as was so often noted after the last meeting in 1979. Suggested in the discussion was the possibility of some "not too competitive" contests and awards. With the bands

not being readily available after the last WARC due to some shared-frequency problems, and some of the bands not available in all ITU areas, the interest has developed slowly. Also the narrow frequencies available brought decisions that certain activities such as contests would not be suitable or that credit for contacts in some bands would not be accepted for DXCC.

The bands being but 100 kHz wide did not allow much room for pile-ups and they were slow in being utilized. G3FKM is not only a top DXer but is also the IARU Secretary for Region 1, this position often involved in liaison with the ITU headquarters in Geneva. As a defender of the DX faithful, when G3FKM speaks, listen! Also, give a bit of attention to the new WARC bands, now almost ten years old.

LU7HJM reports that LU1FT is South American Slim and is unauthorized. Aurelio says that the callsign has not been issued and you can verify this, or any other LU call, by writing to: Secretaria de Comunicaciones, Seccion Principal Radioaficionados, Sarmiento 151-4 to piso- Of.55, 1000 Buenos Aires, Argentina. Aurelio is also L4H.

NA5U notes that FK8FU is active from New Caledonia and is often around 14260 kHz after 0430Z. He also is found on 40, 80, and 160 meters. QSL via NA5U and use the '87 or '88 Call books only. 3W8CW and 3W8DX showed as advertised, again showing why all true-blue DXers are Believers. The good things always come to the Deserving. They also were talking of going on to Laos but needed more keys to open that door. Rotuma showed on schedule in late October signing 3D2XX. VP8BUB should be more active after February; present indicator is that he will be there for another year or more. C9MKT, who brings Mozambique to the Deserving, is usually found intermittently and mostly on weekends. You have to be alert. UA3CR runs a net at 14,300 kHz at 1300Z, this being the Satellite Roundtable with information on the Soviet satellites.

Look for J8DX from mid-February when the K4LTA group shows with K4LTA shouting, "I have returned . . . for the eleventh time." There will be others on the effort and St. Vincent should be readily available. Omani stations started showing the new prefixes in late December. The A4s became A41s. If you hear an A43, it will be a special-event station. A45s are visitors and A47s are club stations.

Often a DXer will wonder about Gus Browning and what he is doing these days. Stephen Clark, K9BJ, recently visited Gus. Naturally, they talked of DX and the good days of DXing. What else did you expect? K9BJ says that Gus has not given up planning DXpeditions, Gus noting that he has a lifetime Bhutan license and is ready to do it all over again. He also says he maintains a contact with the Minister of Communications there. Gus just turned 80 the end of last year.

WB7RFA was in the CQ WW Phone last October but says he did not get into the contest as much as he wished. Craig notes it was a honeymoon trip. Bill Mauzey, W6RT, and a member of the Southern California DX Club, is a new member of the DXAC, filling the spot long held by N6RJ. Peter Conway, who signed 7Q7BC from 1969 to 1976, says he still has the logs and the blank QSL cards if needed. He also signed VQ2BC and 9J2BC from 1962 to 1969. The 1989 officers of the Northern California DX Club are President Jerry Griffin, W8MEP; Vice-president Larry Souza, KG6GF; Secre-



tary Tom Jones, K6TS; and Treasurer, Stan Kuhl, K6MA.

We came up with a couple more young DXCCers with Fritz Thurstone, W4UXI, earning it at the age of 28, but that was a few years back. He then went QRT for a quarter century, earned a PhD in Electrical Engineering, and is now back, the compleat DXer. Everyone should have a PhD, or they have it already if you believe what you hear on the bands. Fritz was first licensed as W9GTN, then as W6JYC, and finally as W4UXI. We have come up with a lot of young DXers in their thirties. That's young to a lot of the more matured DXers. W6DU in a recent trip to Scandinavia came up with SM3EVR, who was on the Honor Roll at the age of 26 in 1982. He also got a 5BWAZ the same year.

Enough. We still are looking for the youngest one currently on the Honor Roll. WB9YMY at 28 is the youngest so far.

