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# TCA



MARCH 1985

The Canadian Amateur  
Radio Magazine

La Revue des Radio  
Amateurs Canadiens



**"How can there be peace without people understanding each other, and how can this be if they do not know each other?" —**

Story Page 19

**Lester B. Pearson**



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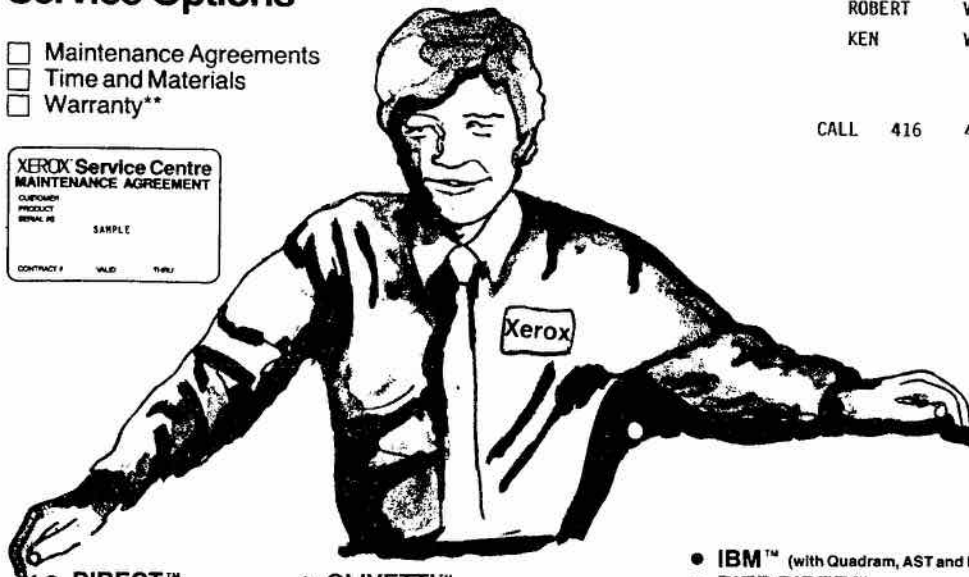
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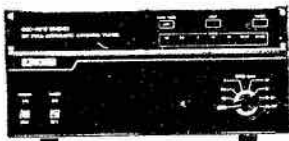


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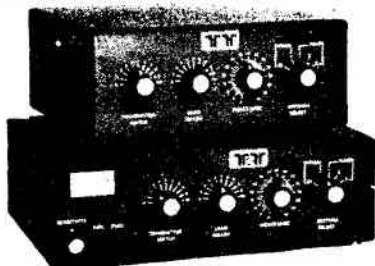


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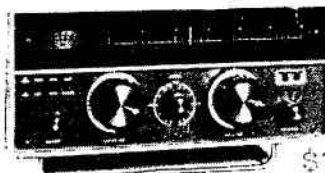
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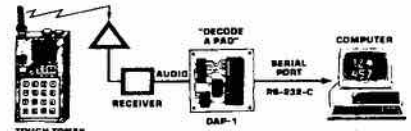
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- Audio tones from any source are converted to solid state switches which control any 16 digit keypad of a radio or other device.
- Some examples you can control include the Pro Search® Rotator (rotate beam remotely), ICOM IC 701 or ICOM IC 211 when using the RM 2 controller, ICOM 7200 & 751, Aztec PCS 4850 handsets such as Kenaco FT-208, FT-708, ICOM IC-22AT, and many more.
- Anything you can do manually with your 16 digit keypad the RAP-1 will do remotely using audio touch tones from any source.
- Two (four digit) programmable access codes are used to operate relays or other on-off functions.

Model RAP-1  
**\$249<sup>95</sup>**

### 'Remote A Pad'

Remote control  
interface board  
and DTMF  
decoder.

- LED decoder status indicators and momentary push state decoder relays are provided.
- 22 gold pin card edge connector, 16 pin dip socket and ribbon cable are supplied.
- All CMOS low power drain (30ma) SSI 201 Decoder.
- Hook eight wires (4 rows and 4 columns) in parallel with the existing keypad of the radio you wish to control remotely. Connect audio to any source, 12 volts D.C. and you are in control.
- The dual 4 digit decoders will turn your links on and off using your programmable access code.
- Detailed interface diagrams and instructions included with purchase. Interface cable for Pro Search® \$9.95 (plugs-in-acc socket).

### ICOM IC-02AT USER'S "AUDIO BLASTER" MODULE

- Module installs in side the radio in 10 minutes
- Remote audio to nearby 1 watt's
- 100 power drain (4-ma stand-by)
- Complete step by step instructions included
- Corrects the LOQ audio problem
- Drive external speakers to full volume, even signals with low deviation

Now Available  
for IC-2AT



Model AB-1

**\$33<sup>95</sup>**

ENGINEERING CONSULTING

EXCLUSIVELY AT.....  
SKYWAVE

**Cushcraft**

**HUSTLER**

**BENCHER**

MFJ

**Mosley**

PALOMAR

**YAESU**

### W90KM MEMORIAL

This antenna is a tribute to silent key Henry Kampe, W90KM, who was responsible for urging the manufacturer to produce it and for field testing it before production.

**\$129<sup>95</sup>**  
Plus \$3  
Shipping & Handling

4 BAND MOBILE

PERFECT FOR MAKE INSTALLATION!

All elements, except 40 which is tunable, are factory tuned to the center of the phone bands; 2:1 SWR to band edges.

The performance of this antenna is a fitting tribute to one of the finest operators who ever lived. You won't be disappointed!

H.C. VanValzah Co.

**YAESU**

Protect both your equipment  
and its performance...

with Transi-Trap™  
Surge Protectors

Transi-Trap™, the original and unique "isolated ground" surge protectors, will eliminate damage caused by high-surge voltages produced by nearby lightning strikes, high wind and static build-up.

To explain, "isolated ground" separates the ground wire hardware from the rest of the protector and its connectors. Consequently, the arc discharge cannot flow to your equipment chassis via the coax shield.

Although certain arc discharge voltages can actually raise the chassis above ground potential and reverse fire the internal components, our field-replaceable Arc Plug™ prevents this from occurring.

Its special gas filled, ceramic discharge tube provides a significant advantage compared to other designs employing semiconductor components or "chips".



R-T, HV Mark II Series  
(also available with N type connectors)

Our design is transparent to receiver front-ends, and does not degrade performance.

Don't hook up your coax without one! The 200 W models are most sensitive, best suited for HCVRS and XCVRS. Two KW models designed for amplifiers. For maximum protection, use both — with 200 W model between XCVR and AMP. All models include Arc-Plug cartridge.

- MODEL LT. (200 W) ..... \$33.95
- MODEL HT. (2 kW) ..... \$41.95
- MODEL R-T. (200 W) (VHF/UHF) ..... \$49.95
- MODEL HV. (2 kW) (VHF/UHF) ..... \$54.95

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PERFECT FOR ALL MARINE SYSTEMS!



# Why buy at Dollard's ?

## One Word.

# SERVICE.

Service means many things to us at Dollard's. It means a commitment to providing you with the best selection of quality equipment at the lowest possible price. It means helping you get the most for your money through an experienced and knowledgeable sales staff. It means getting your orders shipped with minimum turnaround. And it means a lasting support for the products you purchase with our fully equipped and staffed service centre.

We feature the ICOM line of Ham Radio equipment. Dollard's is the largest and most experienced ICOM dealer in the country. As a result, we can deliver the best prices on ICOM and our other lines of quality equipment such as:

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- ASTRON
- BARKER & WILLIAMSON
- CONNECT SYSTEMS
- HEIL
- HUSTLER
- HY-GAIN
- KLM
- LARSEN
- YAESU

Dollard's has the largest warehouse/shipping facility of any dealer in Canada. To you this means wide product selection, immediate shipment within 24 hours from stock items, and professional handling of your order.

Your long-term satisfaction depends on equipment servicing, and we don't let you down there. Our two full-time technicians use Hewlett-Packard, IFR, and Tektronix equipment, draw from a large inventory of spare parts, and have years of experience in ICOM servicing.

