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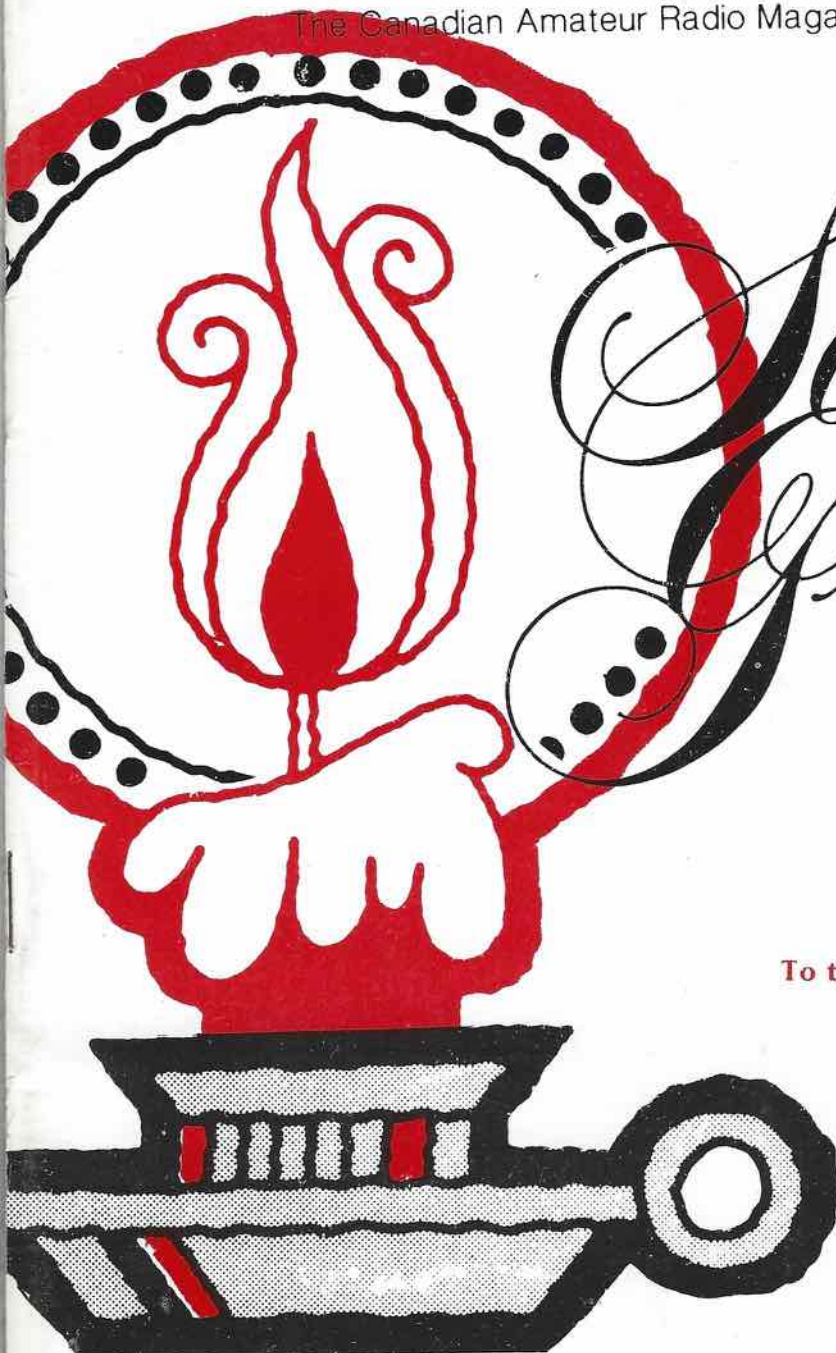
# TCA



\$1<sup>00</sup>

DECEMBER 1980

The Canadian Amateur Radio Magazine

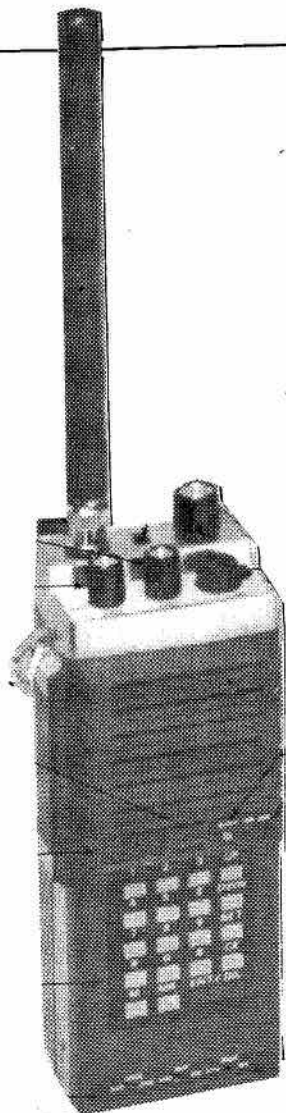


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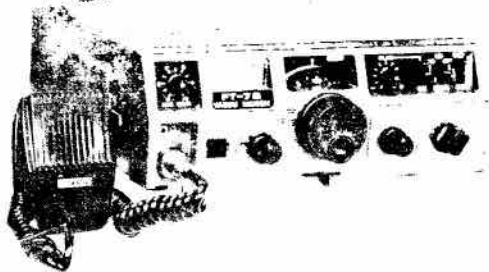


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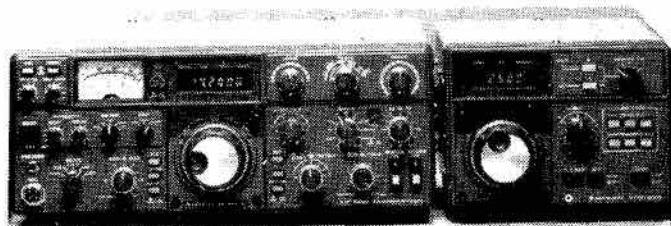


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# TCA

**THE CANADIAN AMATEUR**

December 1980

Vol. 8 No. 11

**Contents**

CARF meets with DOC to discuss examinations . . .	17
Letters to the Editor . . . . .	18
Cross-Canada in a Model A . . . . .	19
Chips and Bits . . . . .	20
Fade-free Power . . . . .	21
WARC '79, Symposium Recommendations . . . . .	22
VE3OCU/TCA . . . . .	24
No-one said this job was easy . . . . .	25
Remember the Magic . . . . .	26
Canadian Contest Scene . . . . .	28
Diary of a Homebrewer . . . . .	30
Albatross & Amateur Radio . . . . .	31
The Convert . . . . .	32
Space between your ears? . . . . .	32
Amateur equipment tariff removed . . . . .	33
News Briefs . . . . .	33
The Hex . . . . .	34

**TECHNICAL SECTION**

Build a 2-Metre Quad for Apartments . . . . .	35
Homebrew parts for the QST Wonderbar . . . . .	36
Build your own Operating Desk . . . . .	38
Centre Fitting for Dipole . . . . .	41
The Fuse . . . . .	42

**TCA - The Canadian Amateur** is published in Canada 11 times per year to provide Radio Amateurs, those interested in radio communications and electronics and the general public with information on matters related to the science of telecommunications.

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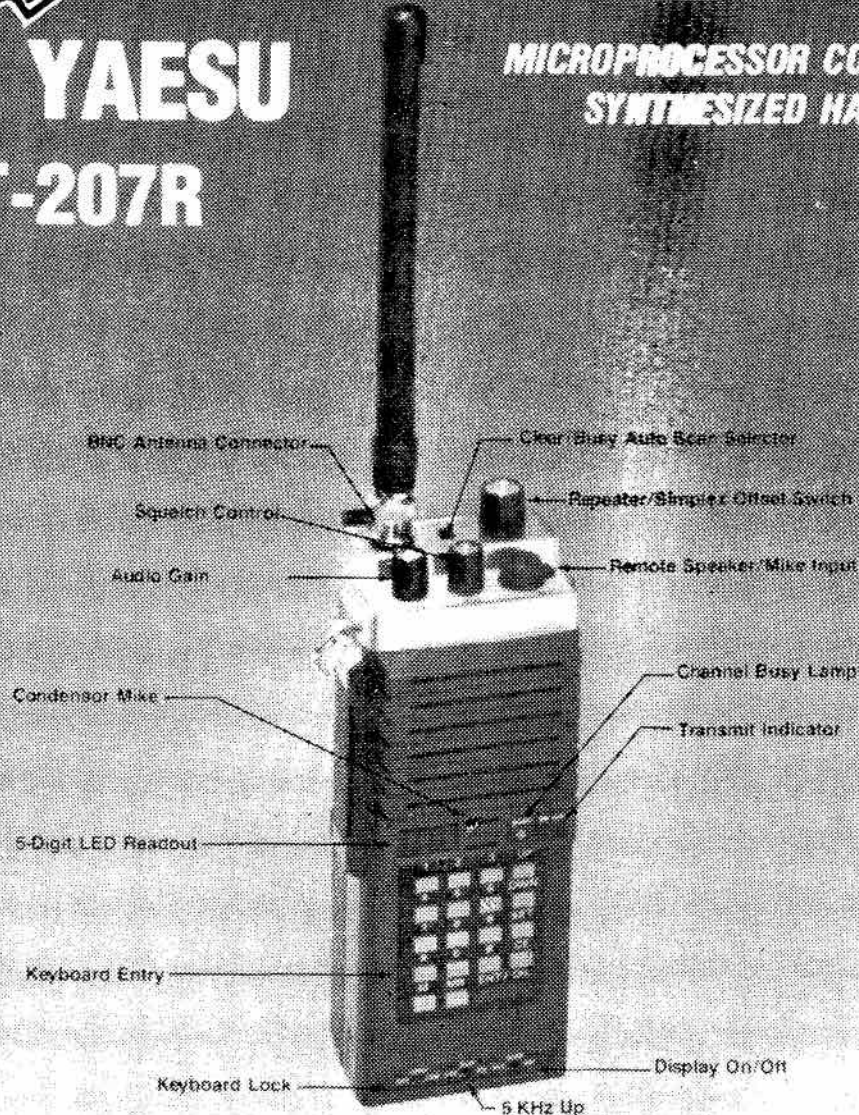
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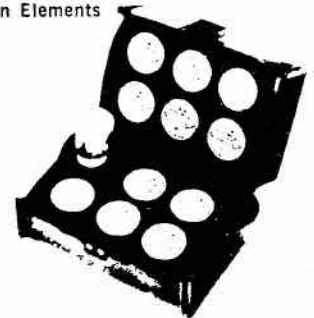
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25 watts	—	25A	25B	25C	25D	25E
50 watts	50H	50A	50B	50C	50D	50E
100 watts	100H	100A	100B	100C	100D	100E
250 watts	250H	250A	250B	250C	250D	250E
500 watts	500H	500A	500B	500C	500D	500E
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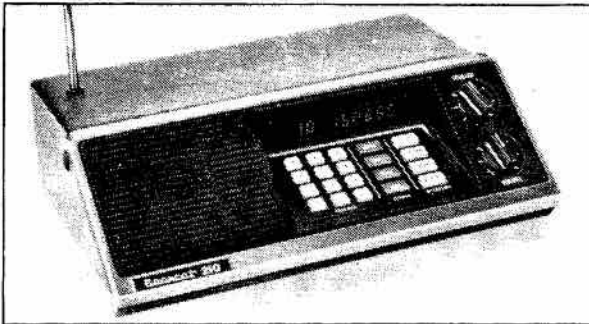
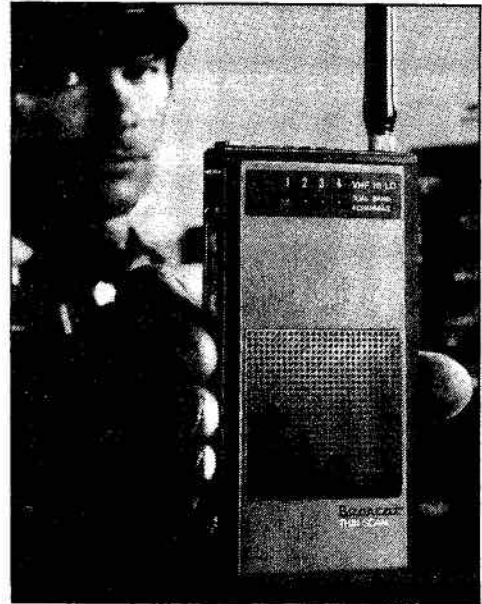
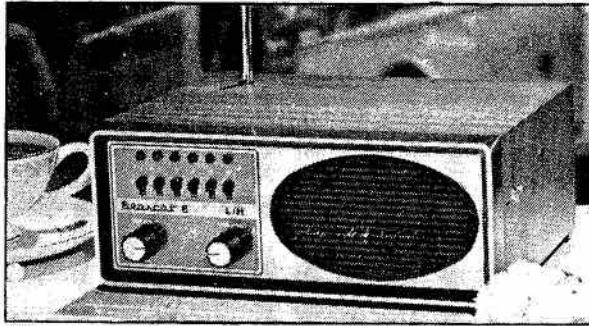
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	MML432/50	\$315.00	Various	MMV1296	\$105.00
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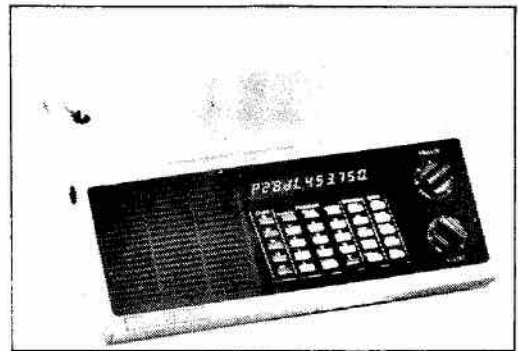
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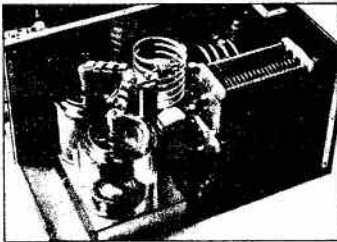
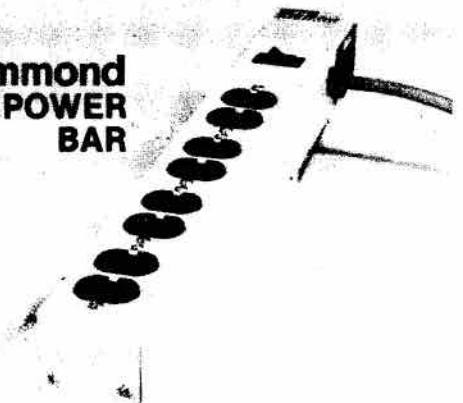
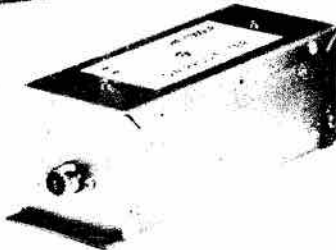
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**HF-1000LP  
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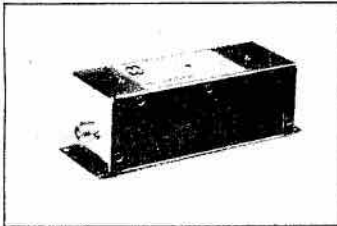
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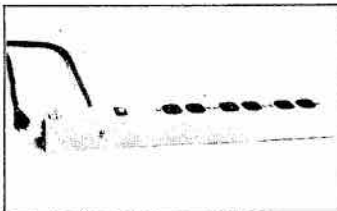


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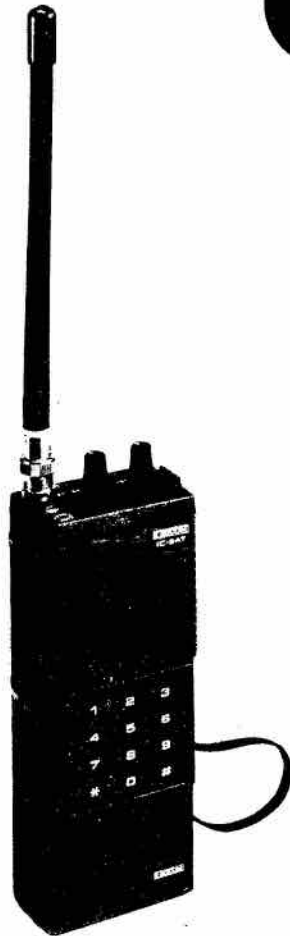
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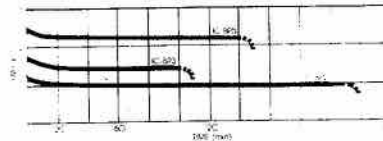
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IC-8P1	IC-2C	BC-25 N-250 AA (4)	84	15	Yes	
IC-8P4	IC-2C	LM-3 (6)	90	15	Yes	
IC-8P4	IC-2C	BC-30 N-425 AP (4)	72	10	Yes	
IC-8P5	IC-2C	BC-30 N-425 AP (4)	108	23	Yes	



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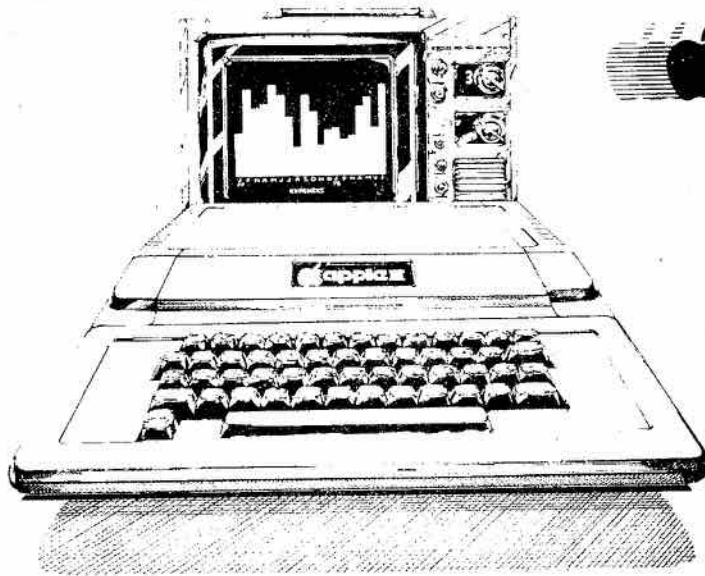
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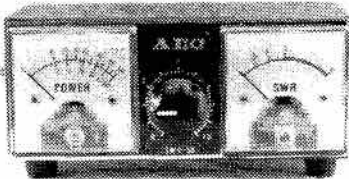
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and a  
Happy New Year

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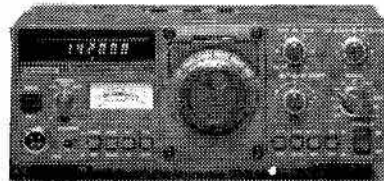


**SWR-50**



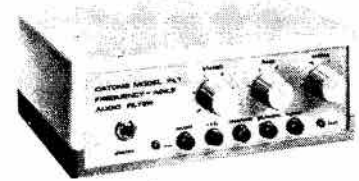
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80-10 meters, including three new bands  
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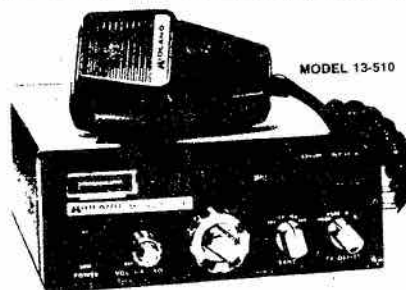
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13-510  
Reg. \$699.00  
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**MOSLEY**  
**TRAP**  
**ANTENNA**

**CL-33**  
\$369.00  
MAXIMUM ELEMENT LENGTH: 27 ft.  
ASSEMBLED WEIGHT: 42 lbs.  
SHIPPING WEIGHT: 47 lbs.  
WIND LOAD: 180 MPH  
EIA Std: 120 lbs.  
WIND SURFACE: 6 sq. ft.  
MATCH: Broad band  
capacitive.