73, Cass, WA6AUD

## QSL Information

CE#FID to ON4IZ  
 CT1CWT/CR3 to CT1CWT  
 CT9GEF to CT3EE  
 D68JL to AK1E  
 EI4GV to KX1BN  
 EJ8GV to KX1BN  
 FG5DX to WB7FRA  
 FK8FU to NA5U (87/88 CB)  
 FR4FD to F6AYA  
 FR7FA/J to F6FNU  
 FT5ZB to F6ESH  
 FY5EW to F6BFH  
 HC8AA to HC2AA  
 HX6CDH to Y44UI  
 J25US to WA8JOC  
 KA2DX to KD7P  
 WY5L/KH3 to N5DAS  
 NT5D/KH6 to NN5W  
 JX1VG to LA1UG  
 LX/PA3DKC to PA3DKC  
 OE1RUA/YK to OE1RUA  
 R88UB to UB4UWA  
 S01A to EA2JG  
 T41/Cuba to CO2QQ  
 TE5JS to N2AU  
 TE88M to T18CBT  
 TV6DNF to F6COU  
 UB5ILA to N9CMB  
 UD6DKW to W3HNC  
 UG6GAT to UQ2MU  
 VP2ET to K5RX  
 V22A to WB7FRA  
 VP2M/DK3QJ to DK3QJ  
 VS6WU to K9EL  
 YZ2S to YU2AKL  
 ZB2/G4HUA to VE6SH  
 4M5RY to YV5KAJ  
 4K1F to UQ2MU  
 5T5CK to DL1HH  
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 New Caledonia  
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 Caledonia  
 FK9FK to J. Nixon, BP 2319,  
 Noumea, New Caledonia  
 HC2AA to F. Landin, Box 5525,  
 Guayaquil, Ecuador  
 HC2AGT/HD2 to Box 5270,  
 Guayaquil, Ecuador  
 HC2OG to Box 10868, Guaya-  
 quil, Ecuador  
 HC8AA to F. Landin, Box 5525,  
 Guayaquil, Ecuador  
 H18JON to Box 3094, Santa Do-  
 mingo, Dominican Republic  
 KC6TO to No. Alabama DX  
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 POB 50.240, Caracas 1050-A,  
 Venezuela  
 7S5BE to Hawk Eriksson,  
 Ringv. 129 IV, 116 61, Stock-  
 holm, Sweden

operated from Geyser Reef just before that one sunk out of sight. 3V8AA was planning a return to Tunisia, and even before it showed there were some arguments on Desecheo meeting the criteria. Also surfacing was Criteria Rule #5 stating that areas such as Embassies, Demilitarized, or Extra-territorial monuments would not be eligible.

DXers were getting hopeful about China with things loosening up and the vice-premier visiting in the States. BY1AA was being worked. The operator was "Pyng" and all the DXers were building up their hopes. A revised DX Operating Code, this being CD-215 leaflet, was

announced and the DXAC were to be solicited for comment on operating conduct and procedures. The Colvins were in Honduras, and FR7ZL was promising Tromelin for all deserving and needy DXers. The Hensons were headed out and hoping for the Maldives and Sri Lanka. D4CBS was promised from Sao Thome in March. There was a good sunspot crop with the January flux only once getting below the 200 figure.

As it has always been, DXers were almost happy. All they needed was a few more countries. But then again, DXers have always had modest needs.