Ham Radio has changed a lot over the last decade. No longer is it solely comprised of tube radios and home-brew stations; it has evolved into every facet of high technology communications. The equipment you use is among the most advanced of its kind in the world. That is why we feel that buying Ham Radio is much more than walking into a store and plunking your money down. It is making the proper choice, getting the best price, and knowing you won't be left in the cold if anything goes wrong after the purchase.

We give you everything at Dollard's.



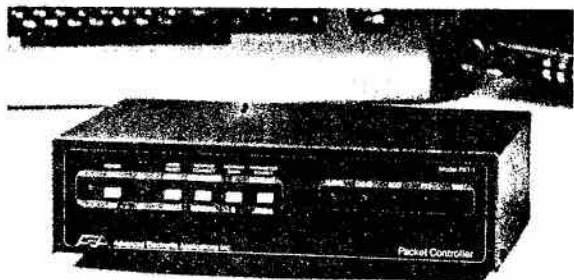
**DOLLARD'S  
Radio • WEST**





**AEA** Brings you the Breakthrough!

# PKT-1 Packet Radio Controller **\$ 849**



- Digital Radio Communication — computer to computer
- Every PKT-1 station is a Digipeater (repeater)
- Multiple conversations on a simplex channel
- Send computer files error free
- Simple to use — 5 usual commands
- Only extra equipment required is RS 232 terminal/ computer and radio
- Customer's 9-15 VDC power allows mobile/portable operation



IsoPole™ 440

**\$104**

## CP-1 Computer Patch

**\$299**



## KT-3 Keyer-Trainer

**\$ 219**



## BT-1 Basic Trainer

**\$149**

**NEW!**

THE ORIGINAL

## SWEDISH KEY

- solid brass
- teak base

- silver contact
- weighs 2 lb

**\$149**

**Dollard's  
Radio • WEST**

A DIVISION OF DOLLARD ELECTRONICS LTD.  
P.O. BOX 58236 , 762 S.W. MARINE DRIVE  
VANCOUVER, B.C. V6P 6E3  
TEL. (604) 321-1833 TELEX 04-54315

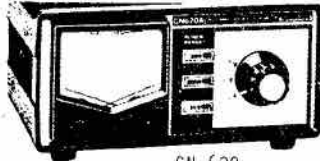


CANADIAN DEALERS: HOBBYTRONIQUE INC.  
DOLLARD DES ORMEAUX, QUE.  
DOLLARD'S RADIO WEST  
VANCOUVER, B.C. BRAD McCARTER  
MACTIER, ONT.

CANADIAN IMPORTER: ATLANTIC HAM RADIO LTD. P.O. BOX 755  
SAINT JOHN, N.B. (506) 652-5753

## SWR & POWER METERS

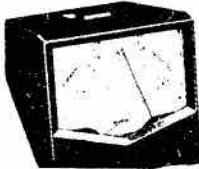
DAIWA cross needle meters make SWR and Power measurement quick and easy. Why bother with the inconvenience of the "older type" meters? With DAIWA there is only one meter to read and no tedious sensitivity adjustments to make - ever! DAIWA cross needle meters indicate forward and reflected power simultaneously. The SWR is read directly at the point where the two needles intersect. DAIWA quality insures reliability and accuracy. Once you've used this meter, you'll wonder how you ever managed without it in the past. The DAIWA SWR/Power meters cover a wide range of frequencies from 1.8 MHz to 2.3 GHz in either the compact model CN520 or the standard model (see below).



CN-620



CN-720(B)



CN-520



	\$99.95	\$159.95	\$219.95	\$299.95	\$259.95
	CN-520	CN-620(B)	CN-630	CN-650	CN-720 (B)
FREQUENCY	1.8-60 MHz	1.8-150 MHz	140-450MHz	1.2-2.5GHz	1.8-150MHz
INPUT/OUTPUT IMPEDANCE	50 ohm				
POWER FWD	200/2kW	20/200/2kW	20/200W	2/20W	20/200/2kW
REF	4/400W	4/40/400W	4/40W	0.4/4W	4/40/400W
SWR DETECTION SENSITIVITY	4W min				
TOLERANCE (full scale)	± 10%				
CONNECTORS	SO-239		SO-239		N type
DIMENSIONS (W x H x D mm)	72x72x95	165W x 75H x 97D	180 x 85 x 120		180 x 120 x 130

## PRE-AMPLIFIERS

Reliable VHF/UHF Ga-As FET design for outstanding sensitivity and low noise. Can be placed directly into the antenna feed line.

RF activated/Manual T/R switching.

\$119.95 \$159.95

	RX-110G	RX-430G
FREQUENCY	144 - 148 MHz	430 - 440 MHz
GAIN	15 dB min	13 dB min
INPUT/OUTPUT IMPEDANCE	50 ohm	
RF POWER BYPASS RATING	30 W CW (FM)	
POWER SOURCE	13.8 V DC 100 mA	
DIMENSIONS (W x H x D mm)	90 x 25 x 92	

### Electronic Keys

CW is one of the most enjoyable modes of amateur radio communication. DAIWA makes CW easy with the DK200/DK210 electronic keys. These keys do most of the work for you by eliminating fatigue and improving your "fist". Features include semi-automatic, automatic, and tune modes as well as dash/dot memories, 8-50 WPM capability, an L.E.D. speedmeter (DK210 only), and two types of keying outputs to suit almost any transmitter. A variable frequency sidetone monitor is also included. If you like CW, you'll love DAIWA'S DK200/DK210 electronic keys.



RX-430G



CS-201



CS-401



CS-4

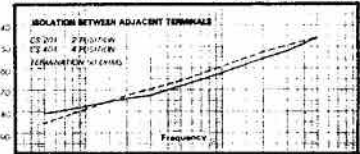


DK-210



LA-2155

## COAXIAL SWITCHES



	\$39	\$59	\$109	\$49
	CS-201	CS-401	CS-201/CS-201 G	CS-4
FREQUENCY	600MHz	800MHz	600MHz	1500MHz
VSWR	below 1.1:2			
POWER RATING	2.5kW PEP 1kW CW		500W PEP 250W CW	
IMPEDANCE	50 ohm			
INSERTION LOSS	Less than 0.2dB			
ISOLATION	better than 50dB at 300MHz better than 45dB at 450MHz adjacent terminal		better than 60dB	
CONNECTORS	SO-239 (N type)		SO-239	BNC
OUTPUT PORT	2		4	4

\$129.95 \$109.95

	DK-210	DK-200
SPEED	8 WPM - 50 WPM	
SIDE-TONE OSCILLATOR FREQUENCY	500 - 3000 Hz	
KEYING OUTPUT CIRCUITRY	GRID BLOCK - 100 V 10 mA max DIRECT + 300 V 100mA max.	
POWER CONSUMPTION	13.8 V DC (9-15 V) approx. 100 mA (DK-200) 200 mA (DK-210) (or 9 volt battery can be installed inside cabinet)	
DIMENSIONS (W x H x D mm)	150 x 62 x 150	
LED SPEED INDICATOR	DK-210 only.	

## LINEAR AMPLIFIERS

DAIWA amplifiers are designed for use with hand-held or other transceivers in either mobile or fixed station configurations.

Because of its light weight and compact size, DAIWA linear amplifiers can be mounted under the dash, under the seat, or in any other convenient location.

The DAIWA linear amplifiers are equipped with RF activated stand-by circuitry.

Easy operation. Simply connect your antenna and your hand-held/transceiver to the linear amplifier.

Connect a DAIWA linear amplifier to a suitable power supply and go!