**Model TA-33 Jr.**  
Mosley TA-33 Jr. has quality and performance found in the TA-33. Rated to 300 watts AM and CW, - 1000 watts P.E.P. on SSB. Complete with Hdw. The Junior may be converted to MP-33 with higher power rating with MPK-3 Kit. Shipping weight 28 lbs. Assembled weight 20 lbs.

**MOSLEY**

- TA33 Jr. \$249
- TA33 now \$329.
- CL-33 \$369.
- CL-36 \$439.
- MPK-3 pwr kit for TA33Jr \$85.
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- RV8C 80m adapter \$59.
- DI-2 2m groundplane \$39.
- MM-144 mobile c/w trunk mount, coax, etc. \$47.50
- RV8C & RV4C 10-80mtr Vertical SPECIAL \$149.

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- ATB-34 \$369.
- A-14-3 3el 14MHz Yagi \$199.
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- A-147-11 2m 11el Yagi \$52.95
- ARX-2 Ringo Ranger \$53.95
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- 203BA \$198.
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- FT207R Hand-held \$449.

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- Delhi DMX-HD-48 \$345.**

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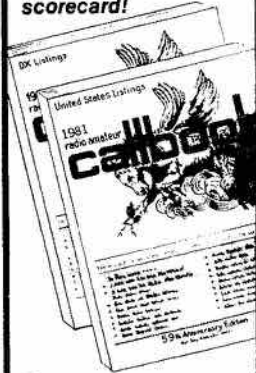
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YAESU FT-207R Microprocessor controlled 2m FM hand held transceiver. Features: 2.5w or 200mW output, keyboard entry of 800 channels across 144 to 148 MHz with digital display, up/down manual or auto scan for busy/clear channel, priority channel with search-back, keyboard lock, memory back-up and display on/off switch. Operates standard 600 Khz offsets or any odd repeater splits. Equipped with Nicad pack, battery charger, flexible rubber antenna, earphone and shoulder strap. Size: 2 1/4" x 7 1/4" x 2 1/4". Wt. 1 1/2 lbs. .... \$459

MP-9 Extra Nicad battery pack ..... \$46  
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 MC-3 3 hr quick desk chgr/AC supply ..... \$110  
 MC-90 Extra 15 hr wall charger ..... \$15  
 LC-7 Leather carrying case ..... \$3  
 TA-2 19" telescoping whip antenna ..... \$15  
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DB7 Decco Mobile DC-DC fast charger also for WILSON'S Mark II&IV---\$59



800 channels in the palm of your hand

Tempo presents the S1 SYNCOM...the world's first synthesized 800 channel hand-held transceiver

TEMPO S1 SYNCOM 2m FM Hand-Held Transceiver 1.5 watts nominal output. Fully synthesized with 800 channels, 144-148 MHz. No crystals required. Top panel thumb wheels select receive frequency to 10 Khz. Slide switch offsets +5 Khz if desired. Operates simplex or offsets + or - 600 Khz for repeaters. Comes with 450 mA nicad battery pack charger and telescoping antenna. 2 1/4" x 6 1/4" x 1 6/8". 16 oz. with battery

Tempo S1-----\$345  
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 Leather Case-----\$24  
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Frequency Range: 3.5-30 MHz (Including WARC Bands)  
 Power Rating: 500 Watts PEP  
 Internal Dummy Load: 50 Watts/Minute  
 Impedance Matching: 15-250 Ohms to 50 Ohm Resistor  
 Input Power Required for Automatic Tune: 1.5 or 10 Watts (Set by rear panel switch)

Tune-Up Time: 45 Seconds Max  
 Power Requirement: 13.8 VDC/2 Amp



SWR & Power Meters Models CN-720 and CN-620

Simultaneous direct reading SWR, Forward Power and Reflected Power.  
 Frequency Range: 1.8-150 MHz  
 SWR Detection Sensitivity: 5 Watts min.  
 Power: 3 Ranges (Forward, 20/200/2000 Watts) (Reflected, 4/40/200 Watts)  
 Tolerance: ± 10% full scale  
 Input/output Impedance: 50 Ohms  
 Connectors: SO-239  
 Dimensions: 180 x 120 x 130 mm; 7 x 4.75 x 5 in; 165 x 75 x 97 mm; 6.5 x 3 x 4 in

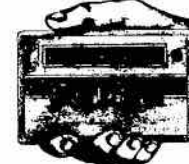
Simultaneous direct reading SWR, Forward Power and Reflected Power.  
 Frequency Range: 140-450 MHz  
 SWR Detection: Sensitivity 5 Watts min.  
 Power: 2 Ranges (Forward, 20/200 Watts) (Reflected, 4/40 Watts)  
 Tolerance: ± 10% full scale  
 Input/output Impedance: 50 Ohms  
 Connectors: SO-239  
 Dimensions: 180 x 85 x 120 mm; 7.12 x 3.37 x 4.75 in

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Code reading Gets even better.



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Introducing the versatile Kantronics Mini-Reader™

At last, you can have the code-reading functions for Morse, RTTY and ASCII combined in a miniature package price. The Kantronics Mini-Reader has all the functions of its larger counterpart, the Field Day 2, including code-speed display, automatic Morse speed tracking, demodulator output, a tuning eye, code-editing programs and a 24-hour clock.

Both have full features!

- \*Morse copying ability
- \*3 to 80 WPM Morse range
- \*Computer programs for improving sloppy Morse
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- \*60, 67, 75 and 100 WPM Baudot
- \*ASCII copying ability
- \*110 and 300 WPM baud (300 baud readable only at operator typing speed)
- \*Copies any shift of RTTY or ASCII
- \*24-hour clock
- \*Entire unit in single package
- \*Automatic code-speed tracking
- \*Morse-code speed display
- \*Tuning eye
- \*Full-year limited warranty
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- \*Internal 200 Hz bandwidth filter
- \*All letters, numbers and punctuation with special characters for Morse, RTTY and ASCII
- \*Self-test mode

CHRISTMAS SPECIAL

Field Day 2

\$599

115/230 volt AC internal speaker  
 Large, 14-segment displays  
 10" by 9" by 5.5"

After Jan 1, 81 \$629.00

MFJ 941C Versa Tuner II



\$127.00

Fastest selling MFJ tuner... because it has the most wanted features at the best price. SWR + dual range wattmeter (300 & 30 watts full scale, forward and reflected power). Sensitive meter measures SWR down to 5 watts output. More flexible antenna switch selects 2-coax lines, direct or through tuner, random wire balanced line, or tuner bypass for dummy load. 12 position efficient airwound inductor for lower losses, more watts out.

Built-in 4:1 balun for balanced lines. 10000 capacitor spacing. Matches everything from 160-10 meters; dipoles, inverted vees, random wires, verticals, mobile whips, beams, balanced and coax lines. Easy to use, anywhere. Measures R×216! has SO-239 connectors, 5-way binding posts, finished in eggshell white with walnut-grained sides.

NEW MFJ "Dry" 300W & 1KW Dummy Loads

MFJ-262 \$75.00 MFJ-260 \$40.00  
 Air Cooled, non-inductive 50-ohm resistors in perforated metal housings with SO-239

connectors, both rated to full load for 30 seconds; de-rating curves to 5 minutes included. Just right for tests and fast tune up. Low VSWR. 300W: 1:1.1 max to 30 MHz; 1:5.1 max. 30-160 MHz 1kW: 1:5.1 max to 30 MHz; 30-160 MHz MFJ-260 (1300W) is just 1.5x2.5x1.75 MFJ-262 (1KW) is 3x3x1.5"

MFJ Dual Tunable SSB/CW Filter "Signal Enhancer"



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Dual filters give unmatched performance. The primary filter lets you peak, notch, low pass or high pass with extra steep skirts. Auxiliary filter: 70 dB notch, 40 Hz peak. Both filters tune from 300 to 3000 Hz with variable bandwidth from 40 Hz to nearly flat. Constant output as bandwidth is varied. Linear frequency control. Switchable noise limiter for impulse noise. Simulated sound for CW lets ears and mind reject QRM. Inputs for 2 rigs, switch selectable. Plugs into phone jack. Two watts for speaker. OFF bypasses filter. 9-18 VDC, 300 mA w/110 VAC with optional adapter \$12. DD 10x2 66" MFJ 751, \$95 similar, primary filter only, less high pass & noise limiter.

The FT-707 has the new WARC bands



OVERSTOCKED IN 707's & 720's  
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NEW FT107 Now in Stock! Also Accessory Items!

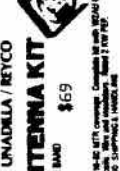


NOW IN STOCK! FT101ZD Digital 160MHz-10M Deluxe Features. Check the others... then get our price!

FT-720RV/720RU Synthesized 2m or 70cm models in stock!

Remote cables and switch box available!

UNADULA / REYCO ANTENNA KIT \$69



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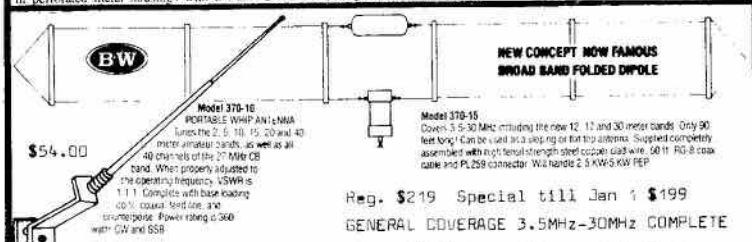


\$499

Late Bulletin Items affected by elimination of duty are lower in price. Call for details.

INSURED SHIPPING & HANDLING ADD 2% of purchase. \$2.50 MINIMUM

NO SALES TAX OUTSIDE N.B.



Model 370-10 PORTABLE WHIP ANTENNA Tuned to 2.5, 10, 15, 20 and 40 meter amateur bands, as well as all 40 channels of the 27 MHz CB band. When properly adjusted to the operating frequency, VSWR is 1:1.1. Complies with base loading 100% coax feed line, and frequency response power rating 5-300 with CW and SSB.

Model 370-15 Covers 3.5-30 MHz including the new 12, 17 and 30 meter bands. Only 30 feet long! Can be used as a whip up to 100 feet antenna. Suggested completely assembled with high tensile strength steel coated copper wire, 50 111 FG-8 coax cable and PL-259 connector. Will handle 2.5 KW/5 KW PEP.

Reg. \$219 Special till Jan 1 \$199  
 GENERAL COVERAGE 3.5MHz-30MHz COMPLETE

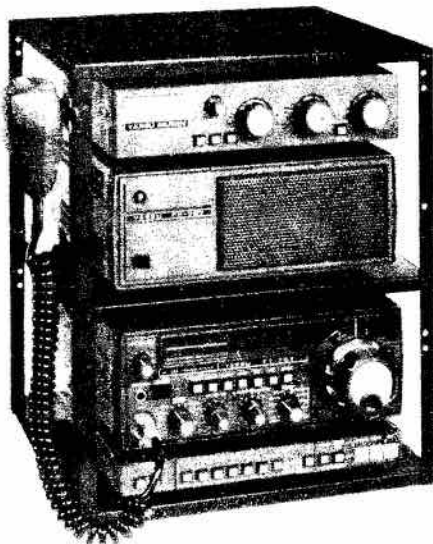
# FT-707

YAESU



## HF SSB TRANSCEIVER

The FT-707 "Wayfarer" is the beginning of a new generation of compact solid state transceivers. Though hardly larger than a book, the FT-707 is a full-feature transceiver with performance you might expect only in a "top of the line" transceiver. Ideally suited for your home station or as a traveling companion, the FT-707 is the radio of the 1980's....and it's brought to you by the active hams at YAESU.



FT 707 \$1199.00

### NEW BANDS FACTORY INSTALLED

When the new amateur bands become available, you won't want to go through the time and expense of overhauling your present equipment. With the FT-707, you get complete coverage of 80 through 10 meters, including the new 10, 18, and 24 MHz bands, all factory installed!

FP-707 POWER SUPPLY	\$239.00
FV-707DM DIGITAL VFO	\$439.00
FC-707 ANTENNA COUPLER	\$189.00
RACK MOUNT YOUR STATION	\$35.00
FT-707 TRANSCEIVER	\$1199.00

### GENERAL

Frequency coverage: 80 m 3.5-4.0 MHz, 40 m 7.0-7.5 MHz, 30 m 10.0-10.5 MHz, 20 m 14.0-14.5 MHz, 17 m 18.0-18.5 MHz, 15 m 21.0-21.5 MHz, 12 m 24.5-25.0 MHz 10 m 28.0-29.9 MHz Modes of operation: LSB, USB, CW, and AM Power requirements: 13.5 volts DC, negative ground Current consumption: DC 1.5 amps receive, DC 20 amps transmit Case size: 93(H) x 240(W) x 295(D) mm incl. heat sink Weight: Approx. 6.5 kg

### TRANSMITTER

Power input: SSB/CW 240 watts DC, AM 80 watts DC Carrier suppression: Better than 40 dB Unwanted side-band suppression: Better than 50 dB at 14 MHz, 1 kHz mod. Spurious emissions: At least 50 dB down Frequency response: 350-2700 Hz (-6 dB) Third order distortion products: At least 31 dB down Frequency stability: Less than 300 Hz drift over 30 minutes after 10 minute warmup;

less than 100 Hz drift after 30 minute warmup Modulation type: (SSB) Balanced modulator, (AM) Amplitude modulation of a low power stage Antenna output impedance: 50 ohms Microphone impedance: 500-600 ohms (low impedance)

### RECEIVER

Sensitivity: SSB/CW 0.25  $\mu$ V for 10 dB S/N, AM 1.0  $\mu$ V for 10 dB S/N Selectivity: SSB 2.4 kHz (-6 dB), 4.0 kHz (-60 dB); CW\* 0.6 kHz (-6 dB), 1.2 kHz (-60 dB); CW\*\* 350 Hz (-6 dB), 1.2 kHz (-60 dB); AM 3.6 kHz (-6 dB), 6.8 kHz (-60 dB) Image rejection: 60 dB (80-12 m), 50 dB 10 m Audio output impedance: 4-16 ohms Audio output: 3 watts  $\pm$  4 ohms @ 10% THD Variable bandwidth control: Continuous from 300 Hz to 2.4 kHz (SSB/CW modes only)

\* with optional 600 Hz CW filter  
\*\* with optional 350 Hz CW filter

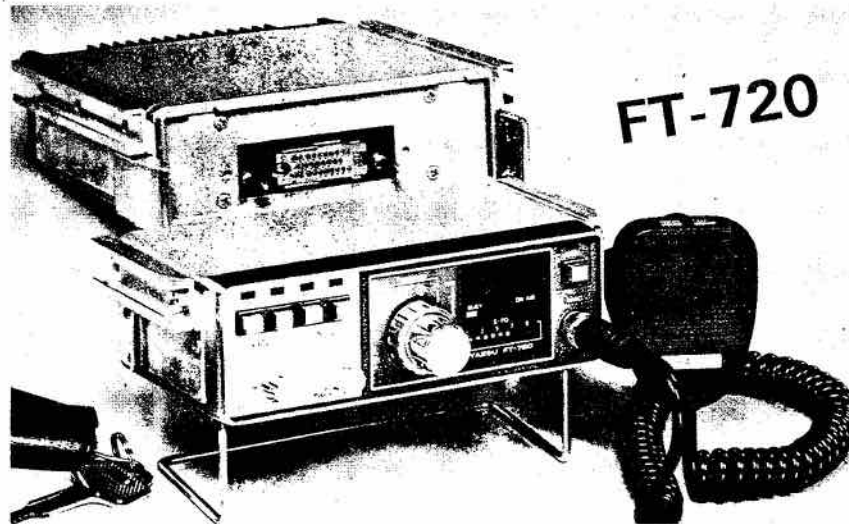


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FROM  YAESU



## ULTRA COMPACT VHF/UHF COMPUTERIZED FM TRANSCEIVER

### Choose Your Favorite Band

The FT-720R Control Head may be used with either the FT-720V 2 Meter RF Deck or the FT-720U 70 cm RF Deck. If you have never operated on 440 MHz, you'll be surprised at the superb coverage and clear, interference-free channels.

### Advanced PLL Technology

Recent advances in Large-Scale-Integrated (LSI) circuitry have made single-chip PLL control systems a reality. In the FT-720R you get the stability of PLL, plus the flexibility of microprocessor control, in a package more compact than was ever possible before.

### Scanning

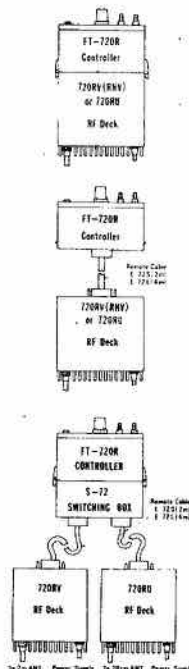
Fingertip controls on the microphone provide instant up/down scanner control. The scanner may be programmed to stop on a busy or clear channel, if you wish.

### Optional Control Box

The S-72 control box option will allow you to connect the control head, the 2 meter RF Deck and the 70 cm RF Deck together, thus enabling you to choose the desired band is simply by throwing one switch!

### Five Memory Channels with Priority Feature

As many as five memory channels may be programmed, for instant return to a favorite repeater or simplex channel. One of the memory channels may be used as a priority channel, as well, and the microprocessor will then search between the priority channel and your main dial frequency!



	FT-720RV	FT-720RU
Frequency coverage:	144.00-147.99 MHz 144.00-145.99 MHz	430-439.975 MHz 440-449.975 MHz
Synthesizer steps:	10 or 12.5 kHz	25 kHz
Power output:	10 watts (RV model) 25 watts (RVH model)	25 kHz 10 watts
Modulation type:	Variable reactance phase modulation	Variable reactance phase modulation
Deviation (max):	±5 kHz	±12 kHz
Maximum bandwidth:	16 kHz	30 kHz
Spurious emissions:	-60 dB or better	-60 dB or better
Antenna connector:	SO-239	Type N
Output impedance:	50 ohms	50 ohms
Microphone impedance:	500-600 ohms	500-600 ohms
Receiver type:	Double conversion superheterodyne	Double conversion superheterodyne
First IF:	10.7 MHz	16.9 MHz
Second IF:	455 kHz	455 kHz
Sensitivity:	0.32 μV for 20 dB quieting	0.5 μV for 20 dB quieting
Selectivity:	±16 kHz (-6 dB) ±12 kHz (-60 dB)	±12 kHz (-6 dB) ±24 kHz (-60 dB)
Audio output:	1.5 watts @ 8 ohms @ 10% THD	1.5 watts @ 8 ohms @ 10% THD
Audio output impedance:	8 ohms	8 ohms
Power requirements:	13.8 VDC, negative ground 13.6 VDC (RVH model)	13.8 VDC, negative ground
Current consumption:	Approx. TX 3.5A (RV model) TX 6.5A (RVH model) RX 0.5A	Approx. TX 4.5A RX 0.5A
Case size:	150(W) x 50(H) x 247(D) mm	150(W) x 50(H) x 247(D) mm
Weight:	Approx. 2.5kg	Approx. 2.5kg

Specifications subject to change without notice.