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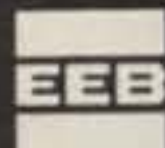
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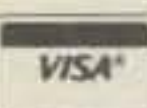
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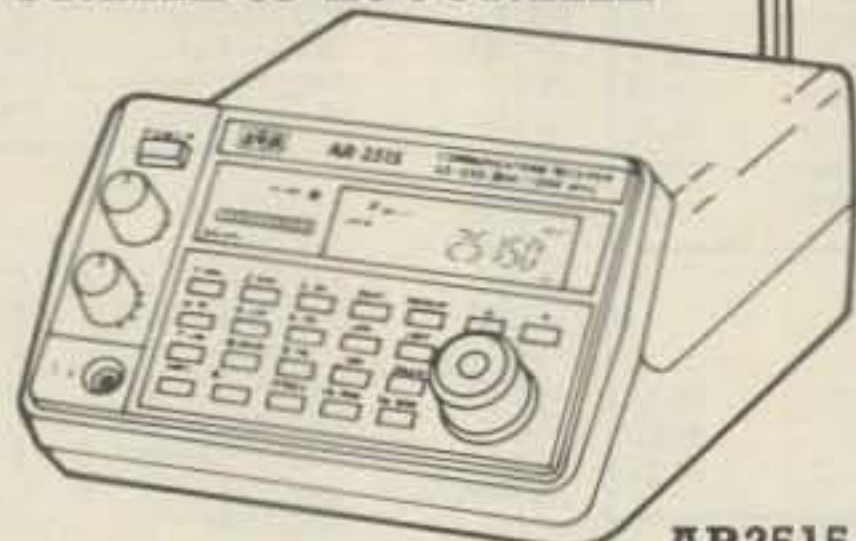
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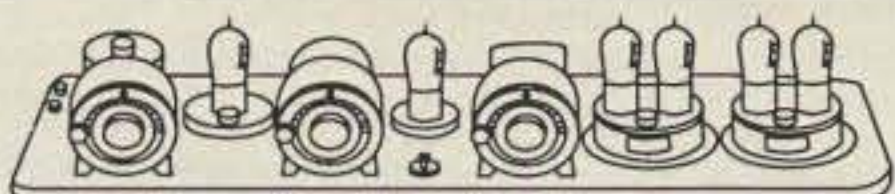
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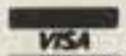
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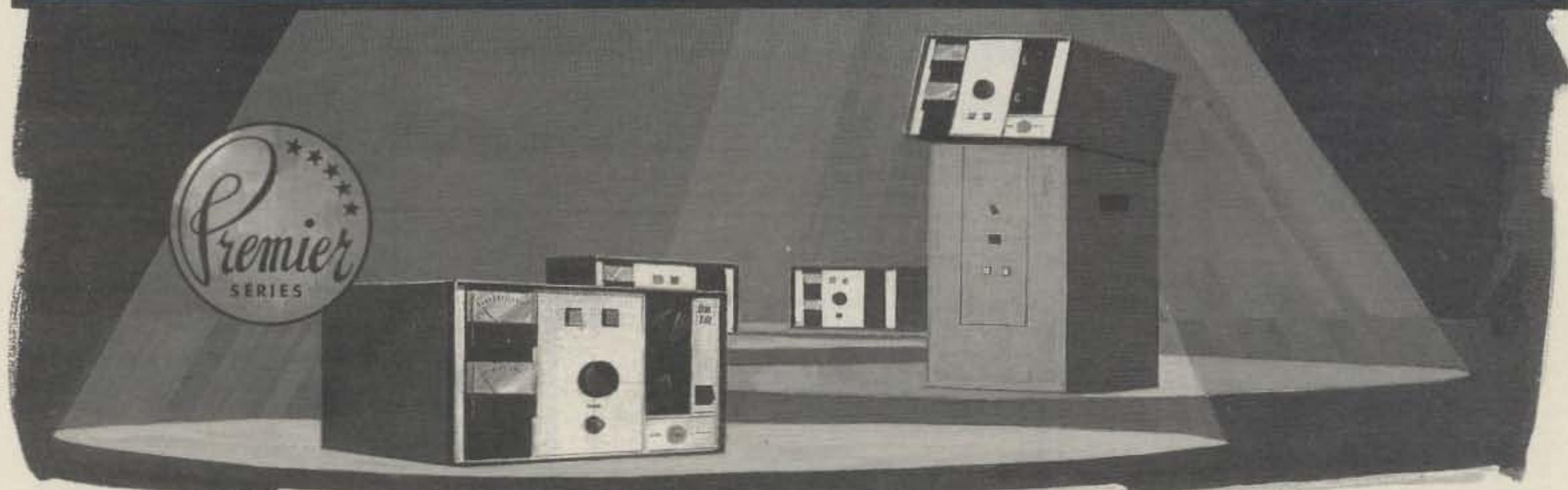
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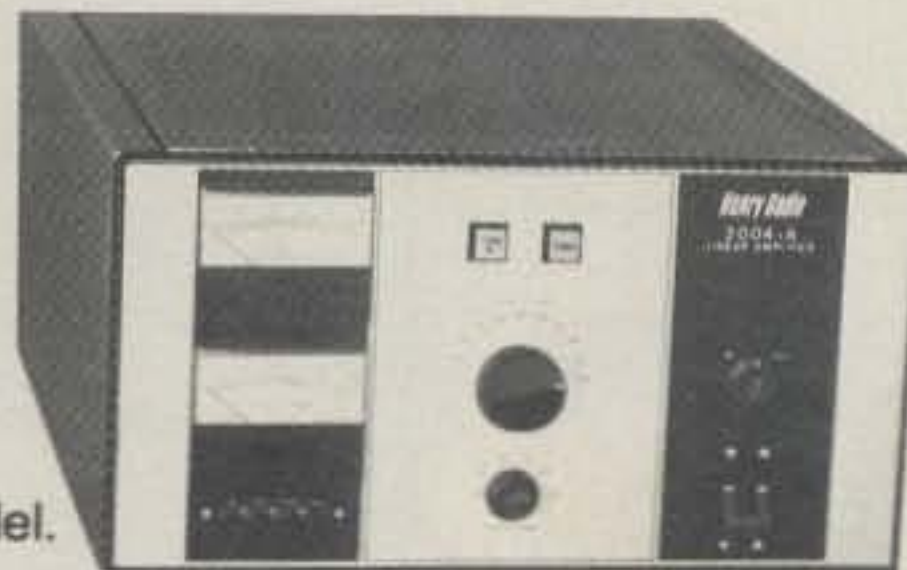
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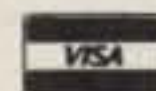
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# You'll be hard-pressed to beat the performance of Yaesu's new FT-411 handheld.