	\$379.95	N.A.	\$179.95	\$109.95	N.A.	N.A.	\$229.95	N.A.
	LA-2155	LA-2065	LA-2060	LA-2035	LA-2030	LA-4040	LA-4030	LA-4015
BAND	144-148MHz							
MODE	FM/SSB/CW							
INPUT POWER	25W	10W	0.5-3W			10W	0.5-3W	0.15-0.25W (Model A) 0.3-0.6W (Model B)
MAXIMUM OUTPUT POWER	150W plus	60W plus	30W plus	30W plus	30W plus	35W plus	15W plus	15W plus
POWER CONSUMPTION	13.8V DC 24A max	13.8V DC 10A max	13.8V DC 12A max	13.8V DC 4.5A max	13.8V DC 6A max	13.8V DC 10A max	13.8V DC 4.5A max	13.8V DC 4.5A max
INPUT PLUG/CONNECTOR	SO-239	PL-259	BNC-BNC (Cable)	BNC	BNC-BNC (Cable)	PL-259	BNC-BNC (Cable)	BNC-BNC (Cable)
OUTPUT CONNECTOR	SO-239							
DIMENSIONS (W x H x D mm)	170 x 79 x 250	100 x 41 x 170	100 x 35 x 125	90 x 45 x 125	100 x 41 x 170	100 x 35 x 125		



# Lesmith Crystals

MANUFACTURER OF QUARTZ CRYSTALS

LESMITH LIMITED

P. O. BOX 703, 54 SHEPHERD RD.  
OAKVILLE, ONTARIO, CANADA L6J 5C1  
TELEPHONE (416) 844-4505  
TELEX: 06 982348

## INTRODUCTION

Since it's incorporation in 1973, LESMITH has been known for it's extensive knowledge of crystal requirements for amateur, commercial, and military equipment. We maintain data on old and new models, and are willing to work with you on any requirements, commercial or experimental.

Most of our work is with repeat customers, for whom our regular delivery is 2 weeks on average for custom crystals. There is no premium for rush orders, and crystals in stock are sent out immediately.

## HOW TO ORDER

Give us at least the information suggested in the sample order below. If we need more information, we will request it. In most cases, this is enough to proceed.

QTY	XTAL FREQ.	T/R	CARRIER	Make & Model Additional data
1		T	146.340	INOUÉ IC22
1		R	146.940	"
3		T	157.845	GE ROYAL EXEC
3		R	152.585	"

## PRICING

If the pricing is obvious, total the amount, add \$1.00 for First Class mail, and send in your money order, or cheque, with the order. If there is any doubt about the formula and or price, send in the order without the money. We will price the order and inform you by return mail. In the meantime, your order will be processed and shipped on receipt of your payment.

In the example, the amateur band crystals are \$8.00 each and the custom or commercial crystals are \$9.50 each. The total is \$73.00 plus \$1.00 = \$74.00. Ontario residents add 7% sales tax.

## 1984 PRICES

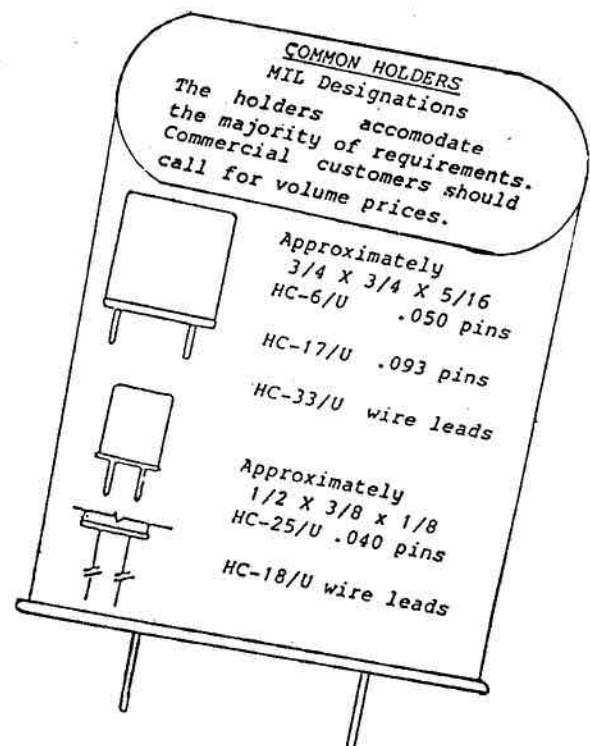
	HC6/U	HC25/U
<u>AMATEUR</u>		
Amateur bands	8.00	8.00
<u>CUSTOM</u>		
6 - 55 Mhz	9.50	9.50
5 - 5.9	10.55	12.75
4 - 4.9	11.60	16.95
3 - 3.9	12.75	16.95
Below 3 mhz	16.95	-
55-100 (fifth)	12.75	12.75

## MODULES

Mocom 70	24.95
Mocom 35	21.95

## REWORK MODULES to new frequency

General	19.95
Hybrids	29.95
MT500 MX300	





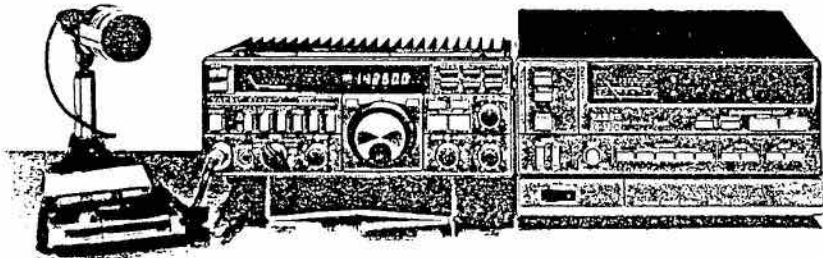
# YAESU

## FREE CATALOGUE

BRAD McCARTER  
Box 262  
MACTIER, ONTARIO POC 1H0  
Phone (705) 375-2836

# FT-209

5 watts  
\$ 389.00



FT 757 SERIES

### OPTIONS

- YH-2 Headset
- MH-12A28 Speaker/Microphone
- PA-3 DC/DC Car Adapter/Trickle Charger
- MMR-21 Mobile Hanger Bracket
- NC-15 Quick Charger/DC Adapter
- FNB-4 12V, 500 mAh Ni-Cd pack
- CSC-11 Soft Case for FT-209R/RH w/FNB-4



MIRAGE

TELEX *hy-gain*

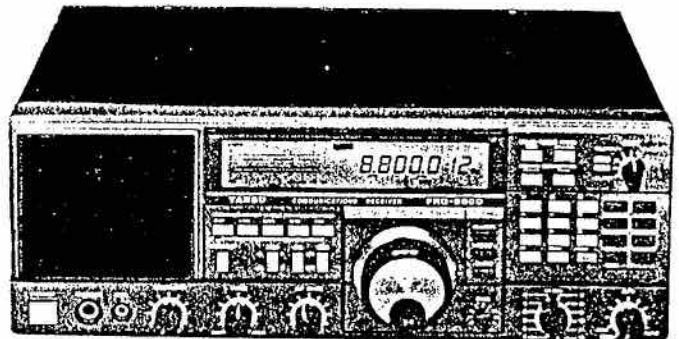
*Hansen*

AMIDON  
*Associates*



# FRG 8800

GENERAL COVERAGE



PHONE: (705) 375-2836

BRAD McCARTER  
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MACTIER, ONTARIO POC 1H0

PRICES AND SPECIFICATIONS OF ALL EQUIPMENT AVAILABLE ON REQUEST  
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4 MILES EAST OF FRANKTOWN  
3 MILES SOUTH OF PROSPECT