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ARE AVAILABLE FROM  
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### PRICES

FT 720R CONTROL HEAD WITH BRACKET	\$329.00
720 RVH 2 MTR. RF DECK - 25 WATTS	\$370.00
720 RU 440 MTR. RF DECK - 10 WATTS	\$450.00
S72 SWITCH BOX	\$129.00
E72L REMOTE CABLE	\$63.00

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# TEN-TEC

## The All-American DX Machines

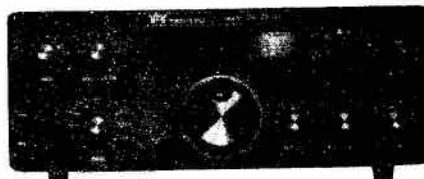


### THE NEW OMNI-SERIES C

The best of TEN-TEC. OMNI-C—with all 9 hf bands, new 3-mode offset tuning, new optimized bandwidth with 7 response curves, new built-in noise blanker, new "hang" AGC and all the features that have made this impressive series famous throughout the amateur world. And with all 9 hf bands, OMNI-C is ready to roam the entire amateur hf world from 160 through 10 meters including the three new bands, 10, 18, and 24.5 MHz (all crystals included excepting 18 and 24.5 MHz).

Another TEN-TEC "first" is in OMNI-C—3-mode offset tuning: offset Receiver tuning, offset Transmitter tuning, and offset Transceiver tuning—and in 2 ranges:  $\pm 500$  Hz or  $\pm 4$  kHz—for complete tuning flexibility in any situation.

And OMNI-C offers 7 response curves, four for SSB, three for CW, with new easy switching of all i-f and audio filters. See the new OMNI-Series C at HAM TRADERS. Only \$1579.

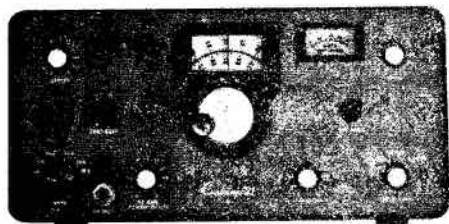


DELTA  
SPECIAL  
\$1099.00  
(Order before Dec. 25)

### THE NEW DELTA

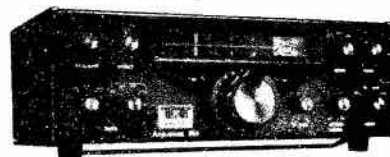
The notable change in hf transceiver design, DELTA offers all 9 hf band coverage, super selectivity, 200 watts, and all the features you want in a new smaller size at a new lower price!

All solid-state, all broadbanded (not even a resonate control), all 9 hf bands including the new 10, 18 and 24.5 MHz bands (even the crystals for all except 18 and 24.5 MHz), new low-noise double-conversion receiver with  $0.3 \mu\text{V}$  sensitivity, high 85 dB dynamic range, 8-pole 2.4 kHz SSB filter plus optional 500 and 250 Hz 6-pole filters that cascade for up to 14 poles of selectivity, plus 4 stages of active audio filtering, built-in notch filter, offset tuning, "hang" AGC for smoother operation, digital readout with six 0.3" red LEDs, 200 watts input on all bands including 10 meters, 100% duty cycle, QSK full break-in, built-in VOX and PTT, adjustable ALC and drive, adjustable sidetone, super stability, vernier tuning, low distortion audio, super new-look styling that's panelized for easy use and small enough to go anywhere ( $4\frac{3}{4}$ "h x  $11\frac{3}{8}$ "w x 15"d), new modular/mass-termination construction for easy board removal, plus a full accessory line. Check the super DELTA price at HAM TRADERS! Only \$1129. Amateur Net



### CENTURY-21 "THE CW MACHINE"

Ideal for the novice as a beginning rig, for the CW op on a budget, for everyone as a second rig. CENTURY-21 goes on making friends the world over! 70 watts input, 80 through 10 meters, all solid-state, full break-in, off-set tuning, broadbanded, overload-protected built-in power supply. See this CW bargain at HAM TRADERS. Only \$469.



### NEW ARGONAUT 515 — THE BEST IN QRP.

The latest in this famous series, the new 515 features improved receiver sensitivity ( $0.35 \mu\text{V}$ ), new heterodyne VFO, new bandspread on 10 meters (four 500 kHz segments), new broadbanded final amplifier design, new dial pointer zero-set, new LED RF output indicator (flashes on 2-watt peaks), new tilt-up bail, and new styling in black and bronze. And it has all the features that made its predecessors famous: 80-10 meter coverage, offset receiver tuning, PTT, full CW break-in, SWR bridge, integral TVI filter, anywhere size. Work it at HAM TRADERS. Only \$569.

(ARGONAUT 509 CLEARANCE \$449)

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# CARF meets with DOC to discuss examinations

Your national Federation met with officials of DOC Ottawa at 10:00 a.m., 6 November 1980 to present areas of concern with the present Amateur and Advanced Amateur examinations.

The CARF Delegation was headed by Bill Wilson, VE3NR, President with the presentation made by Art Blick, VE3AHU, General Manager and Ron Walsh, VE3IDW, Asst. Gen. Mgr., both having a long background in the instruction field.

The Thrust of the presentation was that the growth of Canadian Amateur Radio had declined since the introduction of the present examinations. This decline was attributed to the excessive amount of knowledge now required such that Amateur Radio courses were now 24 to 36 weeks long, resulting in fewer students, a higher drop-out rate and a smaller percentage of pass grades (40%) than normally expected (60%).

The main points of the presentation dealt with:

1. TRC-24 -- Information for the Guidance of Candidates. The lack of detailed reference material relating to the depth of knowledge required posed many problems for instructors in designing courses and in the publishing of adequate study guides.

2. There is an unbalance between the theory requirements for Amateur and Advanced Amateur certificates such that it is estimated that the Amateur requirements approximated 75% that of the Advanced Amateur.

3. A detailed analysis of previous Amateur theory examinations concluded that only 50% of the questions asked could be classified as "good". The rest were put in various categories -- Required excessive memorization of diagrams and formulae; Did not bring out what specific answer was required; Question more properly in Advanced Amateur examination; Question had little, if any, reference to Amateur Radio.

4. The Morse code test should be reduced to 90% correct copy (3 character errors in 3 minutes of test) at 10 wpm.

5. The examination books should be separated by class of examination. If this could not be done, then a different colour used for each class.

6. The amount of questions on Modulation theory in the Amateur examination be re-

duced and questions on the Installation and Operation (not operating procedures) of an Amateur station be added.

7. Many candidates had difficulty in attending examinations held during working hours.

The presentation was well received and concluded with a general discussion on the points raised. The remainder of the day was spent in detailed discussions with individual DOC officials functioning in the areas of concern, ending in the submission of formal recommendations for change.

The CARF delegation was very encouraged by the reception given and confidently expect that substantial changes will be made in the examination requirements, content and procedures.

VE3AHU

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## Phone Expansion

IARU Region One members are not standing still on the proposal by the F.C.C. on expansion of phone on 40 and 20 metres. In the October issue of "Region 1 News", they express concern "to all Amateurs outside the U.S.A. in that, if accepted, the amount of the 14 MHz phone band free from U.S.A. signals will be halved, and about 40% of IARU Region 1 phone band on 7 MHz will be usable by W-stations.

The views of member societies on these proposals are urgently required. It is pointed out that the U.S. Federal Communications Commission,

which will consider the proposals, will accept submissions from organizations outside the U.S.A. Therefore national societies may write directly to the FCC, or if desired, Region 1 will respond directly on behalf of all the member societies."

### WE GOOFED!

In the October issue of TCA, we attributed the article "Rock Bound and Happy" to VE3JDM. Credit should have been given to H. Bernard Sax VE3JBU.

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WRITE TO TCA -  
THE CANADIAN AMATEUR

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# Letters:

## TARIFF BREAKTHROUGH

Congratulations! CARF has come through for the Canadian Amateur once more. After three years of hard work of hard work, I knew that CARF would convince the Government to remove the 14.3% duty on Amateur equipment... A major breakthrough for the Canadian Amateur. A 'well done' thanks to Doug VE3CDC and CARF.

Sorry to hear that Doug resigned as Editor of TCA. I want to say thank you to Doug for the hours of reading enjoyment that TCA provided.

Mike Dougherty VE2DPD  
East-Hereford, Que.

**Thanks to Mike, too, for his early interest in the duty affair from his vantage point as a customs officer.**

## MERGER

I agree with the merger with CRRL in that one voice speaking for all Amateurs, regarding any new rules or proposals would have more effect. (For instance, the U.S.A. 40/20 metre expansion.) Regarding Officers and or Executive, positions should be balanced for both parties.

Reg Argyle VE3DTU  
Mindon Ont.

## SWAP SHOP

I would like to commend the TCA Swap Shop column for its effectiveness and moderate charges. I spent several months trying to locate a circuit diagram for a Valiant transmitter with no success. My ad in TCA in July brought an immediate response from across Canada and within a week of delivery of the magazine I had received several offers and one actual diagram. In the following

weeks the mailman delivered at least six circuit diagrams and complete handbooks for me to photocopy.

Many thanks to those who answered my call for assistance and I will certainly be on the lookout to help anyone else needing circuit diagrams or parts.

W.J.(Bill) Nottingham VE3ARZ  
Nepean, Ont.

## WORDS FROM THE WEST

There is a cry often heard out here in the 'Boonies' of Western Canada, that TCA seldom prints news items of the many events taking place in that vast region of this country lying between Ucluelet and Parry Sound.

The reason for this lack of column space no doubt, is because Westerners often refuse to put pen to a paper that is heading "Down East to Ontario-Oh." To do so would advertise the beauties of gracious Western Living and increase the work being done by our already overburdened immigration people.

Times are about to change, for here is an item for The Canadian Amateur from the Calgary Amateur Radio Association.

Every three years the time comes for the citizenry of many of our urban centres to trek to their nearest polling station and cast ballots for the politician who (in their view) promises the lowest taxes and greatest expenditure of public funds. This is called a Civic Election.

In this great and beautiful city, 120 Amateurs armed with their two-metre rigs have provided (for the sixth time) all communications between polling stations and City Hall, where the results are tabulated on a computer.

This exercise required massive planning and coordination. Arms had to be twisted in order for some Amateurs to kindly volunteer. Equipment, frequencies and repeater use all had to be synchronized. Detailed letters of instruction, plus the necessary legal authorities had to be mailed to everyone. In Calgary, all this work was capably handled by one man, Roy Hookham VE6RH. Roy makes this venture his full-time occupation for at least a month prior to the election.

The public relations benefit for Amateur Radio within this city is enormous. As well, and by no means of small value, the City Government in its wisdom is very - very generous in the form of a donation to the coffers of the Club - thus enabling us to maintain the exalted position as the Most Prestigious, Active, Amateur Radio Club in Canada.

Should any Club wish to try a similar venture and require further details on what such an exercise entails, please write to Roy at Box 592, Calgary, Alberta. T2P 2J2. We will gladly

**TCA WELCOMES LETTERS  
TO THE EDITOR. PLEASE  
SEND ALL CORRESPONDENCE  
TO EDITOR TCA,  
1082 APOLYDOR AVE.,  
OTTAWA, ONT. K1H 8A9.**



forward any information. It really is worth it!

Calgary Amateur Radio  
Association  
J.H. Noel VE6AMW  
President

**This interesting letter evokes fond memories of the hospitality and fine organization which the Calgary ARC exhibited in their hosting of the 1978 CARF National Symposium.**

#### ROYAL SIGNALS ARS

A VK-ZL Chapter of the Royal Signals Amateur Radio Society has been formed. This Chapter has been in existence now for several months and has regular nets: Daily on 21.170 at 12.30 GMT and every Saturday on 28.450 at 23.00 GMT.

These nets have been well supported by members here in Australia and New Zealand. I have worked Les VE3QE on many occasions and Bill VE3WA as well; These QSO's were on 21 megs. I have worked VE3CDM on 10 metres and as the band appears to be opening, then perhaps this would be a good time to enlarge our 10 metre net.

This Chapter has been formed with the blessing and help of G3EKL in Catterick and of course we are under the control of our HQ in the UK.

We do publish a local magazine (Jimmy) and any member who would like to receive a copy has only to let me know.

A special thanks to Tom

VE3CDM who was so helpful when we tried to have regular 'Skeds' on a previous occasion.

Sydney VK2NLE  
Acting Secretary RSARS  
211 Hopetoun Ave.,  
Vaucluse 2030, N.S.W. Australia  
337 6325

*Season's  
Greetings*

FROM CARF

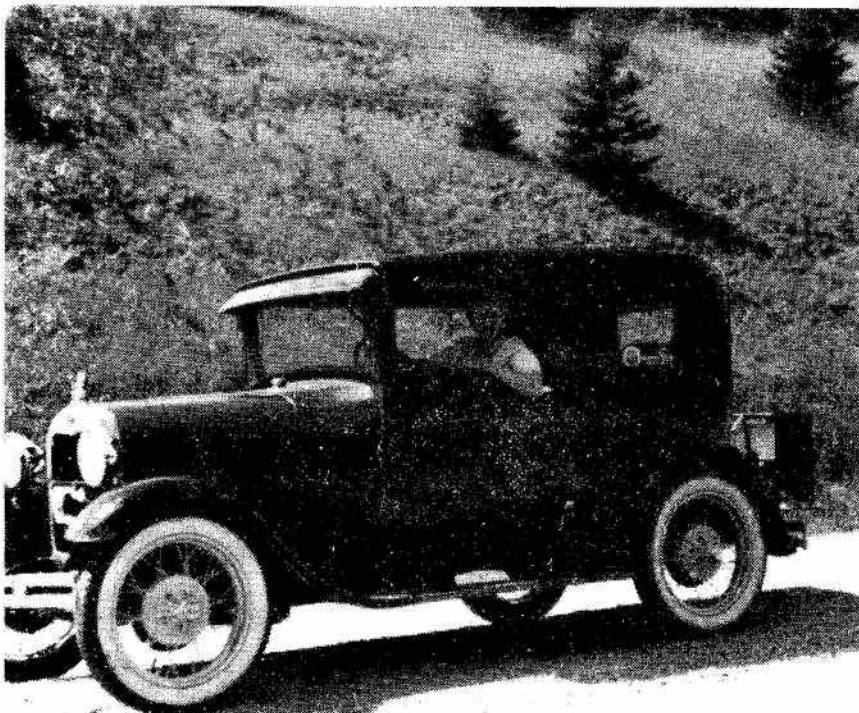
AND THE STAFF OF TCA -  
THE CANADIAN AMATEUR

## Cross-Canada in a Model A

Elaine Little VE7DFE and her husband Jack must have had an interesting summer. From July 25, to August 27, they participated in a Cross Canada tour from Victoria B.C. to St. Johns Newfoundland. Driving a 1928 Model A Ford, Elaine and Jack joined a group of 22 people on a trip that must have raised eyebrows from coast to coast. Included in the procession were vintage cars from the 20's, 30's and 40's including a 1930 Rolls Royce, 1930 Durant Roadster, 1929 Graham Paige, 1935 La Salle and a 1934 Caddy.

The tour was promoted by the B.C. Ministry of Tourism and was announced as the "first organized vintage-car tour of Canada" and "the first to proceed from west to east."

During the trip, Elaine made contacts on 2 metres using an Icom ICZA hand-held with a 5/8 Larsen Whip. I hope she didn't drill any holes!



# CHIPS & BITS

A COMPUTER COLUMN FOR AMATEURS

By Charles MacDonald

Hello again, and welcome to the world of computers. At the end of June I managed to break my leg, of all things, and so this column has not been written for a while.

This month we will talk about the various versions of the **Basic** language that are available on the more popular microcomputers. Also some news on places to exchange information.

Every Saturday, the East Coast Apple Net meets at 9:00 EST to talk about Apple computers. The Net is on 7.26 MHz (approx) LSB. When I listened in, the reception was quite good here in Ottawa, and I only have a 25-foot random wire antenna on my FRG-7.

If you have access to a modem and an ASCII terminal you might also like to try the Ottawa 6502 Users Group bulletin board system. The number is (613) 725-2243. Everyone is welcome to exchange messages on the system. The system runs on a Apple II computer with a D.C. Hayes Micromodem II.

Basic is the most common language to be found on microcomputers. Most of the popular systems, (Apple, CBM-PET, TRS-80) use a version of Basic that was written by a company called Microsoft. Microsoft was started just to write software for computers, and they sell the rights to a given version of one of their languages to the computer manufacturer on a royalty basis. Unfortunately, different computer companies all ask for special extensions

to the Basic so that a program that is written on the TRS-80 may need changes to run on an Apple or a PET. Some computers do not use a Microsoft Basic, the factory choosing to write their own, as in the case of North\*Star Computers, or go to another software house as in the case of Heathkit (now Heath/Zenith Data Systems) who had their Extended Benton Harbor Basic written by Wintek.

The most important word in any Basic is the print statement. Print is used to get information out of the computer.

```
PRINT 2+3
```

5

ready.

```
PRINT "MY NAME IS CHARLES"
```

MY NAME IS CHARLES

ready.

The underlined words in the above examples are what you type in, the rest is what the machine types back. You can also Print the value of variables.

```
LET A=3
```

```
PRINT A
```

3

ready.

If you want to print several items you can separate them on the same line with commas like this.

```
PRINT A, 2+3, A-4
```

3

5

-1

ready.

Note that the machine automatically spaced the answers by about 10 spaces. This is so that they will line up in columns. The commas tell the

machine that we want it to tab between items. With the Microsoft Basic you can also use semi-colons in your print statements.

```
PRINT A; 2+3; A-4
```

3 5 -1

ready.

North\*Star Basic is an exception to this rule. In North\*Star Basic you **must** use commas to separate the individual items you want printed, and they will be printed with only one space between the numbers. In Apple Integer Basic if you use the semi-colons you will get no space between the numbers, like this:

```
35-1
```

## The LET statement

To assign a value to a variable you may use a LET statement

```
LET A=3
```

```
LET B=8*A
```

```
PRINT A,B
```

3

24

ready.

All of the popular Basics allow you to omit the let statement. This saves you some typing and also some storage space.

```
A=3
```

```
B=8*A
```

```
PRINT A,B
```

3

24

In a program you may (on most systems) put more than one statement on a line

```
100 LET A=3: B=8*A:PRINT A,B
```

With North\*Star Basic you use the back slash key instead of the colons, but you don't really have to worry too much about it because the North\*Star will automatically convert the colons into backslash characters if you forget. The only time you have to worry about it is if you have a program written in North\*Star Basic that you want to convert to run on another machine.

On some machines you may also do the same thing in direct mode (not in a program line). Others such as Apple Integer Basic will give you the '\*\*\*SYNTAX ERROR' message if you try.