Let Yaesu's "next generation" handheld lighten your load!

Picking up where our popular FT-209R Series left off, the 2-meter FT-411 will amaze with its astounding array of features!

**The brains of a base station.** "Sophisticated operation" takes on new meaning in the FT-411. You get 49 memories, plus dual VFOs for quick band-hopping. Keyboard frequency entry. Automatic repeater shift. DTMF autodialer with ten memories of up to 15 digits each. *Built-in CTCSS encode/decode.* Selectable channel steps: 5/10/12.5/20/25 kHz. Programmable band scan with upper/lower limits. Selectable memory scan. And extended receive coverage of 140-174 MHz (MARS/CAP permit required for transmit on 140-150 MHz).

Not bad for a handheld measuring just 55(w) x 32(d) x 139(h) mm (the same size as our FT-23R Series HTs)!

**Friendly operation.** For operating convenience, the FT-411's keypad features a "do-re-mi" audible command verification. Both the display and keypad can be backlit (brightly!) for night operation at the push of a button. A rotary channel selector allows fast manual tuning. Or key in the frequency directly. Operate VOX (with YH-2 headset option). Plus you get a battery saver to conserve power while monitoring. And a (defeatable) automatic power-off feature that shuts down your radio if you forget to turn it off!

**High power capability.** The FT-411 comes equipped with the 2.5-watt, 600-mAh FNB-10 battery pack. Try our optional FNB-12 5-watt, 500mAh pack or tiny FNB-9 2.5-watt, 200-mAh pack. Or get 6 watts output by applying 13.8-volts DC from an external power supply.

**Swap options with Yaesu's FT-23R Series.** Our rugged best-seller's chargers, batteries, and microphones are fully compatible with the FT-411. The FT-23R is the perfect companion for the FT-411, and at a great price!

**Try out an FT-411 today.** Ask for it now at your local Yaesu dealer. Or call 1-800-999-2070 for a free brochure. And experience the legendary Yaesu HT performance!



## YAESU



ICOM

IC-735 HF Transceiver



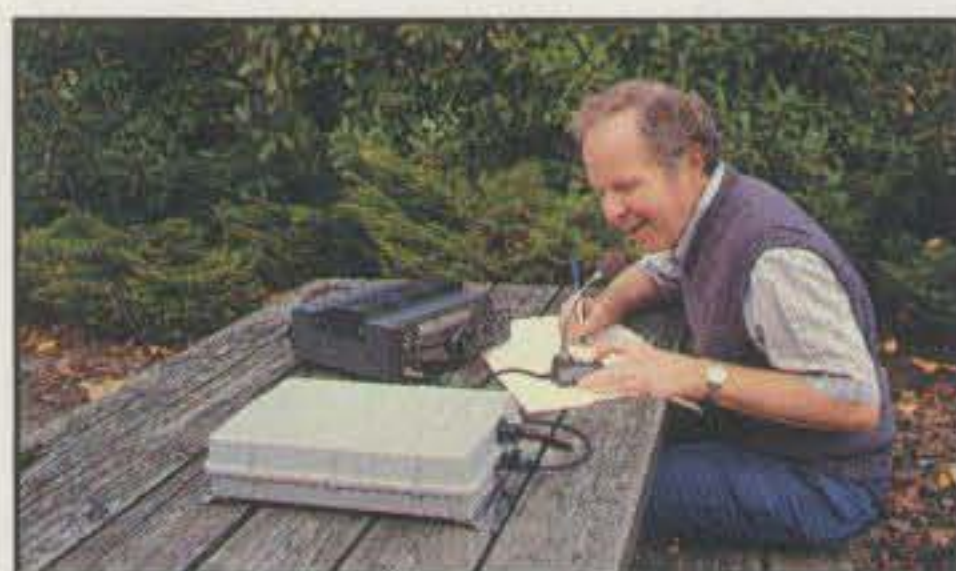
# 'MOST RELIABLE HF'

"Of all the possible radios, I chose the ICOM IC-735 for my CQWW QRP world record attempt."