# WILLIAM J. FORD ELECTRONIC SURPLUS

DISPLAY AREA OVER 2500 SQ. FT.  
MAIL: R.R. 6  
SMITH FALLS  
ONT. K7A 4S7  
PHONE: (613) 283-0637

**Important: For more surplus items refer to previous issues of "TCA"**

- Precision RLC impedance bridge made by Compagnie Generale de Metrolgie Model 626. R from 0.01 ohms to 10 megohms. L from 10 uH to 1000H. C from 1pF to 100uF. Q from 0 to 10. Power factor from 0 to 14%. Size 20x15x9. Wt 48 lbs. Built in pwr supply null indicator and oscillator. DC component is adjustable from 0 to 500 volts. With manual. . . . . \$50.00
- Oscilloscope, 7 miniature (2FP1) oscilloscopes each with their own time base (30HZ to 100 KHz in 8 steps) All plug into a 19" rack panel 3.5" high containing common pwr supply. All solid state by Electro Instruments Model 270. . . . \$150.00
- Tektronix scope dolly Model 201-2D. Designed for small scopes measuring approx 9.75x21" deep. Has storage space for 2 plug-ins plus drawer. 9 position tilt lock platform. Appearance very good. . . . . \$150.00
- Plug-ins for Tek scopes. Useable in 531, 541, 545 and other scopes using similar size units. Following available: 53/54C, 53/54D, O, Q, T, CA equiv. . . . . \$40.00 each.
- General Radio Variac Model W506DG64CKS2 consisting of 6 ganged 50 amp units motor driven by Holtzer-Cabot geared 115V60Hz motor. Units can be operated on 120 or pairs series to operate on 240. Easily dismantled into individual or groups of units. . . . . \$300.00
- Chart recorders, solid state HP Model 7100 series. Portable case with handle, 17x9x7 deep. Uses 11" chart paper. \$25.00
- Chart plotter, Varian Model 1100-E. Uses single sheets approx 12x16, vacuum platen X-Y type. . . . . \$75.00
- PA amplifier, Soundmaster Model 050. 70 watts, uses 4 type 5933 (807) tubes in PPP. Separate treble, bass and phono controls plus Mic1 and Mic2. . . . . \$20.00
- Large camera lens in mount, very heavy. Front element 3.5" dia, rear element 2" dia. Barrel 4" dia by 4" long. Coated, marked 24.50 BFL, 84.30 EFL. . . . . \$25.00
- Aircraft DF loops, ARC Model L-11. Ferrite bar mounted in transparent semiflush housing 6" dia. Self contained drive and servo motors. . . . . \$20.00
- Terminal strips, new packaged 16" long, 1.5" wide. 52 brass screw terminals each with separate solder lug. Can be cut down to any smaller length. . . . . \$2.00
- Tubes, triodes type 100TH. New boxed. . . . . \$10.00
- Teletype Corp gear sets, 75 WPM, sealed packages part number 173101 . . . . . \$1.00 new.
- Diodes, new in EM/ES shielded packaging Type 1N3613 . . . . . \$0.50
- Jennings vacuum relay (1 only) Type RM2, DPDT . . . . . \$100.00
- Military fully enclosed rack cabinets for 19" panels, 7 ft tall, solid sides, double rear doors finished in RCAF blue. Power bars with U gnd sockets down each side plus duplex outlet at bottom front. Only \$12.00 while they last.
- Fire pumps, Gorman-Rupp Model 611/2D-P. Impellar type pump driven by single cyc. gas engine all mounted on frame. . . . . \$75.00
- Bruning Model PD80 copier. Will take dwgs up to approx 48" wide. Table Model. . . . . \$85.00
- Xenon head for Omega Enlargers (Xenomega). Complete with pwr unit and blower. . . . . \$75.00
- Good assortment of large 6-7 ft relay (19") rack cabinets, deluxe construction all with rear doors, some on castors, some with removeable side panels. . . . . \$75.00
- While spring is still many months off, we have a few agricultural items including a 40" rotary cultivator 3pt hitch, tractor PTO driven. A gasoline engine driven wheel barrow with forward and reverse. Italian Machio H.D. tiller heads. Write for details.
- Tubes 4CX1000A/8168, new sealed Eimac plastic pouches. Packaging date 1982. . . . . \$150.00
- General Radio Impedance Bridge Model 164OA. Measures RLC plus Q and D. Built in solid state oscillator & null detector. Acc approx 1%. Portable aluminum carrying case 12x12x7. Wt 17 lbs. Operates from 4 D cells or may be operated using external oscillator & detector. . . . . \$150.00

Terms of Payment: Postal money order, certified cheque or equivalent. Orders with personal cheques held 4 weeks to allow cheques to clear.

All items used surplus unless indicated otherwise. FOB Smiths Falls, Ont. 7% Sales Tax applicable to Ontario residents. Any queries phone or write (include stamp). Phone anytime before 8AM or after 6PM



160-METER DX OPERATING PRACTICES

REGION 1			REGION 2		
COUNTRY	ALLOCATION	NOTES	COUNTRY	ALLOCATION	NOTES
Andorra	(C3) 1810-1875	Phone permitted only in 1825-1875	Antigua	(VP) 1800-2000	
Austria	(OE) 1810-1850	SSB only allowed 1832-1835	Argentina	(LU) 1800-1850	1800-1810 CW only
Bahrain	(A9) 1800-2000		Bahamas	(C6) 1800-1825	
Cyprus	(5B) 1800-2000	Phone permitted only in 1900-2000		1975-2000	
Denmark	(OZ) 1830-1850	CW up to 10 watts only	Bermuda	(VP) 1800-1825	CW and Phone
Djibouti	(J2) 1810-1850			1875-1900	CW and Phone
East Germany	(Y2) 1810-1950	Up to 10 watts, phone only allowed 1900-1950	Bolivia	(CP) 1800-1850	
			Brazil	(PY) 1800-1850	
West Germany	(DL) 1815-1835	SSB only allowed 1832-1835	Canada	(VE) 1800-2000	
	1850-1890	CW only	Colombia	(HK) 1800-2000	
Finland	(OH) 1820-1845	Up to 10 watts	Costa Rica	(TI) 1800-2000	
	1915-1955	Up to 10 watts	El Salvador	(YS) 1800-2000	
France	(F) 1830-1850		Grenada	(J3) 1800-2000	
Gibraltar	(ZB) 1800-2000		Guatemala	(TG) 1800-2000	
Lesotho	(7P) 1800-2000	Up to 10 watts	Honduras	(HR) 1800-2000	
Luxembourg	(LX) 1830-1850		Mexico	(XE) 1800-2000	
Malta	(9H) 1810-2000	Up to 10 watts	Montserrat	(VP) 1800-2000	CW and SSB only
Netherlands	(PA) 1825-1835	Up to 10 watts CW and SSB	Curacao	(PJ) 1800-2000	
Nigeria	(5N) 1800-2000	Up to 10 watts	Nicaragua	(YN) 1800-2000	
Norway	(LA) 1802-1850	CW up to 15 watts	Panama	(HP) 1800-2000	
Oman	(A4) 1800-2000	CW up to 10 watts only	Peru	(OA) 1800-2000	
Poland	(SP) 1750-1800	Up to 10 watts input	Surinam	(PZ) 1800-2000	
	1810-1930	Up to 10 watts except 1830-1850	Trinidad	(9Y) 1900-2000	
Portugal	(CT) 1830-1850	CW and RTTY up to 60 watts only	United States	(W) 1800-2000	
USSR	(U) 1850-1950	Low power, phone only allowed 1875-1950			
San Marino	(T7) 1830-1850		REGION 3		
Senegal	(6W) 1810-1850		COUNTRY	ALLOCATION	NOTES
South Africa	(ZS) 1810-1850		Australia	(VK) 1800-1866	Phone 1825-1866
Spain	(EA) 1830-1850			1874-1875	
Sweden	(SM) 1830-1845	10 watts CW only	French Polynesia	(FO) 1800-2000	
Switzerland	(HB) 1810-1850		Hong Kong	(VS) 1800-2000	CW only
Syria	(YK) 1830-1850		Indonesia	(YB) 1800-1900	Phone
United Kingdom	(G) 1810-2000			1900-2000	CW
			Japan	(JA) 1907-1912	Add 1/2 kHz to limits
			Malaysia	(9M) 1800-2000	
			New Zealand	(ZL) 1803-1857	
				1863-1950	
			Pakistan	(AP) 1800-2000	
			Papua New Guinea	(P2) 1800-1866	
				1874-2000	
			Singapore	(9V) 1800-2000	Up to 10 watts
			Solomon Islands	(H4) 1800-2000	
			Western Samoa	(SW) 1800-2000	Phone 1850-2000

Access to this band is still denied in Belgium, Hungary, Italy, Lebanon, Liberia, Monaco, Morocco, Romania, Sierra Leone, Turkey, Belize, Chili, Bangladesh, Fiji and Philippines. In Region 2, the segment 1800-1850 is an exclusive allocation where 1850-2000 is shared. In Region 3, 1800-2000 is a shared allocation.