**Add Subtract Multiply and Divide**

All known forms of Basic allow you to do the standard four arithmetic functions. To add you use '+', to subtract '-' to multiply use '\*' and to divide '/'. Multiplication and Division take precedence over addition and subtraction. Brackets are used if you want the addition done first.

```
PRINT 2+3*5, (2+3)*5
17          25
```

Note that the multiplication must be indicated by an asterisk. The brackets do not imply multiplication as in normal algebra. □

**NOTE FOR THE RTTY CROWD:**

Gwen, VE3AYL, one of the main workers in CARTG is reported to have had a visit to the hospital for an eye operation. We all wish her well.

**TURKEY OFF THE AIR**

Turkey is off the air again, and TA1MB told his QSL manager K2UO all mail is being checked by the authorities. Do not mail anything to any Turkish Amateur at this time, as it could cause him very severe problems.

Tx The DX Bulletin

# Fade-free Power

Nickel-cadmium batteries are driving an increasing number of electronic and electrical devices. They vary considerably in size and output but all have the same desirable characteristics. They are rechargeable over and over again since none of the active materials of the electro-chemical process are used up, and they maintain a virtually constant voltage for the life of each charge.

Made in Canada, these nickel cadmium cells are of sintered plate construction. Inco nickel carbonyl power is sintered at high temperatures to a nickel-plated steel base. Individual grains of nickel weld at their points of contact resulting in an extremely porous structure. The porous plaques are soaked in a solution of nickel salts to make positive plates, and in cadmium salts to make negative plates. Nickel tabs are welded to each plate and separator material is interposed between the plates to prevent contact and act as a gas barrier. Each cell contains a micro-resealable vent which opens to allow any excess gas pressure to be released.

They are available in each of the popular AA, C and D sizes complete with charging units that enable them to be recharged up to 1000 times, and more. Unlike carbon-zinc and alkaline batteries of the "throw-away" type, they carry little or no charge at the point of sale. The buyer pops a pair in the charger overnight, and they are ready for use the next day.

A conventional dry battery, if fresh, delivers 1.5 volts when it is first put to use. This output

gradually drops until it reaches 0.6 volts near the end of the battery's useful life. Nickel-cadmium batteries will maintain an almost constant 1.20-1.25 volts throughout the discharge period to end the problem of fading flashlights and slow-moving tapes. And they offer significantly better low temperature performance.

Pound for pound, rechargeable nickel-cadmium batteries deliver 50-100% more energy than lead-zinc batteries.

Recent advances in solid-state technology have created many new low-energy stand-by power requirements for which nickel-cadmium batteries are ideally suited. The sealed units can be mounted and operated in any position. Since no maintenance is required they can be located safely in hard-to-reach places and, as they expel only imperceptible amounts of harmless gases, they are an excellent choice for "clean room" environments or in proximity to electronic circuitry. They are frequently mounted directly on printed circuit boards, alongside the I.C. semi-conductor memories, so that the back-up power is right at the load.

**BELL CANADA EQUIPMENT RELEASE**

Bell Canada has more Teleprinter and Terminal Equipment for allocation to Canadian Amateur Radio operators.

Included in this release are VuComm Terminals and Model 35KSR and 35 ASR Teleprinters.

For details, write to The Pioneer Amateur Radio Club, P.O. Box 3246, Postal Station D, Ottawa, Ont. K1P 6H7. Attn: C.B. Taylor VE3OR.



# WARC '79

## Recommendations of the Hamilton Symposium

### FORWARD

The primary purpose of the fourth National Amateur Radio Symposium was to prepare recommendations to DOC regarding the frequencies and policies governing the Canadian Amateur Radio Service that would be adopted to implement the Final Acts of WARC '79.

In order to involve Amateurs across the nation in the discussion of this important subject, and to prepare for this symposium, CARF encouraged the holding of regional symposia, which took place in five different locations across Canada.

The conclusions reached and recommendations made at these events were used, along with letters from individual Amateurs and the Montreal Symposium report, as primary input data for the discussions undertaken in Hamilton on May 17, 1980.

### SUMMARY OF RECOMMENDATIONS

1. The new bands:  
30 Metres (10.10-10.15 MHz)  
16.5 Metres (18.068-18.168 MHz)  
12 Metres (24.89-24.99 MHz).  
- There should be no sub-allocations in these bands;  
- Regulations should show the same modes of emission as for the existing bands, ie: A1, A3, F1, and F3;

- A1 and F1 sub-allocations to be instituted by the "gentleman's agreement" method, subject to changes based on future experience, especially in the 30 Metre band;

- Such "gentleman's agreements" to be widely publicized to ensure awareness of all Amateurs;

- That DOC be requested to permit operation in these new bands as soon as practicable;

- The existing power limitations for the HF bands should apply to the new ones as well.

2. 160 Metres (1.8-2.0 MHz).

- All restrictions in this band should be lifted as soon as LORAN is phased out;

- There should be no sub-allocations in this band;

- Regulations should show the same modes of emission as for the other bands, ie: A1, A3, F1, and F3.

3. 80 Metres (3.5-4.0 MHz).

- 3950-4000 KHz should continue to be allocated (preferably on a primary basis) to the Amateur Service)

- DOC could require Amateurs to avoid certain specific frequencies used by the CBC in the 3950-4000 KHz segment;

- Retention of 3750-3900

KHz as exclusive Amateur in the Canadian domestic table;

- Retention of existing sub-allocations pending reaction to domestic implementation of the WARC '79 decisions and re-evaluation at the 1981 symposium.

4. 40 Metres (7.0-7.3 MHz).

- Appreciation expressed to DOC for the recent sub-allocation change in this band;

- Request DOC to press for cessation of illegal broadcasting operations between 7.0 and 7.1 MHz;

- Informal agreement to limit the use of 7.05-7.10 to primarily DX communications, as the most efficient use for this new phone segment.

5. 20 Metres (14.0-14.35 MHz)/15 Metres (21.0-21.45)/10 Metres (28.0-29.7 MHz).

- no changes recommended at the present time.

6. 6 Metres (50.0-54.0 MHz)/2 Metres (144.0-148.0 MHz).

- the existing mode designations should be replaced by maximum occupied bandwidth designations;

- Allocation of these bands to the Amateur Service domestically)

- Amateurs should be permitted to use up to the



maximum bandwidth provided for in the band in which they are operating;

- Amateurs shall respect the informally agreed sub-bands used for weak signal and satellite communications, and existing power limitations to be continued.

7. 220-225 MHz and 430-450 MHz.

- That these bands be allocated to the Amateur Service in the Canadian domestic table;

- That CARF shall convene a committee to propose an acceptable band plan with bandwidths for the 220 MHz and higher bands.

8. Amateur Satellite Service.

- That the domestic allocation table also list the Amateur Satellite Service in the 7, 14, 18, 21, 24 and 28 MHz Amateur bands, thus reflecting the ITU allocation to this service.

9. Slow Scan TV / Facsimile / data transmission.

- That in the bands where A3 is now permitted, Advanced Amateurs may use such other types of emission that may be selected for experimentation on condition that the bandwidth shall not exceed 3 KHz below 29.0 MHz or 50 KHz above 29.0 MHz;

- If the above is accepted, that the words "types A3 or F3" be deleted to reflect this change.

10. Logging above 30 MHz.

- Deletion of logging requirements in the mobile environment, above 30 MHz;

- Period of activity and band of operation should be the only requirement while in fixed operation, above 30 MHz.

11. Licence privileges above 30 MHz.

- An Amateur certificate should be the only requirement (no discrimination between

Amateur and Advance Amateur) for a station licence for operation above 30 MHz using the A and F modes only;

- That special endorsement requirements for non-CW and non-voice modulation be removed;

- That pulse should be an additional mode in those bands where it is allowed today to be used only by Amateurs with a Digital Operators Certificate.

12. Frequencies above 450 MHz.

- Time constraints prevented the symposium from discussing the frequency bands above 450 MHz. It was noted, however, that briefs had been submitted by Amateur associations regarding the 902-928 MHz band, in response to a request by DOC in 1979.

- In the meantime, it can safely be said on behalf of Canadian Amateurs that they wish to have the bands above 928 MHz allocated internationally by WARC '79 to the

Amateur and Amateur Satellite Services, also allocated to the same services in the Canadian domestic table.

### IN SUMMARY

The symposium's moderator, CARF President Bill Wilson VE3NR, summarized the activities of the Hamilton event in stating that Canadian Amateurs "thought that there should be less regulation, that more emphasis should be placed on Amateurs having and observing their own informally agreed band plans (sometimes called gentlemen's agreements) and that the bands allocated to the Amateur and Amateur Satellite Services by WARC '79 should be brought into the Canadian Table".

(The forgoing has been but a quick overview of the recommendations of the Hamilton symposium. The full text of the symposium report will be available through CARF headquarters in Kingston.)

VE3GEA

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## News Briefs

DOC has started a crackdown on commercial pirating of satellite pay TV programs. The first move was action against a Winnipeg hotel, which disconnected its equipment under the threat of seizure. It may shape into a legal battle.

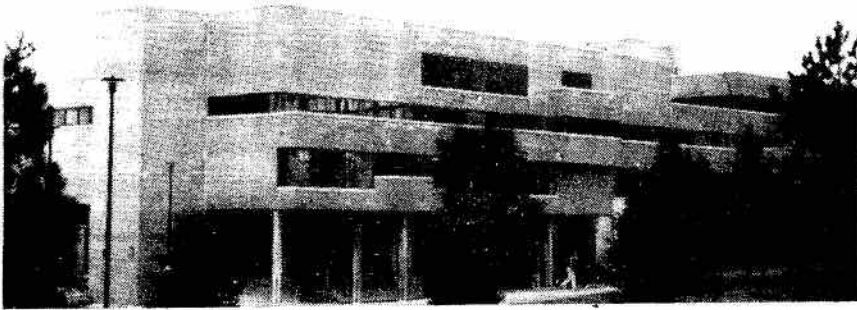
A seizure has been made in Burnaby B.C., although details as to the owner were not available. Meanwhile the residents of Nipawin, Sask. kicked in \$50 apiece and are enjoying satellite TV from their own earth station. A Saskatchewan government official said, according to a Globe and Mail story, that the DOC may be too intimidated by the popularity of these installations to remove them. Sort of like the old days of rum-running ... and judging by

some growls emanating from communities that have no other service, just as dangerous for the federal inspectors who have replaced the revenooers.

### DUTY-FREE RIGS

If you bought any of the rigs now coming in duty free, and are claiming them at a customs office, take along a copy of the DOC bulletin TRC 25 or the Radio Regulations Part 2, both of which have the frequency tables for the Amateur Service.

CARF executive and members extend their thanks to the CARF Tariff Committee chairman Barc Dowden VE3TT and president Bill Wilson VE3NR for their formal presentations to the Tariff Board hearings and their follow-up work with the Board and the Department of Finance.



# VE3OCU

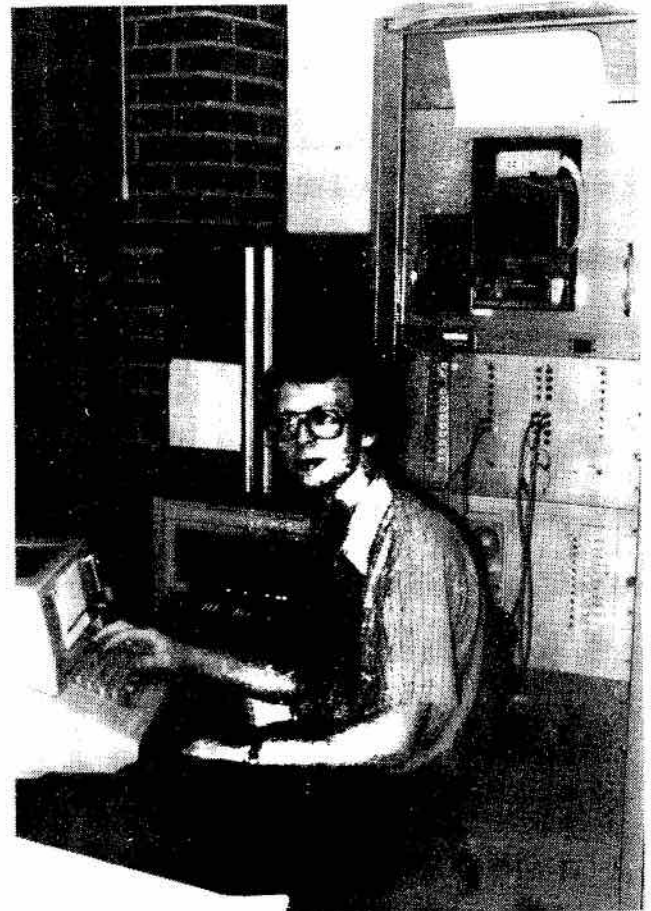
Above: The Carleton University UniCentre, home of VE3OCU/TCA. Below, left: Dave Goodwin VE2DZE. Below, right: Brett Dulmage VE3JLG prepares a CW bulletin on the club's PDP-8 computer.

Ottawa's Carleton University is not unique in that it has an Amateur radio station, VE3OCU. What is unique is the high level of technology at the station, and how the students put it to work.

VE3OCU is the home of VE3TCA, the flagship station of the Canadian Amateur Radio Federation; it is also the home of a PDP-8 minicomputer.

In the spring of 1978, Carleton's engineering department wrote off a PDP-8 which, up to that time, had been used as a training ground for students in computing science. Craig Howey VE3HWN moved fast to obtain the machine for the Radio Club, and before too long their cramped quarters were cramped even more.

Months were spent reconditioning the computer, and now VE3OCU boasts one of the few computer controlled stations in Canada.



Along with the PDP-8, VE3 OCU runs a new Kenwood TS 820, Heath SB200 and various antennas. To round things off, the students run their own repeater VE3OCR which has inputs and outputs on three VHF/UHF bands.

Leading the crew is Brett Dulmage VE3JLG, the CARF News Service Manager. Brett is responsible for the distribution of the written radio new bulletins to the News Service Stations each week. He also maintains an up-to-date listing of News Station schedules and tries to maintain adequate national coverage by the station.

He has been involved with the transmission of news bulletins from VE3OCU, then VE3TCA since 1978. He has been president of the Carleton University ARC for three years and is the licensee of the club's VHF-FM repeater. At present he is studying electrical engineering in his spare time at the University.

Helping Brett with the CARF News Service is Dave Goodwin VE2DZE. Dave obtained his licence in 1975 and has spent most of his on-air time on CW, with some 10 metre phone work. In 1978 Dave became a director of the Ottawa Amateur Radio Club and, about the same time, became involved in Carleton's ARC. This led to his becoming one of two primary operators of VE3TCA.

Shortly afterwards, Dave became a member of CARF's Contests and Awards committee, administering the Canadaward and the upcoming CARF Commonwealth Phone contest. In addition to all this, Dave writes the Contest Scene for TCA ... and is a first-year Political Science student at the University of Ottawa.

Ah, it's nice to be young.

Doug VE3CDC and your editor VE3ARS were both members of the Carleton ARC.

## No-one said this job was easy

I would like to take this opportunity to thank all of you who have supported me in these first trying months as editor of TCA. Late deadlines, equipment failure and many other problems have led to some rather late nights and aching heads. I am beginning to see the light at the end of the tunnel now and I guess that means easier times are coming.

The most satisfying aspect of this job is watching the reactions to the articles that appear in TCA. The response on the major issues leaves me with the feeling that we are accomplishing our objective: to bring to you a journal that is both newsworthy and entertaining. It is not an easy job to do both.

The new year is about to come in and I expect that it will be a good year for TCA, especially if more of you come forth with your ideas and opinions. We thrive on that type of material. The interest that you show in the content of TCA will, no doubt, bring out those who have things to say.

Make TCA your clearing house for ideas. We will all benefit from whatever expertise you are willing to demonstrate. It is also hoped that those of you who have led interesting lives will share with us the adventures or mis-adventures that have helped to spice up your activities as an Amateur. The article "Flames in the Snow" (July/Aug., 80) is a prime example of what must be out there.

There have been complaints in the past that articles sent

were not published or acknowledged. This is a problem that is not unique to TCA. I will in future try to reply to this problem in the most positive manner. It is true that some articles cannot be published due to copyright laws, and laws of common sense. On the rare occasion that this does happen, we will try to inform the writer of the decision. No one benefits when the efforts of one are ignored.

It is also unfortunate that our postal system is only one step up from the Pony Express, and as a result some material ends up in Ottawa Illinois, despite whatever was marked on the envelope. This is a problem that no-one has an answer for. We are stuck with this system, and will have to make the best of it.

I make the appeal to you. Sit down and write. Tell us something funny, or something sad. Share with us your knowledge of Amateur Radio and some of what it has, or has not, done for you. It is up to you as participants in a great hobby to let us all know how great, or not so great, a hobby this is.

TCA depends on you to make it happen. The journal is yours. Support it.

### HAPPY HOLIDAY

From the Editorial staff, and the Executive of CARF Publications and the Executive of The Canadian Amateur Radio Federation Inc., a very MERRY CHRISTMAS and a HAPPY NEW YEAR.

May you all receive that all-band 'Belchfire Special' that you dream about.



# Remember

"You know, there's more to life than Amateur radio, my dear," said the great 'ham' in my life, with his customary straight face and twinkle in his eye.

"Yeah, you're right," I conceded, and my memory flew back twenty-five years when I had said the same words to him and didn't know a resistor from a capacitor.

Anyway, last August while at the cottage, I got on the air for the first time after getting my ticket (but still not my call letters.) I picked up an 'Extra' in New Jersey, and flopped and floundered through an agonizing QSO. What an ordeal! Afterwards, I asked myself why I had worked and studied so hard all last winter for such a demanding crazy, and nerve-racking hobby as this. Amateurs really are kooks, and I even had a certificate to prove I was one of them. The rig that had intrigued me so much the previous summer, was now an intimidating electronic monster; so believe me, I didn't go within six feet of it for another two days.

By this time, the OM had business in the city for a few days - so I was left alone with that monster and the cat. The cat found more interesting company farther afield, and so I eventually psyched myself up to attempt my second QSO. This time I hung onto the key with a piece of rubber glove. That way it couldn't get away - from my sweaty hand! Remember how it was with you?

Well, because of an organized plan of attack, things went

much better this time. I had prepared a cue card which looked something like this: UR RST -----; NAME NAME IS MARIE MARIE; QTH QTH IS etc.....and I kept this in front of me for weeks. That second contact was not particularly noteworthy, but it was exciting because I was still in the stage of disbelief that anyone could actually make sense out of my dits and dahs. I wonder if this feeling ever completely disappears? I hope not, because for me, at least, that is part of the magic.

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**"Amateurs really are kooks, & I even had a certificate to prove I was one of them!"**

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The following day brought me a West Virginia operator who said nice things like, "Marie, you have a really good fist - for a beginner," and then and there I was caught up in an hour-long rag-chew. That compliment drove me on, and food and sleep became things I rarely thought about. No drug trip could ever compare with this, and I was hooked beyond rehabilitation.

September came. Being back home brought the familiar autumn routines for all the family except this YL, who

continued to be the mad ham, grabbing every available free minute to be in the shack where the magic was. By that time, I had my own call letters, but was staying strictly to the novice bands. The thrills were still coming in, though: my first YL contact; my first QSO with a first-time-on-the-air Amateur; the QSO with the three little girls aged 10 (and in the Year of the Child!); and numerous contacts with old-timers of over fifty-years experience, who were obviously pleased to slow down to give a newcomer a chance and the odd helpful hint. Do you remember those days?