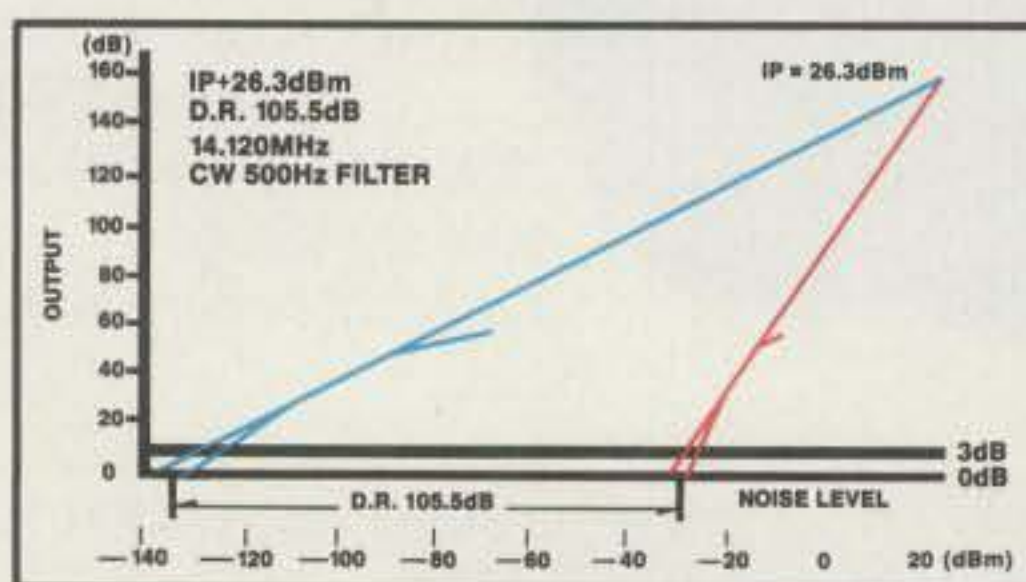
Danny Eskenazi, K7SS, World High QRP Score  
 -1987 CQWW SSB (PJ2FR)\*  
 -1986 CQWPX SSB (K7SS/WH6)  
 -1986 ARRL DX PHONE & CW (K7SS/KH6)

ICOM's IC-735 is the world's most popular HF transceiver. With the highest performance, smallest size, and best customer satisfaction of any HF transceiver, the IC-735 is the winner's choice for fixed, portable, or mobile operations.

- **Field Proven 100W Transmitter** with 100% duty cycle. Proudly backed with ICOM's full one-year warranty.
- **105dB Dynamic Range Receiver** includes passband tuning, IF notch, adjustable noise blanker, and semi or full CW QSK.
- **Conveniently Designed.** Measures only 3.7"H by 9.5"W by 9"D.



- **Optional AH-2 Automatic Tuning Mobile Antenna System** covers 3.5MHz-30MHz and tracks with the IC-735's tuned frequencies.
- **All HF Amateur Bands and Modes** plus general coverage reception from 100KHz-30MHz.



CIRCLE 6 ON READER SERVICE CARD

- **12 Tunable Memories** operate and reprogram like 12 separate VFO's. Supreme flexibility!

**Additional Options:** SM-10 graphic equalized mic. PS-55 AC power supply, AT-150 automatic antenna tuner for base operation.

**ICOM's IC-735...** a proven winner for reliable worldwide HF communications. See it today at your local ICOM dealer.



**ICOM**  
 First in Communications

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**Customer Service Hotline (206) 454-7619**  
 3150 Premier Drive, Suite 126, Irving, TX 75063  
 1777 Phoenix Parkway, Suite 201, Atlanta, GA 30349  
 ICOM CANADA, A Division of ICOM America, Inc.,  
 3071 - #5 Road, Unit 9, Richmond, B.C. V6X 2T4  
 All stated specifications subject to change without notice or obligation. All ICOM radios significantly exceed FCC regulations limiting spurious emissions. 735188.  
 \*Final contest results pending.