80-METER DX OPERATING PRACTICES

AREA	CW SECTION	PHONE SECTION	PHONE DX
Africa (most countries)	3.500-3.600	3.600-4.000	3.790-3.810
Argentina, Chile	3.500-3.750	3.600-3.750	3.740-3.750
Asia (most countries)	3.500-3.600	3.600-4.000	3.790-3.810
Australia	3.500-3.600	3.600-3.700	3.690-3.700
Canada	3.500-3.725	3.725-3.999	3.750-3.800
Europe (except USSR)	3.500-3.600	3.600-3.800	3.790-3.800
Greece	3.500-3.600	3.500-3.600	3.590-3.600
India	3.650-3.700	3.650-3.700	3.675-3.700
Japan	3.500-3.550	3.550-3.575	3.793-3.803
New Zealand	3.500-3.600	3.600-4.000	3.775-3.825
South America (most countries)	3.500-3.600	3.600-3.999	3.775-3.800
USA and territories	3.500-3.775	3.775-3.999	3.775-3.825
Marshall Islands	3.500-3.900	3.800-3.999	3.800-3.825
USSR	3.500-3.600	3.600-3.650	3.640-3.650

Reprinted from the SCDXC Bulletin 11-2-84, via DX Report, courtesy DX Column Editor VE3KKB.





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# Questionnaire

*What do you think of TCA? How could it be improved?  
Please fill in this questionnaire and return it to Box 855, Hawkesbury,  
Ontario K6A 3C9. If you'd like to expand on any facet of TCA, include a  
page or two of your thoughts.*

## QUESTIONNAIRE

Age	under 20	20-40	40-60	over 60	
Number of years licensed	under 5	5-15	15-25	Old timer	
type of licence	Amateur	Advanced Amateur	Digital	Other	
Bands usually worked	160	80	40	20	15
	10	VHF	UHF	SHF	WARC
Number of hours/week active	less than 1		1-10	more	
Rank TCA columns	YL AMSAT	Tyro Technical	DX Letters	Contest	

What else would you like to see? \_\_\_\_\_  
\_\_\_\_\_

*Would you like the minutes of  
the CARF board meetings  
published in full in TCA?* \_\_\_\_\_  
\_\_\_\_\_

*Date of delivery of this issue:* \_\_\_\_\_

*Thank you so much!  
73, Frank VE3DQB, Editor, TCA.*





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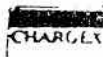
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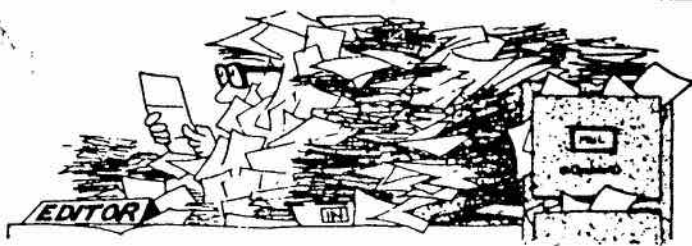
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# LETTERS



## QUICK QSL'S

Let me bestow credit where credit is due. I became a ham last June. I actively took to the air waves and told my QSO's that I would diligently QSL via the bureau.

I never expected to get their cards for quite some time. Was I ever in for a pleasant surprise! Today (Dec. 13) I received my first batch from the VE3 QSL bureau: five cards; three from the U.S., one from Santo Domingo and one from Spain. The U.S. ones were not surprising but the other two certainly were: I worked HI8 on Sept. 11 and EA3OD on Oct. 31, a mere 43 days ago.

Well done, Trilliums! Thank you very much from a new Amateur who is very appreciative of your hard work.

73,  
Antonio VE3NXQ

## DELIBERATE INTERFERENCE

Having been an Amateur for several years, I have become well accustomed to accidental and intentional interference on the Amateur bands. It is a problem that has been around for many years, and will no doubt become even worse in the future. Amateur reaction to this interference is mainly tolerable in the extreme.

However, I was dismayed to listen to Amateur reaction to deliberate interference on an Ottawa area repeater. As a temporary resident of the nation's capital, I was unfamiliar with the various repeaters in the area and spent most of the time just listening. One repeater in particular was continually bothered by an individual who deliberately used the autodial function without identifying. It was no doubt malicious interference, as he would do this in the middle of conversa-

tions.

I was dismayed to find this, but not totally surprised. What really shocked me was the Amateur reaction. I have never before heard such a shocking display of abuse, threats, and name-calling directed at this unidentified person by licenced Amateurs. Several gentlemen made remarks about the fellow's parents, age, sex and mental capacity in a very derogatory fashion. This was the worst possible thing to do, as it goaded the individual into creating greater interference, and led to total disarray on the repeater. A non-ham friend who was listening to the melée, remarked that he now knew why we were called 'amateurs.'

One must keep in mind Amateur signals are easily received on general coverage radios. Members of the press, prospective hams, and members of the public are frequent listeners. The foregoing reaction by Amateurs does not convey a very good

## TCA FOR BLIND AMATEURS?

I have been reading TCA on tape for about a year for two local blind Amateurs. I don't think there is a general TCA tapes-for-the blind service, though.

Would it be possible to start one? I am willing to read some months if another volunteer would help. The Canadian National Institute for the Blind has free tape distribution procedures in place.

Jim Cleveland VE1CHI

*Do you know a blind Amateur? If you do, ask him what he thinks of the idea, and let the editor know — just leave a message on the tape at 613-632-9847. If reaction is favourable we'll get it in place soon. — Editor.*

impression of Amateur radio. Next time we lose frequency allocations or other services, think back to the many times you have heard us act in an 'amateur' fashion; think back to those who could have been listening. The radio spectrum is crowded, and there are many who would like our generous allocation.

We are neither policeman of the airwaves, nor vigilantes of non-licenced Amateurs. We are users of a shared radio spectrum, and we should treat intentional interference in a professional manner. Otherwise we may all wake up one morning and wonder what became of Amateur radio.

Something to think about.

T.S. Ellam VE6CJR/3, G4HUA

*Not the first such letter published in TCA. The correct procedure when deliberate interference is met with follows:*

- 1) Take no notice on the air. Do not let the interferer think he is bothering anybody.
- 2) Record the interference as evidence.
- 3) DF the interfering station and locate the Amateur.
- 4) Inform DOC.

## A CONTESTER'S COMPLAINT

Why will not the DOC let DX contesters use a special prefix for the last weekend in March for the CQ WPX contest? The U.S.S.R. and many other European countries, and the central and south American countries do. It certainly makes a difference in one's score. Each province should have a different prefix allocated to it for the WPX contest weekend.

Another point: some Canadians operate USB on 40 metres making some Europeans and Africans mad. The rest of the world operates lower sideband on



160; 80 and 40. Just because some U.S. guys do it doesn't mean Canadians have to be like that.

Whose idea was it to have CW only on 30 metres? Most Europeans, South Africans and Oceanic countries can operate sideband. After all, RTTY is allowed. The Mexicans can use SSB and they are as close as we are to the U.S. They don't have subbands either.  $\Delta$

Henry Thel VE7WJ

## VE7LPC, Lester Pearson College

The cover picture shows a few of the international gang at Lester Pearson College ARC, Victoria, B.C., where there are students from 62 countries. L/R at the club station VE7LPC, are Marcela Ibarra Garcia, Columbia; Juliette Warren C6ADG/VE7FSS, Bahamas; Ximena Van Gelder HC1FN, Ecuador; Marko Percovik OA4BIK, Peru; Roy Parrett VE7TG, sponsor; Bert King VE7FBK and Al Wilson VE7AXW.

Lester Pearson College of the Pacific offers a two-year course of the usual academic subjects. In addition, a wide range of activities are available, including Amateur radio classes. Students can qualify for the Canadian Operator's Certificate, enabling our visitors to keep in touch with their home country by Amateur radio.

The station at VE7LPC was donated by the Kiwanis Club of Victoria. It includes a Kenwood TS-108S transceiver, Hammond Linear, TH6DXX beam antenna on a 70-foot tower, and 800-channel 2-metre FM station. Operation is mostly weekends. Skeds are possible on weekdays after classes— about 22:30 Z.

Pearson College is a national memorial to Canada's late prime minister and Nobel Peace Prize winner Lester B. Pearson.  $\Delta$

### CORRECTION

Figure 1 of the December 1984 Microwaves column (page 34): 0.4 mm should read 0.4 inches, 0.9 mm should read 0.9 inches.



## Find, Fix and Strike

...and to add to our miseries, some of our colleagues south of the border have again taken to the practice of dumping fat carriers on net or general QSO activities. Occasional cases of this can be attributed to not being aware the other stations are on the air, but, when it only happens during net activities and the offending station follows if the net shifts its frequency, then, I think the conclusion to be drawn is quite clear.