In October I dared to go on 20 metres - no novice band there! But again, I met the same kinds of operators: encouraging and patient. It was then I learned that little procedure of, "question mark, question mark, BK," when a quick answer is wanted to a direct question. I told myself, "Gee, I guess now that I can work 20 metres, I'm officially out of the play pen." I still roam the novice bands, however, and love to answer a s-l-o-w CQ, just hoping it might be someone's first time on the air and that I might be able to return some of the gracious treatment accorded me.

By this time, the QSL cards were coming in with delightful regularity. Doesn't it just make your day when somebody takes the time to write you a cheerful letter along with the card? All the time I had been taking code and theory classes, I had the notion that Amateur radio was purely a cerebral and technical



# the Magic

By Marie Bedal VE3LUL

activity. I have great respect for and curiosity about that aspect of the hobby, but little did I realize the importance of the human element and its many fringe benefits.

Now, in case you're finding this account a bit too sweet for your taste, I must add that I did meet up with one abominable 'lid'. It happened during an exceptionally pleasant QSO with an old-timer when we were swapping a few comments on sailing. Because of this lid's long and noisy tune-up, dead on our frequency, Al and I decided to say goodbye, but before Al could send his final, in came our 599 lid calling me. In my inexperience and ignorance, to say nothing of surprise, I answered this guy, who just wanted me as his first Canadian contact. Only after I had given him my report, name, QTH and had agreed to QSL, did I realize how rudely he had interrupted a fine QSO. Of course, he didn't have the courtesy to say, Thanks, 73, and sign off. He just vanished into the air and by this time, the air in the ham shack was getting somewhat blue. That lid is still waiting for my card; and may all his antennas fall down!

Meantime, the sailing Amateur and I have had the pleasure of exchanging letters, cards and Christmas notes. I suppose the old saw of the rotten apple in every barrel holds true even for Amateur radio; but name me just one other hobby where the participants are all nice people like you and me. I think it might have been better operating on my part, however, had I sent

that upstart a card and a courteous, explanatory note on what is not done on the air. Maybe it's not too late to send that card? Maybe he was a beginner, too? Maybe we should all remember what it was like when we were new at the game.

After six months of A1 activity below 29 MHz I went to the DOC office to get my 10-metre A3 endorsement. With 154 solid QSO's in my log and well over 100 cards, the inspector was duly impressed. He lamented the fact, however, that I had no DX stations logged. He need not worry. Today I got a

G3 on 10-metre phone, and a DL on CW, and who knows what I will pull in tomorrow? Meantime, I love this hobby, and I'm boning up for the Advanced exam next October. I'm building a filter to help beat some of that QRM, and I'm enjoying a few club activities, and some provincial YL activities.

My first seven months are only the beginning. Of course, I must remember there is more to life than just ham radio; but then again, there is more ham radio than you would ever believe.

There's always the magic. Remember?

## Kooky QSL Card



This trick card was received by Garry Hammond VE3GCO and those who heed its warning may not find themselves in the bind recently afflicting a U.S. Amateur as featured in a much quoted letter to 'Dear Abby'. In it an XYL details the cause of their marriage hitting the rocks. (Decipher the card for what it was.)

The little circle at the top is a conveniently punched hole for hanging up the card. Garry still hasn't found out whether or not 'Andy' is in the optical business.

# Contest Scene

Dave Goodwin VE2DZE, 4 Victoria Place, Aylmer,  
Quebec J9H 2J3

## CONTEST CALENDAR

### December

6-7 ARRL 160 metres

13-14 ARRL 10 metres

### 28 CARF Canada Contest

### January

10-11 ARRL VHF SS

17-18 73 160 metre Phone

24-25 REF CW

### February

7-8 RSGB 7 MHz Phone

21-22 ARRL DX CW

21-22 REF Phone

28-1 Mar RSGB 7 MHz CW

I must apologize for misinforming you all. I gave the wrong addresses for logs to be submitted for the CQ WW contests. I unfortunately have to write this column about a month and a half before you see it, and I was basing my writeup on last year's rules. Phone logs should go to: Bob Cox K3EST, 5801 Huntland Dr., Temple Hills, MD 20031 U.S.A. CW logs go to: Larry Brockman N6AR, 7164 Rock Ridge Terrace, Canoga Park, CA 91307, U.S.A. In this column the results of both the phone and CW CQ WW DX contests appear in part. Yuri VE3BMV won the CARF trophy for earning the highest single-op, single band score in the CW contest.

### CQ WW DX SSB CONTEST 1979 RESULTS

Canadian certificate winners.

Call	Class	Score
VO1CM	A	553,587
VO2CW	A	1,497,888
VO3GCO	A	2,895,100

VX3EEW	A	1,134,190
VE4EW	A	915,776
CZ6KW	A	3,493,340*
CZ6OU	A	3,426,655
VE7CC	A	3,048,584
VE1TG	28	425,790
VE2ANE	28	56,842
VX3EDC	28	750,240
VE3KZ	28	608,751
VE5DX	28	998,576
CZ6WQ	28	1,182,315*
VE3BMV	21	1,072,176
VE4SW	21	305,123
VE6LU	21	234,036
VE7CML	21	1,111,776*
VE3BSJ	14	96,502
VE7IG	14	802,872*
VE1AI	3.5	57,154
VE3ECP	3.5	64,496*
VX3JAY	3.5	63,840
VE3BBN	1.8	4,818*
VE7VP	1.8	847
VE1DXA	MS	3,273,410*
VE2CAR	MS	1,966,602
VE3DOP	MS	1,129,436
VE4XK	MS	2,482,164
VE5CHS	MS	9,156
VE7AV	MS	972,840

\* Class Winner for Canada.

### CQ WW DX CW CONTEST 1979 RESULTS

Canadian certificate winners.

Call	Class	Score
VE1AIH	A	914,413*
VO1AW	A	688,246
VE2AYU	A	827,122
VE3DUS	A	541,658
VE6AYI	A	821,845
VE1TG	28	161,760
VE4VV	28	298,530
VE5AAD	28	6,630
CZ6KW	28	183,260
VE7WJ	28	416,871*
VO2CW	21	180,810

VE3BMV	21	574,056*
VE7DXC	21	448,572
VE1UG	14	138,840*
VE3FCU	14	55,029
VE7IQ	7	4,140*
VE3RA	3.5	9,632*
VE3ABG	1.8	1,736*
VE4XK	1.8	530
VE3OCU	MS	1,326,065*
VE7AV	MS	532,875
VE8NI	MS	116,040

\* Class winner for Canada.

### ARRL 10 m CONTEST

Period: 0000z 13 Dec. to 2359z 14 Dec. A maximum of 36 hours may be worked by all stations.

Suggested Freqs.:

28000-28050 CW  
28100-28150 CW (USA Novices and Tech.)  
28500-28,600 SSB  
28800-28900 AM

CW may not be worked in the phone bands. Cross mode contacts are not permitted.

Classes: Single or multi-op, single transmitter only.

Exchange: RST plus Province/State for Canada and USA; RST plus serial number for DX; RST plus ITU region number for maritime mobiles.

Points: 2 pt/QSO, 4 pt/QSO with a Novice or Technician station. They will identify themselves by sending /N or /T after their calls. DX may not work each other for points or multipliers.

Multipliers: US states, Canadian call areas, DXCC countries, ITU regions (from /MM only.) Canada and U.S.A. do not count

as countries.

Entries: Official forms are available from ARRL HQ for an SAE and IRC. Reasonable facsimiles will do. Dupe sheets should be used if more than 200 QSOs are made. Entries should be sent to ARRL 10m contest, 225 Main St., Newington, CT., 06111, U.S.A. by Jan. 9, 1981.

After a healthy delay, I can tell you that the ARRL Contests Advisory Committee has decided that for their 1981 DX Contest that Canadian Amateurs will be considered as Americans. However, in conversation with the committee's chairman, Tom K1KI, I was told that if the committee felt there was enough call, they would be willing to change our status to 'DX' for some later contest.

I feel, as you can probably tell, that we should be permitted to operate in the same manner in that contest as are XEs, VP9s, KL7s, and of course, Sable Island stations. If this change to the rules was made, it could mean greater numbers of Canadians participating in the contest, as large scores would be easy to roll up.

From where we sit, most of us can work the USA with great ease at any time of the day or night. In a contest situation, what really counts is making contacts in great bulk, and collecting the multipliers necessary to turn that bulk into a respectable score. Most serious contesters are not in contests to improve their Honour Roll standing in DXCC.

If the change I am talking about does happen, however, DXers who get on in contests to pick up a few new countries would be left out in the cold. Contests are, however, put on for contesters, who like to submit massive logs filled with meaningful (to them) contacts. There are two sides to this question, but I think the

contester's view should carry more weight. Tom K1KI appears, as I said before, to be willing to consider the change, but only if he and the committee receive input from Contesters. If you have an opinion on this issue, the ARRL CAC needs it to make a decision. Please write them at ARRL HQ, 225 Main St., Newington, CT., 06111, USA.

You should have seen the rules for the Canada Contest in the November TCA. If you were active at all in the Canada Day Contest, you should find this one even better, considering the generally better conditions on all bands we experience in the winter.

Results have been published for the RSGB's Commonwealth Contest on CW, and congratulations to VE7CC, who placed first overall in that contest. Canadian results appear here.

73 Magazine has also published results of their first 160 metre phone contest. Some 45 Canadian stations were logged, but only three bothered to submit entries. The rules were somewhat confusing for Canadians, as there was only one multiplier for all of Canada. The exchange was somewhat out of the norm, also, as it was RS and DXCC country. Well, in response to the confusion caused, 73 has decided to make each Province count as a multiplier. This contest was very enjoyable, (I worked it from VE3OCU), and has a lot of potential. It is the only 160 contest which is exclusively SSB, and therefore should keep phone contesters happy.

I believe the Canadian Ten Metre Club will be running another contest in January or February, but I have no details.

The CQ WW SSB in October, by all accounts was reasonable, but I spent the Contest on 160 from VE3OCU. Conditions were generally poor, I found. I was

able to work PJ2, KP4, VP9, and hear a few other DX countries, but from where I was, I simply couldn't work the USA very well.

Listening to the BC band, I had my suspicions confirmed when USA stations were relatively few and far between. I should say I was all outpaced by VE3ABG and VE3BBN, who by example have showed me that a dipole up 120 feet is not good enough.

### RESULTS, 1979 RSGB COMMONWEALTH CONTEST CW CANADA

(130 entries worldwide)

Pos.	Call	Score
1	VE7CC	7293
5	VE5RA	5691
7	VE2WA	5615
8	VE1MX	5525
10	VE6KW	5190
14	VO1AW	4820
17	VE4VV	4783
20	VE1AIH	4465
22	VE3DAP	4295
27	VE6LU	3986
34	VE5JQ	3295
58	VE2DZE	2250
60	VE3YK	2120
61	VE3JKZ	2075
64	VE1ANU	1990
77	VE7BS	1531 *

\*21 MHz single band.

### RESULTS, 1980 73 MAG. 160 METRE SSB CONTEST (74 entries worldwide)

CANADA

Pos.	Call	Score
13	VE3OCU	68,640
29	VE4WR	35,260
67	VE5JQ	4,305

### PACKET RIG

Randy Smith, VE1SAT now has a 9600 baud packet machine going on 222.94 in Greenwood, N.S. with two or three stations already in action. □

**We pay for technical articles.  
Send contributions to:  
CARF Technical Editor, Box 356,  
Kingston, Ont. K7L 4W2.**

# Diary of a Homebrewer

(Name withheld to protect the guilty.)

---

**Aug. 28, 1978** - Got my Systcom Commander I today, looking forward to two-metre mobile.

**Oct. 15** - Sure enjoy that two-metre mobile rig, must get a base station power supply soon.

**Oct. 22** - Eric gave me a schematic for his 12-volt supply he had one of the boys build for him at the high school electronics class. Costs only \$40, a lot less than the local repeater group is asking.

**Oct. 24** - Harold, the electronics teacher, will try to get one of the boys to build my supply as a class project.

**1979**

**Mar 30** - Harold advises he has most of the parts but construction won't begin until April.

**May 25** - Nothing done yet, Harold says it'll be done in June.

**June 5** - Building a 5/8 whip from a QST article so the antenna will be ready to go.

**June 10** - School's over, power supply still not built. Harold says he'll build it himself before the end of the month.

**June 27** - Nothing done. Harold gave me about half the required parts. Cost \$27.

**July 5** - Picked up some parts in Toronto today -- \$8.

**Aug. 20** - Made the rounds in Kitchener today for more parts. Cost \$30 including gas for the car. Ordered diodes and trimpots by mail.

**Aug. 25** - Mounted my 5/8 whip today, borrowed Eric's power supply and confirmed everything's okay.

**Sept. 10** - Diodes arrived today -- \$6.50.

**Sept. 30** - Trimmers arrived today -- \$8.50. Now to get started.

**Oct. 10** - Finished construction. Harold will test it at the school.

**Oct. 17** - Harold says something was shorted, he'll check it out.

**Nov. 5** - Harold gave it to a student to check out, no news yet.

**Nov. 15** - Dave (the student) can't find anything wrong but will keep trying.

**Dec. 2** - Harold says nothing further done. Dave has been tied up with class assignments.

**Dec. 16** - Worked at the school today, couldn't find the problem. Getting a steady regulated 25 volts.

**Dec. 19** - Another hour at the school -- nothing.

**Dec. 21** - Brought the power

supply home today -- Maybe better luck here.

**Dec. 27** - Picked up replacements in London today for several ICs and a transistor.

**Dec. 29** - Designed a PC board and broke a transistor today.

**1980**

**Jan 10** - Harold made the PC board for me. Now to get more replacement transistors.

**Jan 12** - Got more transistors in Kitchener -- \$4.50. Looks like the one I installed last summer was incorrectly identified and thus wired in wrong.

**Jan 14** - Everything's put together again and hooked up. Here's hoping.

**Jan 15** - Borrowed a voltmeter from the school for the big test, and what do you know -- it works!

**Jan 16** - Sure nice to be on two-metres from the home QTH but it cost me over \$100 to do it. Would have been a lot less trouble and costly to get a power supply from the local repeater group after all. No more home brews for me.

**Feb 5** - Just read an article on building a transmatch and got out the old parts catalogue. I wonder.....





# Albatross and Amateur Radio

UNDER THE SOUTHERN CROSS

By David Adams VE3HBF

It's a source of endless fascination to me that through Amateur radio I can communicate with people in some of the most isolated and unlikely places on this earth. Places that no cruise ships or scheduled airlines ever visit. Yet places where man has established a toehold, usually for the purpose of scientific research of some kind.

The only trouble is that, since these places are rare DX spots, it's not often possible to have a real good ragchew. I have been fortunate to make contact with two or three such places when no-one else seemed to be around waiting to break in for a quick QSO.

One such was ZS2MI on Marion Island, where there is a weather station operated by the South African government. It's about halfway between Cape Town and the coast of the Antarctic continent, and David, one of the two radio technicians stationed there, told me all sorts of interesting things about life down there.

The scientific team consisted of four meteorologists, two radio technicians and a 'medic'. Communications with South Africa were maintained by radio teletypewriter and radio telephone. Apart from the meteorological work, regular observations were made of geomagnetic and ionospheric conditions.

There was also a very keen ornithologist from Belfast spending a season on the island, which was a nesting ground for many thousands of sea birds, including the Wandering Albatross, which has a wingspan of 11 feet -- the largest of any living bird. David said he could see one of their

nests from the radio shack. The single large egg weighs half a kilogram.

Weather on the island was rotten -- always cool (average about 4 degrees C) -- and usually very stormy. Marion is a volcanic island, and the lava rock makes walking difficult. It's about 12 miles long and seven miles wide, and David and one of his colleagues had walked around it -- a distance of 72 kilometres -- with some difficulty, sinking in black lava mud up to their thighs at times.

The research teams spend about 12 months on the island, until the annual relief ship brings their replacements from Simonstown in May.

Another remote island with many similarities to Marion is Campbell Island, 400 miles south of the southernmost tip of New Zealand. Like Marion it's a rugged, mountainous, volcanic island, cold, humid and wind-swept, where New Zealand has a weather and scientific station.

Campbell Island, like many of the remote islands in the Southern Ocean, was discovered by a sealing ship, 'Perseverance' in 1810, and in a few years the great herds of fur seals found there had been wiped out. Whalers called there until the end of the last century, when an unsuccessful attempt was made to introduce sheep. The weather station was set up during World War II.

I learned this and much more from a half-hour chat with Lance, one of the team of 13 men manning the station, and the operator of ZL4QL/A. The scientific work included monitoring solar noise and measuring and observing magnetic effects.

Campbell Island also provides nesting grounds for many thousands of sea birds. Lance said there were 4,000 pairs of Royal Albatross there with 4,000 chicks. These great sea birds are so placid and unafraid of man that you could pick them up and remove the single egg they were incubating, and they would do nothing.

Enemies of the albatross do exist on the island: rats, presumably introduced by visiting ships, burrow underneath the nesting grounds and emerge to eat the baby chicks. There are also hordes of sea lion pups, equally unconcerned when any of the New Zealanders wade in among them. Some cats are also said to roam the 40-square-mile island, though Lance had not seen any.

His ICOM 701 was being operated on battery power, as Lance was in the process of connecting up a new generator. I was his first contact for several weeks.

The Australians have Macquarie Island and Heard Island; the French have Kerguelen and Croset; the British have Tristan da Cunha and Gough Island and the Norwegians exercise sovereignty over Bouvet and Peter I islands. Tristan da Cunha is the only one of these with a resident local population. Three have permanent scientific research stations. Most are rugged, inhospitable, with extreme climate and unsuited to human habitation.

So spare a kind thought for the intrepid Amateurs who manage to set up DXpeditions to some of these obscure and lonely dots on the sub-Antarctic map.

David Adams VE3HBF  
in York North ARC 'Splatter'

# The Convert

by Tom Roughley VE7DWP

The room was full of bits and pieces of electronic equipment. Against the wall stood an unfinished whitewood bookcase, groaning under the weight of a mountain of Amateur Radio magazines and related electronic books.

Hanging from the wall – some in plastic covers – were hundreds of postcards with large letters on them, which I later knew as QSLs and prefixes. Over the gas meter was draped my Old Country flag, the Union Jack, obviously making an unsuccessful attempt to hide the monstrosity.

Finally my good friend Norm (VE6QUV) had lured me into his nightly domain, the 'Shack'; I thought what a suitable choice of names he had given to it.

Little did I know that I would soon be bitten by the proverbial bug.

I sat in a most uncomfortable chair with the springs making a vain attempt to penetrate my hide and watched my old friend as he hammered away on his key, and later on listened with amusement as he chattered away into the mike using such strange words as 'QTH', 'handle and 'old man'. What a strange bunch of guys they were! He grinned at me when I refused his offer to talk with someone or other in some distant place (as if he knew I would).

That night I left with a copy of 'Beginners Guide to Ham Radio'.

During the following several weeks my visits to Norms 'Shack' became more frequent, and my working hours as a city bus driver passed swiftly as I "dih-dah-ed" my way through

the rush hour traffic, verbalizing every gas station sign and car license plate I saw. More than one passenger at the front of the bus gave me a long look, or poked a friend in the ribs and nodded in my direction.