As a suggestion for our Technical Advisor, I wonder if, as a club project, we could design and construct a null reading directional loop with a fairly narrow beam width to be mounted at the QTH of one of our members so we could take and record accurate bearings on the offending station? We could then encourage one or two other clubs in Ontario to do the same and thus produce cross-bearings that can usefully be reported to the DOC.

My experience has shown that, given some reasonable cross-bearings to start from, DOC are more than willing (if necessary with the aid of the FCC) to lower the boom on offenders. One fine example is a former Philadelphia RTTY operator who is no longer on the air following the seizure of some \$3,000 worth of equipment.

Anyway, it seems to me that, not too long ago, I saw some of the basic components for such a project at the QTH of VE3ZS, which

might spark the necessary design idea.  $\Delta$

Bob VE3KLL  
from Ottawa Valley Mobile RC  
*Rambler*)

### SMUGGLING

Two Amateurs were discussing their purchases at a flea market. The first ham wondered how he would get his new transceiver into the house without his wife seeing it. "Guess I will have to sneak it in by the basement door," he said. The second ham replied, "Oh, I dunno, there is quite a lot of new ham gear goes in by the front door— wrapped in a mink coat".

Thanks North Okanagan  
ARC Bulletin

### CORRECTION

TCA December 1984 misprinted 'West Island Radio Club' as 'West Indian' Radio Club. Perhaps the members of WIARC wish, as Frank does, that they were in the West Indies this bitter cold winter.

### NEW NET

A new Amateur Radio Net has been established in Northern Alberta. It is called the Northern Alberta 160 metre ragchewers net. It began on Oct. 1 1984 at 04:30 Z on 1852 kHz.

Net manager and originator is Lorne VE6AWI. All Amateurs are invited to check into the net.

—From VE6



# DOC DOINGS

A report from the EMI Committee, Ottawa ARC

## Cross Waves

In the past six weeks, two serious cases have been investigated after discussions with the DOC Regional Office. In both, the most serious interference occurred with high power and antenna pointed toward the complainant. In both cases, DOC gave the Amateur equipment a clean bill of health and operation

was in accordance with licence terms.

Case #1 occurred in Glencairn. The complaints related to:

- a) Furnace control
- b) Electronic organ
- c) Microwave oven

This has been one of the first cases of a furnace control operating in the presence of RF.


By Ralph Cameron VE3BBM

Although this particular control by Lennox has not been seen, it is thought to be SCR controlled. There appears to be no noise suppression incorporated into the design. Since an SCR requires a gate voltage above a certain threshold to turn 'ON,' it is obvious that conducted RF is the culprit. DOC used a toroid on the line cord to temporarily prove the validity of this reasoning; and the problem disappeared. A local reduction of the area mains voltage (approx 5% lower) has caused a recurrence of the problem. This suggests that the suppression threshold is marginal, and a choke suitable for the current should be installed right in the gate lead. Possibly, a ferrite bead in the gate lead would solve the problem. Imagine the furnace control relay following your CW keying... Not a very desirable situation!

Operation in this case was on 20M. Power output was at 1KW with a four-element beam. At the 100W level this particular interference was absent.

The microwave oven was of the type that retains timer information in memory after the cycle is completed. In this case the CW keying pulses were sufficient to initiate another timer cycle! A simple line filter would cure this problem. The complainant so far has opted to remove the wall plug until such time as the oven is used.

The organ, a Yamaha, is another serious problem. Should one be unfortunate enough to be wearing headphones during interference, the attendant sound level is almost deafening. A con-

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6265-2-74

November 30, 1984

CARF  
P.O. Box 356  
Kingston, Ontario  
K7L 4W2

Gentlemen:

In order that your organization is aware of the enforcement activities that are being carried out throughout the province, I am sending you notice of another prosecution for unlicensed radio operation.

An Ottawa area amateur radio operator reported that an unauthorized station was operating through a local two meter repeater. An investigation by our Department resulted in Mr. J. Marcel Goudreault of Ottawa appearing in Provincial Court on Oct. 16, 1984 to answer the charge of operating an amateur radio without a licence. Mr. Goudreault pleaded guilty and was fined \$500 for the offense.

I will endeavour to keep you informed of the Department's activities in this area but if you have any questions, please feel free to call me at 966-6268.



C. Olsen  
Regional Manager  
Spectrum Control  
Ontario Region



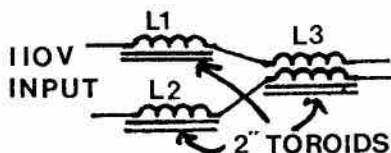
tact with the Yamaha Service Manager revealed a most understanding and sympathetic individual. His cooperation has revealed some interesting and encouraging facts. Fortunately, the organ was under warranty, and Yamaha Head Office agreed to accept costs to eliminate the interference.

Most of the interference occurred when the pedal (swell/volume) control was depressed. Rather long exposed leads lead directly to a four channel stereo preamp (high gain). At low offending RF levels (100W out) some reduction in interference could be noted by moving one's arm near the amplifier's (organ) speaker lead output. A toroidal core on the line cord had a noticeable but minimal effect. The organ exterior consists of several PCB's mounted side-by-side on at least two levels, separated by two feet. Needless to say, the opportunities for RF pickup are ideal. Back to the drawing board.

I made an appointment to visit the organ Service Centre and, in concert with the Service manager, reviewed the 4ft. x 4ft. schematic. A suggestion was made to try ferrite beads at each of the stereo preamp inputs, as well as to shield exposed runs of those leads to the swell control. Adhesive aluminum tape was to be used, or even aluminum foil. This is now in progress, and a handful of beads were donated to the cause. Results should be interesting, and I hope to report in a future article how effective these measures were. At that time I will name names and give appreciation to the cooperative parties.

It was most interesting to note that the new digitally synthesized Yamaha organs provide a very substantial line filter (3 toroidal cores) for rejection of common and differential mode currents. Shielding of long runs is accomplished with wrapping by adhesive backed aluminum tape. The circuit cards are now enclosed in a metal card cage with numerous ground points. How refreshing!

The line filter did not appear on the schematic, but layout is as follows:



This should make a very effective line filter; and you have to hand it to the Japanese for their initiative. They undoubtedly conform to FCC Spec 18 for domestic electronic items.

Copies of the CSA Specification Standard C108.8-M/1983 are available from CSA, 178 Rexdale Blvd., Rexdale, Ont. M9W

1R2. Before you pay out \$20 for this 16-page document, check your library for FCC Specification Standard 15. They are almost identical in format and content. It is probable this specification will become a mandatory DOT requirement in a year or two. Its full title is suggestive of the equipment it encompasses, "Electromagnetic Emissions from Data Processing Equipment and Electronic Office Machines". It falls far short of any minimal requirements for audio/visual/entertainment equipment.  $\Delta$

from Ottawa ARC *Groundwave*

## Free QSL Service

The CARF Outgoing QSL Service will forward your QSL cards to anywhere in the world. This service is **free to CARF members**.

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. Include the label (or copy or facsimile) from your current copy of **TCA**. Wrap heavier packages in strong paper or put in a 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 to see if any were lost.

Name, call Return Address CARF Membership Number	PRINTED MATTER	Correct Postage
CARF National QSL Bureau P.O. Box 66 ISLINGTON, ONTARIO M9A 4X1		

Use this address,  
not Box 356, Kingston

Your finished package should look like this.



# Atlantic spanned by wireless!

By Marshall Killen VE3KK

## Part II

It was not until late in 1923 that the first transatlantic contact was made. This was on Nov. 27 on 100 metres between French F8AB and U.S. 1MO-1XAM, Schnell & Reinartz. It was at first considered a fluke until British G2KF Jack Partridge of Merton on Dec. 8 proved it to be otherwise by working U1MO operated by Ken Warner at West Hartford, Conn. Warner was one of the top operators in the U.S.A. and was to become a leading figure in the history of the ARRL.