In keeping with the reputation that Amateurs have acquired as friendly and helpful people I was duly presented with my friend's now silent H.R.10b Heath receiver.

My first antenna (coat hanger) was thereupon erected at the side of the bed, much to my wife's (now my 'XYL') displeasure.

For some reason she objected to being awakened by a nudge in the ribs from time to time in the middle of the night as I tried to give her my progress report on my ability as a S.W.L.

The day of the exam was exciting. The DOC inspector

couldn't figure out how to stop my pencil from jumping out of my hand as I made my first attempt to copy ten words per minute, but on my second attempt the examiner smiled at me and extended his hand with, "Congratulations you are now an Amateur."

The much thumbed-through catalogue was duly hauled out and upon the arrival of my kit the fastest ever assembly took place.

I'll always remember the thrill and panic as my first nervous C.Q. was answered. Should I dive under the desk or run into the bedroom and hide? Maybe I should turn the rig off!

However I didn't succumb and now some thousands of QSOs later I look forward to my Advanced, if I can ever find the time between contacts to study.

What a fascinating hobby!

---

## Space between your ears?

Sounds that are too high for humans to hear are audible to dogs. The upper limit of hearing in humans is about 20 kHz, in dogs about 40 kHz, and in bats and mice about 80 kHz. The lower limit of human hearing is about 125 kHz.

Ricky and Henry Heffner of the University of Kansas and Ned Stichman of the Ralph Mitchell Zoo in Kansas, have discovered that some animals can hear lower sounds than humans can. Most animals with a head larger than a human's

seem to have this ability.

The researchers tested the hearing range of a 7-year-old Indian elephant at the zoo. This elephant, Lois, could not hear sounds higher than 12 kHz, but could hear sounds as low as 16 Hz, levels inaudible to humans. The researchers decided that the range of hearing in animals is in inverse proportion not to the size of the ear but to the size of the skull; this determines the distance between the ears. □

Can. Medical Assoc. Journal

# Amateur tariff removed!

Whatever the rest of Canadians thought of the federal budget, 20,000 Amateurs found a good word for one item in it. The lifting of duty on major Amateur items is now a reality due to the persistent efforts of CARF and other radio organizations.

The 14.3 to 16.6% rates formerly applied on various equipment from the U.K., the U.S.A., Japan and other countries in the customs category of Most Favoured Nations has been dropped in favour of free entry, effective October 29.

The following equipment, under Tariff Item 44534-2 is affected; transmitters, receivers, transceivers, and converters, assembled or in kit form, designed for use only on the Amateur bands of the radio frequency spectrum as defined by regulations made pursuant to the Radio Act; linear amplifiers, variable frequency oscillators and power supplies designed for use with the foregoing; parts of all of the foregoing.

One fly in the ointment is that, according to a source in the Department of National Revenue head office, rigs with the new bands of 10, 18 and 24 megahertz will still be dutiable, as these frequencies have not yet been officially allocated for use by Amateurs and have not yet been added to the frequency schedules.

In an effort to mitigate this ruling by National Revenue, CARF has already written to DOC to ask for amendments to the Radio Regulations frequency tables to include these bands subject, however, to whatever future starting date the Department may decide upon. The inclusion of the two time stations JY and WWV on any of the equipment noted would, accord-

ing to the National Revenue spokesman, probably be interpreted as presenting no barrier to their new duty-free status. Microphones, antennas and other accessories are, by the way, still dutiable.

Antique collectors are also happy to find out that under Tariff Item 69325-1 the duty has been removed on radio receivers, speakers and earphones and parts thereof which can be

proved to be more than 30 years old.

Customs sources said that while technically the new tariff rules are a legislative matter for Parliamentary attention, they were, by tradition and custom deemed to be in effect the day after the budget. Eventual Parliamentary approval and royal assent to the changes in the Customs Tariff will cover this action retroactively. □

## News Briefs

### NEW REPEATER

Lake of the Woods ARS has now installed a new solid state two metre repeater at Kenora, Ontario:

Frequency - 146.430 MHz input, 147.030 MHz output. Access - open to all Amateurs in the area; carrier operated. Call - VE3LWR (Lake of the Woods Repeater) CW identified. Range - 30 mile radius of Kenora, on north end of Lake of the Woods. Equipment - G.E. Master Imperial Series at 30 watts output. Antenna - Cushcraft 4 pole AFM-4D presently on a 100 foot tower (1350 ft elevation); feedline RG-17.

The repeater was purchased with the assistance of a Wintario Grant. Autopatch is their next project, hopefully to be installed during the next year.

Tx VE3EFY

### SOME BEGINNER!

For a number of years now P.E.I. Amateurs have been presenting a huge trophy to the Amateur who has made the most CW contacts in **their first year** on the air. The winner's name, call sign, etc. is engraved on the trophy. The trophy is returned

but the Amateur is given a small trophy to keep. The award is called the Doug Moser award in memory of a man who did a lot for Amateur radio before his death.

This year's award was won by Jeannine Cote VE1BWP of Grand Falls, N.B. She made 1700 CW contacts in her first year.

Jeannine also won the CW speed contest at the Sydney convention with 25 wpm.

### WIRELESS INSTITUTE OF AUSTRALIA

The Wireless Institute of Australia, the oldest Radio Amateur Society in the world, has been active since 1910 in protecting the interests of, and seeking additional privileges for, the Australian Amateur Radio operator.

The W.I.A. consists of seven autonomous State Divisions who nationally, constitute the Federal Council, operating from Brisbane, has over the past years been very active in uniting the Queensland Radio Amateurs and its success may be measured by the fact that the Queensland Division has the highest proportion of Radio Amateurs as members of the Institute in Australia.



# The Hex

## IN WHICH IS EXPLAINED THE MAGIC IN HEXADECIMAL NUMBERS

Microprocessors are becoming more widely used in many Amateur radio applications. This is because they offer a more versatile (and often less expensive) means of implementing many types of complex logic and control functions. Microprocessors are used to send and receive morse code and teletype signals, to tune digitally synthesized transceivers, to perform automatic logging, and many other things.

Like anything else, the computer field has its own special vocabulary and notation. If you've been reading about our microprocessors you may have come across some numbers like 3A, \$F6, or 03C1H. These are hexadecimal numbers and are widely used in the computer field. If you would like to find out what they mean, read on.

To understand hex (that's short for hexadecimal and it really has nothing to do with witchcraft) we have to understand another type of number system called binary. Let's start with three basic definitions:

1. A single binary digit is called a **bit** and can be either a 0 or a 1.

2. **Binary numbers** are made up of one or more bits.

3. An eight-bit binary number is called a **byte**.

Got it? Here's what a typical binary number (a byte in fact) looks like:

01011010

Binary numbers are too cumbersome to use if you have a

lot of them to write, so people came up with hex - a shorthand way of writing binary numbers. The principle is simple: break up the binary number into groups of 4 bits and use a single symbol (a number or a letter) to represent each different pattern. Since there are 16 possible combinations of 1s and 0s in 4 bits, we use the numbers from 0 to 9 and the letters from A through F.

Table 1 shows what hex number is used for each four-bit pattern. Sometimes a "\$" before, or an "H" after the hexadecimal number is used to avoid confusing hex and ordinary decimal numbers.

TABLE 1

bit pattern	hex number
0000	0
0001	1
0010	2
0011	3
0100	4
0101	5
0110	6
0111	7
1000	8
1001	9
1010	A
1011	B
1100	C
1101	D
1110	E
1111	F

Here are some examples:

binary	hex
0010	2H
0010 1010	2AH
1010 0000	\$AO
1010 1111 0110 1010	\$AF6A

Simple isn't it?

In most cases, the conversion from binary to hex or hex to binary is all that you need. Sometimes, however, the binary number represents an actual value. For example, it could represent a count of the number of times something has happened. In that case we have to convert from binary to decimal.

In the binary number system the value of each bit position doubles each time we move one bit position to the left. The rightmost bit (also called the least significant bit) has a value of 1, the next has a value of 2, the next 4, and so on. To convert a binary number to decimal, just add up the decimal values of all the '1' bits. For example to convert 100101 to decimal:

1 0 0 1 0 1  
add: 32 + 4 + 1 = 37

Table 2 shows the decimal values of the first 8 bit positions.

TABLE 2

bit position	value
0	1
1	2
2	4
3	8
4	16
5	32
6	64
7	128
"	"

(note that the first bit is position 0, not 1)

Now that you understand how it works, try to figure out how to convert from decimal to binary (Hint: try a small number first and try to figure out what numbers from Table 2 add up to the chosen the decimal number).



# Build a 2-Metre Quad for Apartments

For those of us who have to live in apartments, being Amateur radio operators brings all kinds of headaches, not the least of which is the antenna (unless you live in the penthouse!). Many Amateurs in this situation can operate two metres quite easily, because of the small size of the antenna. I have built a couple of  $\frac{1}{4}$  wave whip antennas out of coat hangers with excellent results.

However, always striving for improvement, one day I thought that maybe a quad antenna would work better than the whip in my apartment. So I built one out of some simple materials and was very pleased with the performance.

The main advantage of the quad is its directivity: most of the RF energy can be directed out of the window and away from the building, instead of into your apartment where it can't do you any good. In addition, a two element quad is not too large, being only a bit larger than the  $\frac{1}{4}$  wave whip with radials.

The following materials are required:

Four pieces of molding,  $\frac{1}{4}$  inch square cross-section, 30 inches long.

One piece of molding,  $\frac{1}{2}$  inch cross-section, 15 inches long.

Two lengths of wire, preferably stranded antenna wire (although just about any kind will do), 84 inches long.

A few wood and machine screws to hold it all together.

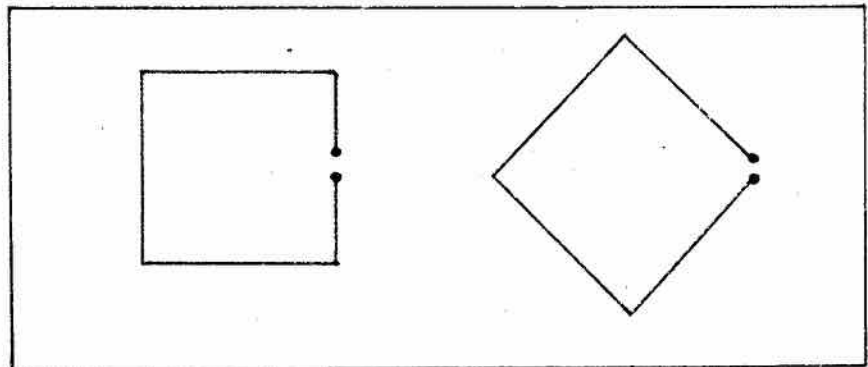
The first thing to do is to cut notches at the exact centre of each of the four pieces of molding,  $\frac{1}{4}$  inch wide and about

$\frac{1}{3}$  the thickness of the wood deep. Place two pieces together at the notches, drill a hole through the middle and secure the pieces together with a machine screw and nut. You now have two rigid cross-shaped pieces, one of which will become the driven element and the other the reflector.

At the end of each arm, drill a small hole through which the wire will pass. For the driven element, these should be about  $13\frac{1}{2}$  inches from the centre, and for the reflector about  $14\frac{1}{4}$  inches. My antenna is centred at

147 MHz for repeater operation. Proportionately longer distances must be used for lower frequencies. The total length of the driven element wire when strung through the holes is one wavelength.

String one piece of wire through the reflector arms, pull tight and solder the ends together. String the other piece of wire through the driven element arms, and terminate with a coax connector. This connector should be positioned as shown in the diagrams to achieve vertical polarization.



The last thing to do is screw the two elements to the boom, which is the larger piece of molding. Use two wood screws on each element, one through each arm for a secure attachment. The distance between the two elements should be about 13 or 14 inches, and is not at all critical.

The quad can be driven directly from 50 ohm coax and will make a good match. More ambitious builders may want some kind of balancing device, since the quad is an inherently balanced antenna. I have tried a bazooka type adapter, consisting

of  $\frac{1}{4}$  wavelength of shield peeled back over the coax, but it's hard to tell if this results in any improvements.

If the antenna will be used outdoors on your balcony, you should seal the wood to protect it from moisture. My quad is hung from the ceiling (using the curtain rod) just in front of the window; I get about 6 dB of gain over the  $\frac{1}{4}$  wave whip. The quad enables me to work repeaters which could not be accessed reliably with the whip antenna.

Jack Botner VE3LNY  
35 Wynford Hts. Cr. #1708  
Don Mills, Ont.

---

# Homebrew parts for the QST Wonder-Bar

Is a Bowtie only for wearing around the neck? The answer is a resounding NO!! It also makes a great 10 metre antenna.

With reference to an item in QST, April 1980, page 59, I undertook to build the antenna with the following substitutions: (The reasons for all the substitutions mentioned were just simply the lack of proper parts as published in QST.) 5/8" OD galvanized light weight conduit tubing was used instead of the 1/2" OD aluminum specified. Also the B&W miniductor specified was not obtainable, nor could I lay my hands on 16 ga. wire, so the coil was constructed from 14 ga. insulated solid wire. 10 1/2 turns were wound on a glass testtube, 1" OD; 4 turns per inch. Although I used a testtube, anything of 1" OD can be used to form this coil. The second coil was wound two turns of 12 ga. insulated wire on an empty 'Comtrex' cold medicine bottle. This gave a coil of about 1 1/4" ID and fitted perfectly over

the other coil. The coil formers are then discarded. The two turn coil was terminated in an SO-239, but 52 ohm coax could be hooked up directly.

Construction of the antenna is straightforward. Figs 1 and 2 give the details.

On completion, the antenna was placed on a five foot pole in the backyard for adjustment of the coils. As constructed, it was beautifully resonant at 27 MHz ... it appeared that the substitutions I made had also lowered its resonant frequency. The solution was to shorten the 10 1/2 turn coil to 8 1/2 turns (which is shown on the drawing). The Bowtie was now resonant at 28.7 MHz -- perfect. After waterproofing all exposed wiring, the two coils were immobilized with tape and some silicone glue, the antenna was put up in a fixed position facing east and west, about 25 or 30 feet above the ground on an existing 55 foot tower holding a 10-80m inverted vee. I am not much given to bragging, but

California stations that barely moved the S-meter using the vee became a solid 10-20 over S9 when the bowtie was used.

It is indeed, as named by QST, a 'Wonderbar'. As constructed, the antenna will handle the legal limit.

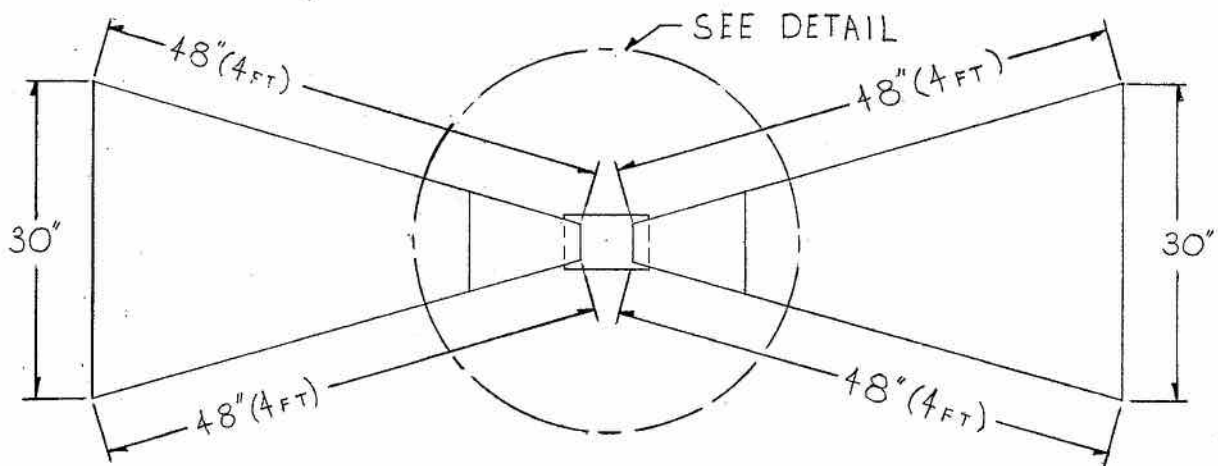
I am now toying with the idea that, if the bowtie is so effective on its own, how would two or three of them, arranged as a Yagi, work? Pity that I have no chance to try this, but if any of you do, I would love to hear from you.

Finally, credit for the detailed drawing should go to my son Bastiaan, who did an excellent job on this.

Happy 10m DX with this antenna ... I know this is possible as I just worked my first SSB contact with ZL under marginal conditions.