On the morning of Dec. 11 1923, Hiram Percy Maxim, President of the ARRL, addressed the following message (as U1MOs Nr 3 to G2KF) to Senatore Marconi, London:

"American Radio Relay League presents its respects and this evidence of Dawn of International Amateur Radio"

Six days later Marconi replied by commercial radio:

"Please accept my thanks and appreciation which I offer you and all concerned for your cordial message transmitted and received by Amateur Stations".

### Equipment used

For F8AB's contact with the U.S.A., two French-type SIF tubes, 250 watts each in parallel, were used as oscillators with the high voltage from 25 cycle mains being applied to their plates. Schell, Reinartz and Warner all spoke about Deloy's 25 cycle gurgler. On Dec. 12 1923, G2SH Fred Hogg had the second British-U.S. contact when he worked U1MO.

On Dec. 16 G2OD Ernest Simmonds at Gerrards Cross near

London made the first two-way contact between England and Canada when he worked A.W.Greig C1BQ of Halifax, N.S. The press reporting this success said, "This was the first time in the world's history that one of Britain's subjects, remote in the far-flung empire had spoken directly to another in the homeland." Out of that first Amateur contact between Great Britain and Canada was to grow the British Empire Radio Union. It continues to flourish and is well-known for its annual BERU contests.

The tests of Dec. 22 1923-Jan. 10 1924 were very successful with 19 British, 14 French and three Dutch stations being heard in the U.S.A. and Canada. Cecil's G2SZ was one of them. During February 1924, the RSGB conducted transmitting tests for 20 nights, sending code words which later had to be verified by cable.

### Top U.K. Scorer

G2SZ was logged in the U.S.A. on 19 out of the 20 nights and was judged the top scorer for the U.K. and second overall for Europe. During these tests, Cecil arranged tests for himself with F.E. Handy 1BDI at Maine University (later to be Communications Manager for many years at ARRL HQ).

A few weeks later, G2SZ became one of the first European stations to work both the U.S.A. and Canada. As well as working Handy 1BDI, he worked 1BQ in Halifax followed next by a long QSO with 2BN J.L. Miller in Montreal. The Prince of Wales, later to become King Edward VIII, came to Cecil's school to officially open

the new science building in which G2SZ was located. He congratulated Cecil on his success and apparently went into the wireless room, shutting the door on his retinue so that he could have a private chat for some minutes with Cecil. The British and U.S. press gave considerable coverage to this event with pictures of the prince talking to the youthful operator and examining the school's Amateur wireless station.<sup>1</sup>

### More Firsts

G2SZ went on to become the first European station to be in contact with the 6th district U.S.A. and 4th province, Canada. W6 and VE4. All these contacts were on wavelengths below 100 metres, generally around 80 or 90. Scientists and other eggheads were still saying that there was no future for world-wide communication on wavelengths below 200 metres so, with egg on their faces already, they were shortly to receive a further jolt, thanks to Cecil.

1924 saw Cecil in his last year at the school. Most unusual at a private school where discipline is so strict, Cecil had permission to leave his dormitory during the night and go across to the science building to operate G2SZ. Even after he became a student at London University, he continued to operate G2SZ during the week-ends and when his studies permitted him to do so.  $\Delta$

To be continued.

<sup>1</sup> *New York Times*, March 2, 1924; *The London Sphere*, Feb. 16, 1924; *Illustrated London News*, March 1, 1924, *Royal Visit to Mill Hill school*.





# MICROWAVES

By Michael Ross VE2DUB  
988 Hudson,  
St. Bruno, Quebec J3V 3Y2

I'd like to begin this month by thanking all Amateurs who have been sending me reports of microwave activity in their area. Keep the letters coming. Please note my new address, as the post office isn't always 100% effective in redirecting the mail. A few letters have been returned to sender. If you have not received a reply to a letter sent to my old address: please try the new one.

Kees Kaper PAOKKZ/VE5, 234 Ave I North, Saskatoon, Sask. S7I 2G4, in Saskatoon is looking for other local hams interested in microwave communication. He is well-equipped for both 10 and 24 GHz with 15mW and 45mW gunplexers feeding 2-foot dishes on 10 GHz. He also has a 4-foot and 9-foot dish plus lots of test equipment for both bands. Kees was very active on the microwave bands in Holland, making the first Holland to England and Belgium to England 10 GHz contacts in the mid 1970's. He also has operated 10 GHz mobile TV and set up a 10 GHz beacon station. Kees would welcome any Amateurs who might want to take part in similar experiments in Canada.

Syd Harding VE3GQN, 407 Fairview Drive Whitby Ontario L1N 3A9, would like to hear from Amateurs in the Toronto-Whitby-Oshawa area who are active on the microwave bands.

Dennis Mungham VE3ASO is active on 1296 with 150 watts to a 45-element loop yagi on SSB and CW from the Ottawa area. He reports that his weekly sked with VE3BFM, near Toronto, is quite consistently successful, with weak 449 signals over the 315 km path. A September tropo duct netted WB8BKC in Michigan some 475 miles away with 59 plus signals. Also heard was W9ZIH near Chicago but no two-way. Dennis also reports working W1JR near

Boston via airplane scatter on two occasions.

With the vast expanse of VHF/UHF/microwave spectrum available to Amateurs, it may seem to the uninitiated to be one large uncharted radio wasteland. Upon closer examination, each band is composed of many individual slices, carefully divided among the numerous special interest groups, in the form of band plans.

While these plans are not written into law, with the exception of certain CW, phone, pulse/packet or satellite designations, they serve to protect the interests of each group by concentrating like activities within a band segment, thus reducing mutual interference between incompatible modes of operation.

Relying on each Amateur's acceptance of these "gentlemen's agreements" as we do, imparts a responsibility on each one of us to become aware of the recognized plans on each band that we operate. Generally accepted band plans for VHF/UHF and lower microwave frequencies may be found in the front of the ARRL repeater directory.

Don't simply assume, because you can't hear anything on a particular frequency, that it is not being used. Maybe, today you could be right, but with the increasing popularity of the higher bands it won't be like that for long.

To illustrate the variety of activity being allocated spectrum by various band plan committees, the following should be included: FM repeater inputs and outputs, FM simplex, ATV repeater inputs, outputs, and simplex, satellite uplinks and downlinks, weak signal CW, SSB and Earth Moon Earth, beacons, spread spectrum, linear translators, SSTV, FAX, ACSB, RTTY, digital communica-

tions, links, remote control and telemetry, remote bases, meteor scatter, etc.

Certainly there is enough room for everyone, each in its place. Whether chasing weak DX in a VHF contest, listening for signals off the moon or pounding away at a computer keyboard to a network of linked computers, the higher frequencies are the place to be for the Amateur of the future, today. If you are already active on the bands, please let me know so we can share your knowledge with the potential inhabitants of the microwave bands of the future.  $\Delta$

## News Briefs

### ONTARIO WINTER GAMES

The Niagara Peninsula ARC has been asked to provide radio communications for the Ontario Winter Games, to be held in St. Catharines March 14-17, 1985. Why? Because they handled the Ontario Bi-centennial Day so well last August, as reported in TCA December 1984.

—From Niagara Peninsula  
ARC *Feedline*

### CODE PHONE

Several clubs run a code phone. The Ottawa Valley Mobile ARC's number is 825-0786, available 24 hours a day. Worth copying.

Please fill in the Questionnaire on Page 16, and return it to Box 855, Hawkesbury, Ontario K6A 3C9.

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  - IC-730-----\$749/\$779
  - IC-271H-----\$1099/\$1149
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- RS12A \$129; RS10A \$119; RS-7A \$ 95

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RS-20A, RS-20M, VS-20M	16	20	5 x 9 x 10 1/2	18
RS-12A	9	12	4 1/2 x 8 x 9	13
RS-10A	7.5	11	4 x 7 1/2 x 10 1/4	11
RS-7A	5	7	3 1/4 x 6 1/2 x 9	9
RS-4A	3	4	3 1/4 x 6 1/2 x 9	5

\*ICS - Intermittent Communications Service (50% Duty Cycle)



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## Papal Communications Exercise

# Amateurs Keys in Papal Visit

By Bob Smits VE7EMD

In September 1984, 106 Amateur radio operators played a crucial role in organizing the visit of Pope John Paul II to Abbotsford B.C. Over a four-day period from Sept. 15-18, more than 3,500 messages were relayed for all key officials of the Papal Mass Committee in the largest Amateur communications exercise ever held in Western Canada.