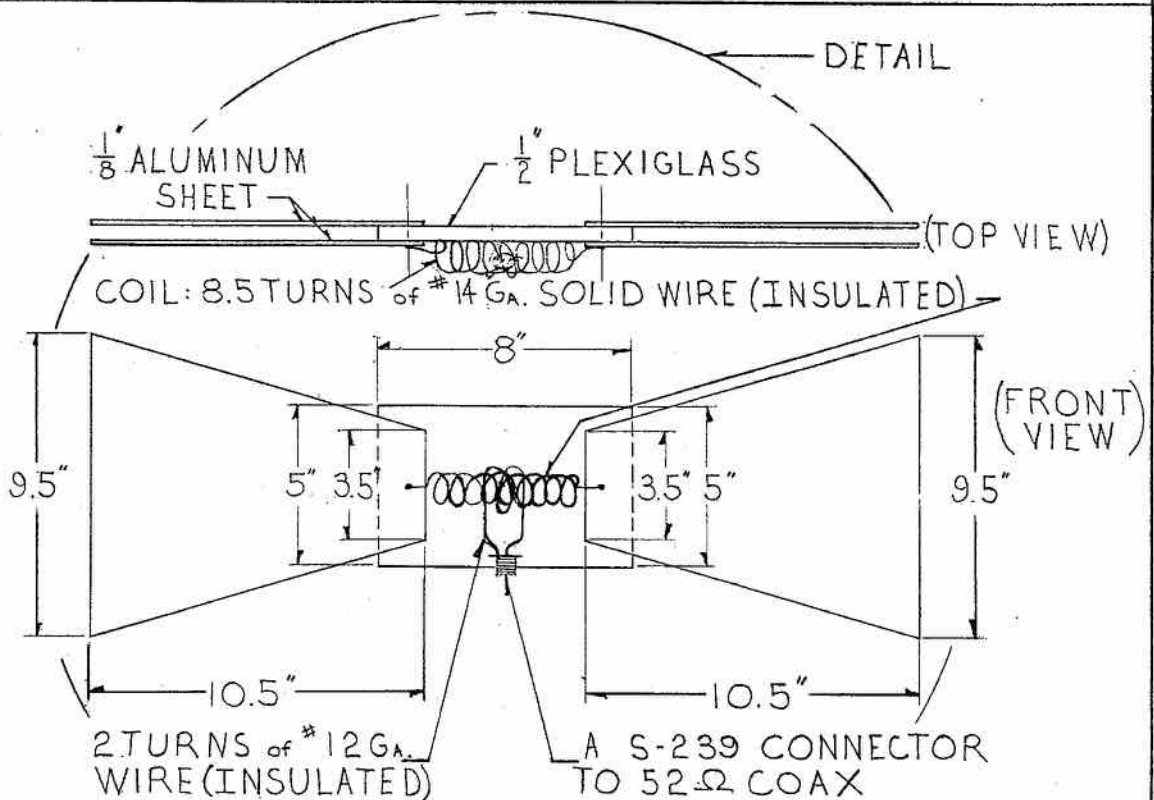
□

Tom Van Den Elshout VE3LNT  
12 Johnson Rd.  
Aurora, Ont. L4G 2A2



OVERALL VIEW

DRN BY: B.C.V.D.E SCALE: 1"=1'-0" TITLE: "THE BOWTIE"



DRN BY: B.C.V.D.E SCALE: 1/4"=1'-0" TITLE: "THE BOWTIE"

DATE: 80-04-29

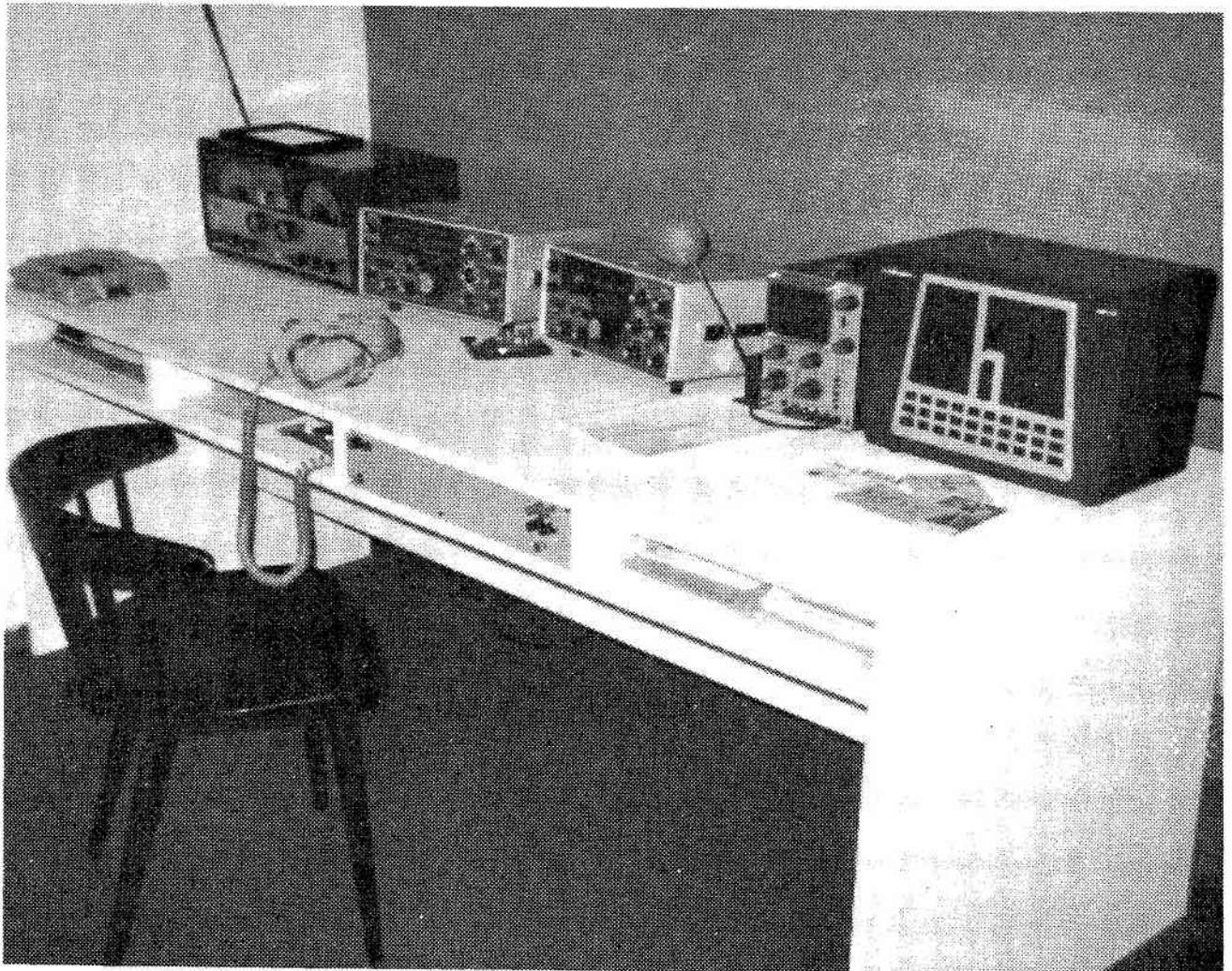
# TCA: Technical Section

Build your own

# Operating Desk

By W.J. Karle VE4KZ

FIGURE 1





The operating desk is a central feature of the Amateur station. It supports and provides easy access to most of the equipment and controls used for communication. It contributes to the operator's comfort, efficiency, and safety. Yet, how often is it simply a standard table or desk quickly pressed into service? Why not design and construct a suitable operating desk? This article describes how to build one. Some design principles are mentioned.

The operating desk shown in Figure 1 was made of plywood. Construction only required the use of a few handtools because the wood was cut by the lumber dealer. The parts of the desk were assembled using white glue. White glue provides high

strength whereas nails and screws generally are not suitable fasteners for plywood. The wood was finished in a manner which conceals the grain and edge plies while providing durable and easily maintained surfaces. The total construction time was about forty hours. This period included the glue and paint drying times. The cost was about 60 dollars for all materials.

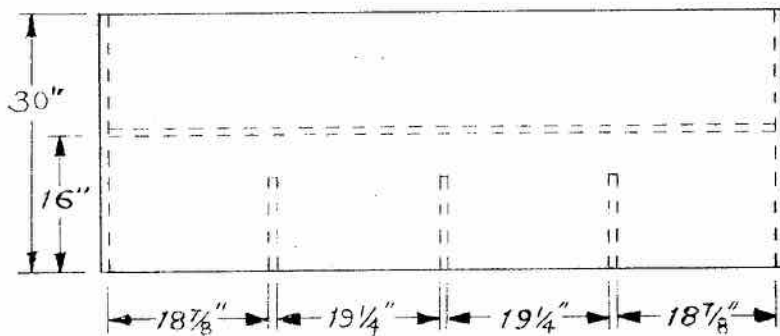
The working drawing is shown in Figure 2. The dimensions were calculated by considering the total surface area required by the present and future equipment. The depth of the top was determined by noting the distance which was needed from the table edge to the key ('phone operators may

need less depth while keyboard operators may require more). To this distance was added the depth of the deepest piece of equipment plus another three inches for cable routing. Dividing the area by the total required depth gave the width of the operating surface.

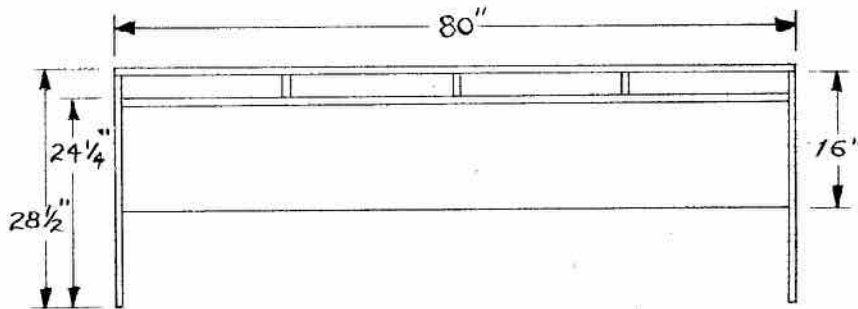
The height was determined by experiment. That is, several existing desks and tables were tested for comfort by sitting before them using the normal operating chair. A fairly standard desk height of 28 1/2 inches was found suitable for my stature and for CW operations. Your height and favourite operating mode may call for a different dimension.

The shelf was spaced below the main surface and the

FIGURE 2



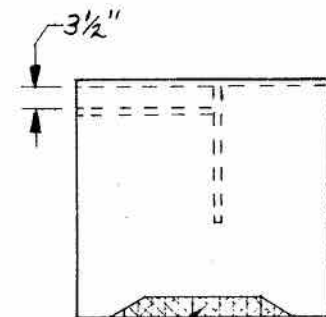
TOP VIEW



FRONT VIEW

MATERIAL:

3/4" G1S PLYWOOD



CUT OUT  
(SEE TEXT)

SIDE VIEW

dividers were positioned in order to accept standard 19 inch rack panels in the two central sections. Note that the dividers do not extend to the vertical panel: this facilitates wire routing. The vertical panel makes the top rigid and prevents lateral sway of the entire structure.

Plywood is quite strong but, due to the desk's width,  $\frac{3}{4}$  inch thick stock was considered necessary. For widths less than sixty inches, half inch plywood ought to be adequate. Fir plywood was selected rather than the more expensive and attractive kinds. The wood was good on one side rather than having two good sides. Since the desk was to be painted and since only the outward facing surfaces were to be visible, one sided stock was acceptable.

Simple dimensional drawings helped the saw operator cut the wood. Whether you or the dealer does the work, it is important to check the "Trueness" of the saw; there are several joints in this desk which are quite long and still must be precisely perpendicular.

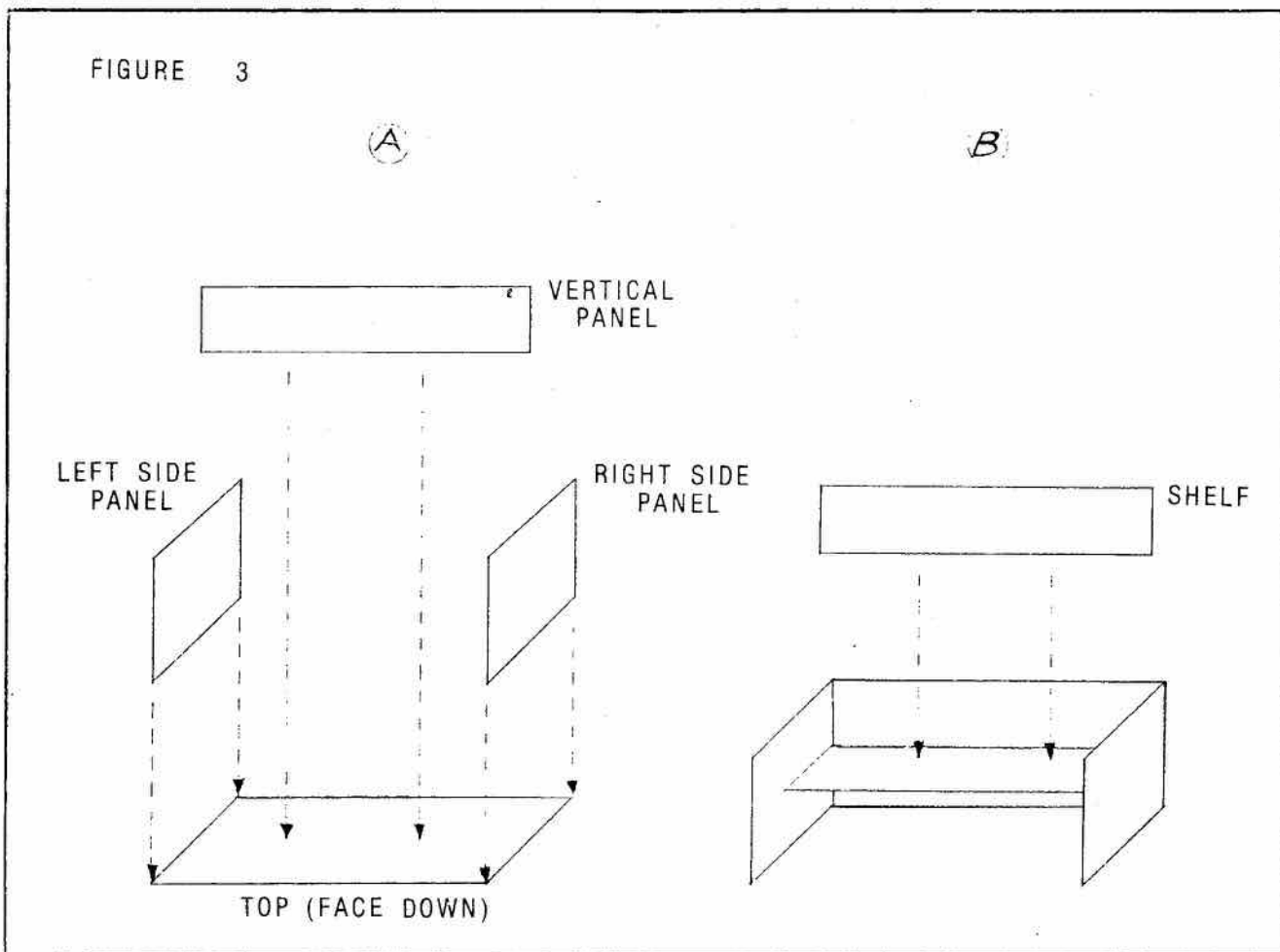
The assembly of the parts was easy. See Figure 3A. The desk was, at first, built upside down. The top was laid face down on the floor. Glue was applied to one of the side panels and to the vertical panel (Weldwood "Prestoset" glue was used). It ought to be noted that glue is always put on a cut edge (where the plies are visible) rather than on a smooth face. Also, only a narrow strip of glue is needed but it must cover the whole length of the joint; the glue will spread when the pieces

are pressed together.

One side panel was placed into position. Then, the vertical panel was correctly located. The pieces were temporarily held together using masking tape. Glue was applied to the other side panel, it was positioned, and taped to the vertical panel. The side panels were checked to be at right angles to the top with a tri-square. The vertical panel was checked to be perpendicular to the side panels and to the top.

Weights were laid on the upward facing edges. The weights were a few heavy books. White glue does not need clamping in order to yield a strong bond. The weights only serve to spread the glue and to prevent shifting of the pieces while the glue sets.

The glue was set to a



rubbery consistency after thirty minutes. The weights were removed. The glue was allowed to thoroughly dry for eight hours without disturbing the pieces.

Next, the desk was turned so that its front edges were facing upward. See Figure 3B. Glue was applied to the shelf. It was positioned and checked to be correctly spaced from the top and perpendicular to the vertical panel. After weighting and drying, the dividers were glued into place. Some one inch diameter wiring pass holes (not shown on the drawings) were drilled using an auger bit. The pass holes allow bringing wiring to the front of the desk and, because of the location, prevent accidental contact.

Surface preparation followed. A medium-thick mix of spackling compound (such as Polyfilla) was spread over all outward facing surfaces after placing the desk upright and after removing the masking tape. A piece of board was drawn along the surfaces to scrape off the excess spackling compound. This step filled most of the depressions in the wood. The edges, where the plies were visible, were similarly treated. A second coat was applied after the first was dry. This coat was sanded using a medium grade of sandpaper.

It must be stressed that surface preparation, as described, is necessary and must be carefully done if the typical plywood appearance is to be fully camouflaged. Preparing the edges is the most trying part.

All surfaces were painted with a primer-sealer. The visible surfaces were wet-sanded using a fine grade of waterproof sandpaper after the paint was dry. This step was repeated with a second coat and sanding.

For the finishing coats, two applications of an egg-shell latex enamel were used. Sanding was

not possible nor necessary.

This operating desk has been in use for two years. It has been found to be satisfactory in terms of comfort, efficiency, and safety. It has been easy to maintain since it wipes clean with a damp cloth. The surface has not become marred even though some prototyping of circuits usually takes place at one end of the desk. A corner did get damaged. It was repaired by applying a little spackling compound, primer, and paint.

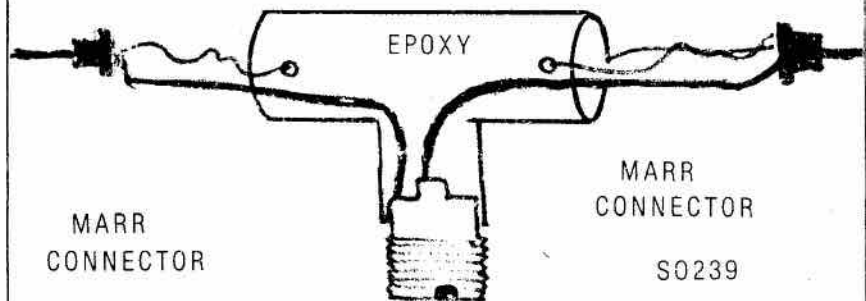
If the desk has a negative factor, it is mobility when fully

loaded. This problem could be reduced by minimizing the contact area between the side panels and the floor. Cutting out the cross-hatched areas on the side panels, as shown in Figure 2, would do this. Metal glides or casters could also be used.

You must have an idea for the best layout of your station. Using the principles and techniques described here, you can design and build your own operating desk. □

W.J. Karle VE4KZ  
59 Magdalene Bay  
Winnipeg, Manitoba R3T 3L3

## Centre Fitting for Dipole



To update; Instead of cutting T in half, use a SO239 which will fit nicely into the base of a 1/2 inch T fitting. Bring two adequately RF insulated wires such as inner conductor of RG59U through the T down to the SO239. Solder the two wires to the centre conductor and ground. Then fill with epoxy and press the SO239 firmly into the tee and when set you will find it firmly embedded.

Now you can just screw your co-ax on. □

Rowland VE3AML  
R.R.# 5 Sarnia N7T 7H6

# THE FUSE

Often neglected, often abused, often forgotten, the Fuse plays an important part in protecting your equipment.

The first fuses were pieces of copper wire and came into being in the 1870 - 1880 years. In the 1890s Edison was the first to enclose a fuse wire in glass. By 1904 standards were set up by the Underwriters Labs.

The automotive fuse came into being with the development of the motor car in 1914. These were followed by fuses for the new electronics industry in 1927.

The common glass fuse known as '3AG' means 'Automotive Glass'. It was the third size put on the market. The current value stamped on the fuse is its nominal value, meaning that this is the value it can be loaded to

based on a controlled set of conditions.

The nominal value is affected by the conditions it works under such as enclosure, temperature, size of wire in the circuit and contact pressure. To take into account these conditions, a fuse is loaded to not more than 75% of its nominal rating. In practice 50% is normally used.

Voltage is only important if the energy level in the circuit is high enough to produce an arc, that is a primary circuit where current is available to flow across the gap of the blown fuse under 'dead short' conditions. Very few circuits have these conditions. For instance, fusing a 120 volt AC line provides the current to jump across a blown fuse, but not enough voltage is present to make the current flow over the gap. Secondary circuits

have high voltage but low current and limiting caused by the load. It is safer, however, to use a fuse that is equal to or greater than the voltage in the circuit.

Fuses tend to blow a gap in the centre of the fuse element because the end supports act as a heat sink, hence the danger of a small gap.

Finally, be sure the wire in the circuit is large enough to carry the current and that the fuse end resistance of the holder is low. The greatest danger in replacing a fuse is using a larger value current rating than what is called for. This practice is common and more equipment is destroyed this way than by any other means.

by Howard VE3RL  
in Quinte QRM

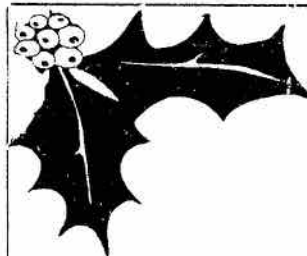
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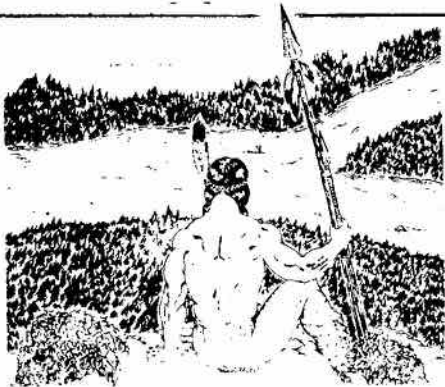
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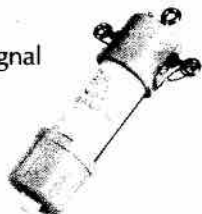
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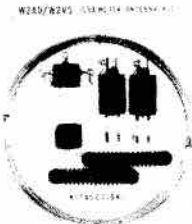


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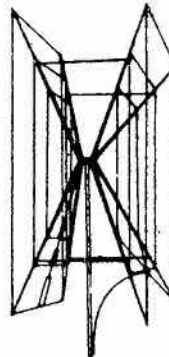
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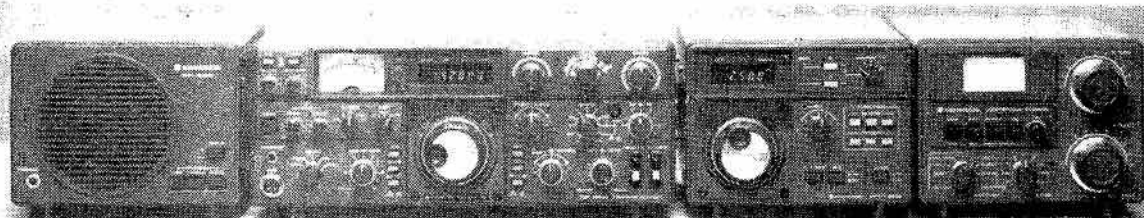
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**FOR SALE:** Kenwood TR 2400 2 metre handheld new \$450. Matching 100 watt Dycom Amp. with A.C. supply \$225. Ringo Ranger \$35. Larsen Mobile Whip with Mag. base \$35., Yaesu FT-7 sideband transceiver \$395., Hygain TH-3 \$85., Heathkit HM 102 SWR Bridge \$40., Typing reperf head for 35 ASR \$45., VE3CTP, 2 Adirondack Gate, Agincourt, Ont. M1T 3E7. 416-291-0088.

**FOR SALE:** All new Amateur Radio awards directory of the world-rules, checklists, maps, application forms, etc. for the 150 most popular awards. \$7.00 postage paid from author VE3GCO, Garry Hammond, 5 McLaren Avenue, Listowel, Ontario N4W 3K1.

**WANTED TO BUY:** For TTY #33TCV Wiring Diagrams, Tape reperf and reader. Cover for machine (reperf and printer). Also info on the two boards in call control unit #182630 and 182750. Connection for 20MA loop. John M. Clarke VO1EE, P.O. Box 92, Creston South, Nfld. AOE 1K0. 709-279-1157.

**FOR SALE:** Hand held motorola HT22D with charger; \$175.00 (UHF) Contact Bruce Allinott, Box 38, Site 210, RR 2 Parksville, B.C. V0R 2S6. 604-248-5630. VE7DYX.

**FOR SALE:** Antenna tuner MFJ Model J-945 rated 250 watts, all lo bands. Coax Switch, 5 position. Low pass filter, all low bands, 250 watt rated, Johnson. Avanti antenna, 2 metre, no holes required, window glass mounted, an excellent antenna. G. Schleihaufer VE3ISA, 270 Scarlett Road, Suite 202, Toronto, Ont. M6N 4X7. 416-766-1750.



## Canadian Amateur Radio First!

### WHAT IS CARF?

The Canadian Amateur Radio Federation, Inc. is incorporated and operates under a federal charter, with the following objectives:

1. To act as a coordinating body for Amateur radio organizations in Canada;
2. To act as a liaison agency between its members and other Amateur organizations in Canada and other countries;
3. To act as a liaison and advisory agency between its members and the Department of Communications;
4. To promote the interests of Amateur radio operators through a program of technical and general education in Amateur matters.

### OFFICERS

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Imm. Past President	VE2VQ	John Henry
Vice-President	VE3BID	Don Slater
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### BOARD OF DIRECTORS

If you want to contact the Federation, write or call a Director in your Region or write to CARF, Box 356, Kingston, Ont. K7L 4W2.

**VE7BBQ** Peter Driessen, 1946 York Ave., Apt. 203, Vancouver, B.C. V6J 1E3. 604-732-3298.

**VE6HO** Jim McKenna, Box 703, Ft. McLeod, Alta., T0L 0Z0. 403-234-4068.

**VE3FON** Marv Nash, 43 Bruce Farm Rd., Willowdale, Ont. M2H 1G4. 416-223-5544.

**VE3FTO** Ed Sheffman, 182 Fenn Ave., Willowdale, Ont. M2P 1X9. 416-226-1701.

**VE2SY** Lionel Bonhomme, 22 Cinq-Mars, Hull, Quebec J8Y 6B7. 819-771-4953.

**VO1NP** Nate Penney, Box 10, Shoal Harbour, Nfld. A0C 2L0. 709-466-2931.

### BANNED COUNTRIES LIST

Iraq, Khmer Republic\*\*, Libya, Somalia, Turkey, Viet-Nam, Peoples Democratic Republic of Yemen.

\*\* Station XU1AA has been authorized to exchange communications with Amateurs of other countries. Note: The calls 7OA to 7OZ are assigned to the Peoples Republic of Yemen.

### THIRD PARTY TRAFFIC AGREEMENTS

Bolivia, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Guyana, Honduras, Israel, Jamaica, Mexico, Nicaragua, Peru, Trinidad/Tobago, U.S.A. (Territories and Possessions), Uruguay, Venezuela.

### RECIPROCAL OPERATING AGREEMENTS

Austria, Barbados, Belgium, Bermuda, Brazil, Colombia, Costa Rica, Denmark, Dominica, Dominican Republic, Ecuador, Federal Republic of Germany, Finland, France, Guatemala, Haiti, Honduras, Iceland, India, Indonesia, Israel, Luxembourg, Netherlands, New Zealand, Nicaragua, Norway, Panama, Peru, Phillipines, Poland, Portugal, Senegal, Sweden, Switzerland, United Kingdom, U.S.A., Uruguay and Venezuela.

Note: As a general rule, DOC will consider licensed Amateurs of Commonwealth countries for reciprocal privileges in Canada if the other country does the same.

# How to use the CARF QSL Service

The CARF Outgoing QSL Service will forward your QSL cards to anywhere in the world. This service is **free to CARF members**. If you send a lot of cards, a CARF membership will soon pay for itself in view of the high cost of postage when cards are mailed direct.

**Please observe the following rules when using the CARF Outgoing QSL Service:**

1. Sort cards alphabetically by prefix.
2. Sort Canadian cards numerically by call area.
3. Place small lots of cards in strong, heavy envelopes and seal securely. Wrap heavier packages in strong paper or put in cardboard box. Tie securely. Do not staple!
4. Address your package as shown in the diagram.
5. **Do not register the cards.** This only delays them, costs more and is not really necessary.
6. If you want proof that CARF received your cards, enclose a self-addressed, stamped postcard or envelope with 'Receipt' marked on it.
7. If a package should be damaged on arrival (very rare), CARF will send you a list of cards received so that you can check if any were lost.

(For an explanation of QSL Bureaus in general, see the CARF Regulations Handbook chapter on QSLing.)

Name, call	<b>PRINTED</b>	Correct Postage
Return Address	<b>MATTER</b>	
<b>CARF Membership No.</b>		
CARF National QSL Bureau P.O. Box 66 ISLINGTON, ONTARIO M9A 4X1		

Use this address  
NOT Box 356 Kingston

Le service d'envoi des cartes QSL de FRAC se charge de l'envoi de vos cartes QSL dans le monde entier. Ce service est gratuit à tous les membres de FRAC. Si vous envoyez beaucoup de cartes, les frais de votre souscription seront tôt récupérés dû au coût élevé du service postal quand les cartes sont expédiées directement.

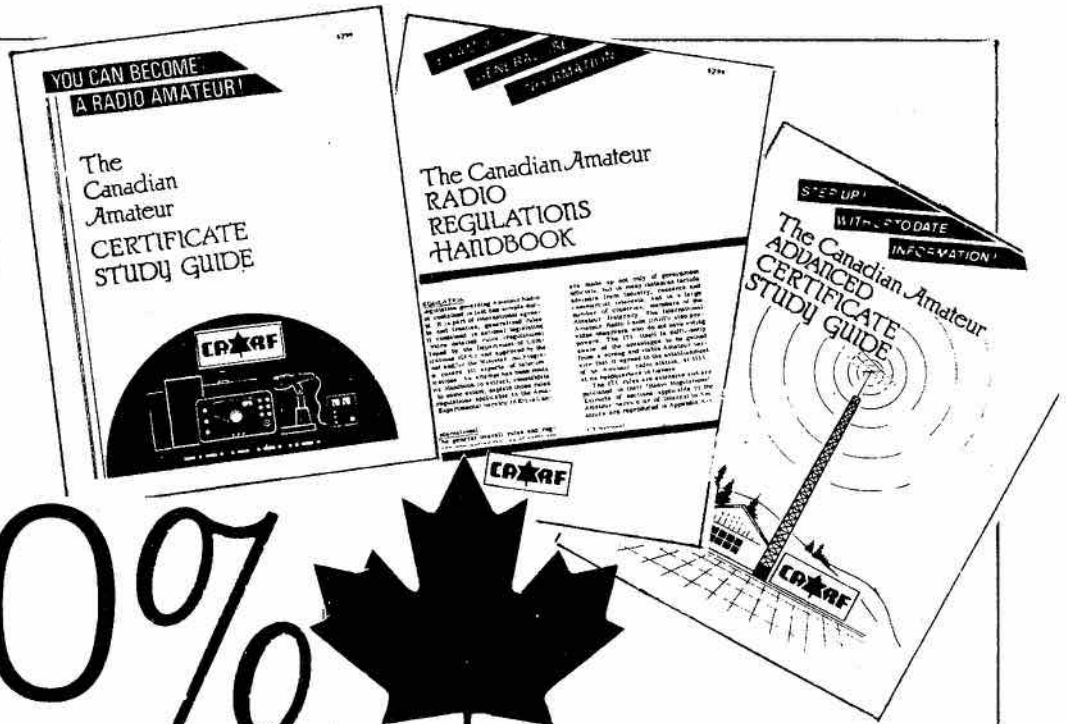
Veillez observer les règles suivantes quand vous utilisez le service FRAC d'envoi des cartes QSL:

1. Classer les cartes (DX) alphabétiquement par préfixe
2. Classer les cartes canadiennes par ordre numérique de préfixe.
3. Veillez placer les petites quantités de cartes dans des enveloppes en papier épais et bien scellées. Envelopper les grosses quantités de cartes avec précaution de préférence dans du carton. N'utilisez pas de brocheuse!
4. Veillez adresser vos envois.
5. **Ne Pas Recommander** les envois de cartes. Cette pratique est plus dispendieuse et occasionne souvent des retards et par conséquent, n'est pas réellement nécessaire
6. Si vous désirez recevoir une preuve que FRAC a reçu votre envoi de carte QSL, veuillez inclure une enveloppe pré-adressée ou une carte postale avec timbre avec le mot 'Receipt' imprimé.
7. Si un colis était endommagé sur réception (très rare), FRAC vous fera parvenir une liste des cartes reçues de sorte que vous pourrez vérifier s'il y en a eu de perdues dans le courrier.

Traduisé par Jack VE2SF



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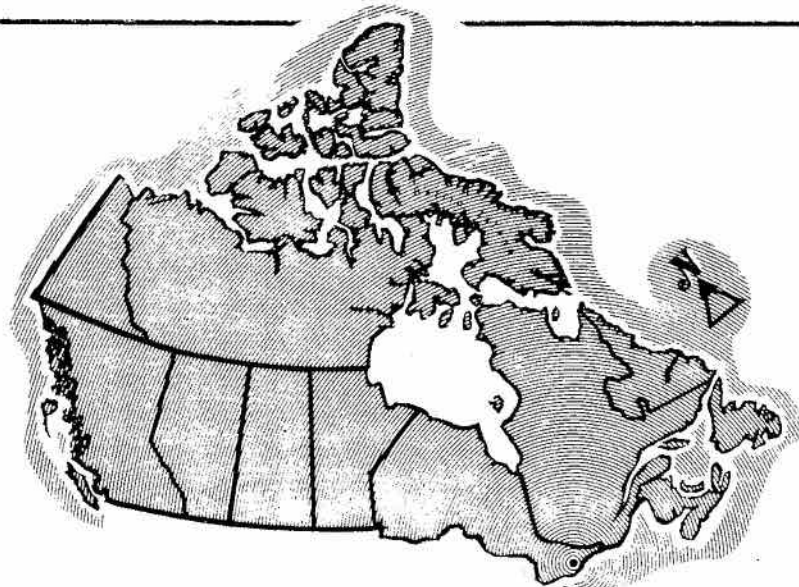


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Total: \_\_\_\_\_

MY CALL \_\_\_\_\_ FAMILY CALL(S) \_\_\_\_\_

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

POSTAL CODE \_\_\_\_\_ DATE \_\_\_\_\_

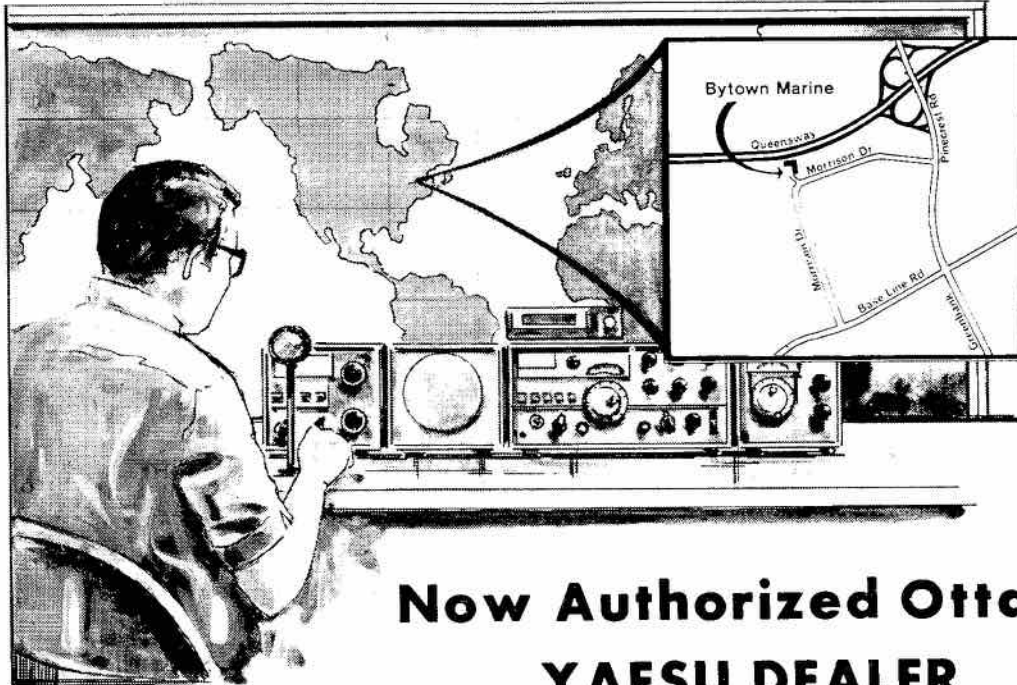
\*  
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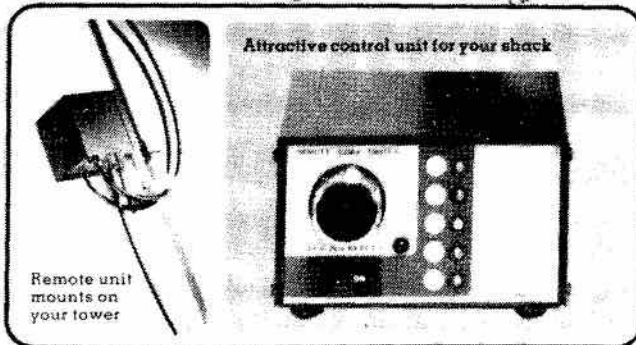
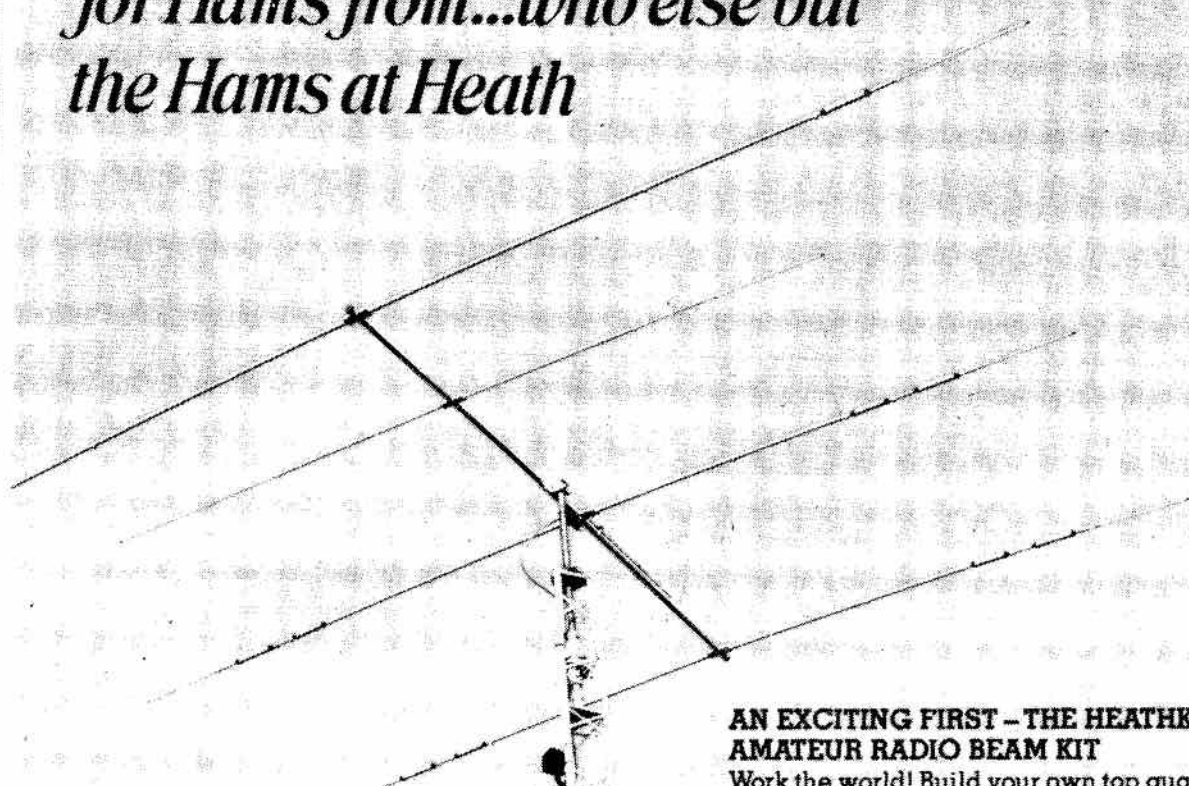


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