### Initial Involvement

In February 1984, Tony Craig, the president of the Amateur Radio Communications Association (ARCA), was approached by a representative of the Papal Visit Committee and requested to assist with communications. Craig, after initial discussions with the Papal Transportation Committee, determined that the job was likely to be far too large to organize under the auspices of ARCA alone.

Discussions were then held with the Regional Amateur Communications Coordinator, Robert

Smits VE7EMD, regarding the possibility of organizing the Amateur radio involvement under the umbrella of the PEP Amateur Radio Service.

An exercise of the size contemplated would allow many Amateurs to gain invaluable experience in the organizing, planning of, and participation in a large scale event; and would also raise PEP's profile a little in the Amateur community.

On May 24, Smits and Craig met with representatives of the Papal Mass Committee, RCMP communications, RCMP security, Papal Visit Task Force, and Medical personnel to discuss Amateur Radio participation at the event. The Vancouver Papal Mass Committee now estimated that 270,000 to 500,000+ would attend at Abbotsford Airport.

### Initial Organization

In the first week of June, Amateur Emergency Coordinators (AEC's) from across the Lower Mainland met with Smits and Craig to discuss the situation at

PEP headquarters in Surrey. To establish the number of available Amateur radio opera-



*Why tarry the wheels from his chariots? Brian VE7CTE and John VE7QW on an ATV from the motor pool.*



tors, each AEC was asked to conduct a preliminary phone campaign to hams in his area.

On June 20, at a joint meeting of the hams, John Tyrell, the Secretary of the Papal Mass Committee, Sergeant MacLaren of RCMP Communications and PEP Deputy Regional Manager Ross McIntyre, it was decided to go ahead with the project.

#### Recruitment

A volunteer ham questionnaire was now distributed to every AEC and at Maple Ridge and Tacoma Hamfests. The need for Amateurs was also publicized in local news media, on VHF and HF nets in B.C., and on PEP and VE7AGJ radio bulletin boards. A notice was also prepared that would go out in the Catholic media, alerting Amateurs that they were needed.

#### Planning

Detailed large scale maps of the Abbotsford site were examined and the scenario for the dates Sept. 16-18 1984 was gone over item-by-item to establish the number of operators required.

The Papal Mass Committee agreed to supply about \$400 to buy spare batteries for Amateur handhells, rented an unused hangar for use as Amateur Radio Headquarters, and agreed to supply nylon jackets and caps to identify the radio operators. PEP agreed to pay for feeding and accommodating the Amateurs, as well as supply necessary coffee, flashlight batteries, etc.

On Aug. 16 an information mailing was distributed to all volunteers giving a general outline of the operation, maps of the Airport, proposed frequencies, a schedule of events, and answers to anticipated questions about parking, battery charging, feeding, etc. Arrangements were made with a nearby municipality to transport 100 army cots and mattresses from the Chilliwack Armed Forces base to the old hangar that the hams would occupy.

Some 35 operators received special security clearance from the RCMP because they would be

accompanying key persons in highly secure areas.

#### Organization

On Sept. 1 and 8, walkarounds were conducted of the airport and the podium to familiarize operators with the layout.

On the 14th, the technical crew erected two 50-foot portable towers, and the repeater antennas at the receive and transmit sites. Bob Livingston installed a simplex autopatch so that local telephone dialling would be possible.

Early Saturday morning the technicians started to set up the repeaters. The photocopier, computer and printer were set up in the control room at Amateur HQ. Annie Jones VE7FVP and Joanna Immanse, VE7BID's XYL, prepared to register Amateurs and give out meal tickets, jackets, caps, passes and current schedules.

The operation was conducted with two VHF split site repeaters, as well as eight simplex frequencies. The repeaters, which would be linked on 220 MHz, would be necessary to allow the Net Control Stations (NCS) to listen to the repeater input while transmitting. This allowed the NCS to hear

priority traffic breaking in, as well as providing NCS with an 'override' capability. One of the repeaters was set aside for traffic between key members of the Mass Committee while the second one served as backup in case the first repeater went down and carried all the medical and Amateur administrative traffic.

#### Simplex Allotments

NCS operators also had a direct 'hotline' to the RCMP command center for emergency communications. The RCMP also had the capability to operate on Amateur frequencies if necessary.

Traffic between the six entrance gates and their associated parking lots; food concessions and the feeding manager; and between the access zone and the access zone commander were all carried out on separate simplex frequencies.

Hank Burrows VE7BXH roped off an identified part of the volunteer parking lot as exclusively for Amateur Radio operators, and guided incoming hams to parking locations.

Will Immanse VE7BID unloaded his Honda 250 motorbikes and was promptly

*Continued on next page ▶*



*Glenn VE7CXI, assigned to Father Newman during event. Glenn is— what's this? Glenn is a United Church Minister! CARF and CRRL will be getting together next!*



appointed as Chief Amateur Motor Pool Officer. As soon as possible he went over to pick up three of the Suzuki All-Terrain Vehicles assigned to the hams.

#### Battery Chargers

Battery charging was a real necessity. Four constant-voltage, current-limited chargers were constructed that could do the bulk of the charging within an hour. Batteries were then moved to a gang of trickle chargers. A bank of 18 constant-current chargers was available to take up peak demands for batteries from the field. Rapid-charger stands supplied by the Amateurs were used to charge brands of batteries to which quick electrical connection could not be made. Bob Brasington VE7BBB and John Wright, a non-Amateur, collected chargers from arriving hams, tagged, charged and kept track of all the Amateurs' batteries.

#### Thousands of messages

Over the next four days, the Amateurs handled thousands upon thousands of messages. Smits began assigning operators

to positions as they were required, revising the schedule as necessary. Changes were first made on the printout in the control room, and then posted on the wall next to the sign-in table so that all operators could see at a glance where they were assigned.

At times, every available ham was in use, and Smits was just able to keep up with the demand for operators (both at additional positions requested by the organizers and at shift change) by assigning operators as they arrived at the airport.

Craig patrolled the site on one of the ATV's to 'put out fires' as they arose. Before the event was over he would log over 300 km on the odometer of his vehicle.

Traffic on the two repeaters was consistently heavy. An hourly average of 180-200 messages, and in excess of 3500 messages in total were handled on the two repeaters. That this level was maintained was due mainly to the ability of the Net Control Stations to maintain order and allow priority messages to get through first.

#### Main Repeater Use

The main repeater was used to capacity. A service queue was established which on the average was two to four levels deep waiting to pass traffic. Estimated on-air time for this channel was about 50% over the four day span, and consisted of nothing but needed traffic. The secondary repeater was assigned to administrative and emergency traffic. Its duty cycle was considerably less except during the actual arrival when it became saturated with traffic. The secondary repeater became a valuable asset with its lower traffic volume since it facilitated a quick response to numerous priority calls for medical assistance, including two cardiac arrest cases that were hospitalized. Seven cases of lost children were matched up with their frantic parents, at least one directly by VE7XQ on his ATV.

#### 100% Duty Cycle

As arrival became imminent, the function of the NCS's centered about directing operators to fre-

quencies and assigning the order of traffic. At the peak period, 100% duty cycle was reached.

The Pope arrived at the site by military helicopter about 15:00 hours. During the Mass, the operators assigned to the chief ushers were a husband and wife team of Roman Catholics from the Abbotsford parish. One of them, Charles Puhl VE7AYC, received communion from the hands of the Pope himself.

While the Pope was speaking, the helicopter pilots that had flown in the Premier of B.C. and other dignitaries, walked over to watch. When they wanted to return to their machines, RCMP security refused them access. Meanwhile, the Aircraft Operations Director, Percy Lotzer, dismissed his radio operator, Vic Lake VE7CUT, and went to the heli-pad to watch the departures. Since he had no radio operator, no one could reach him to advise him of the situation.

As the premier was scheduled to greet the Pope in about an hour at B.C. Place Stadium, there was a great deal of consternation. Peter Andersen VE7FRB and Gordon Storie VE7EXI were able to reach officials at B.C. Place to delay the schedule by half an hour, while the pilots were located.

Far earlier than anticipated, the need for communications diminished. By 19:00 on Tuesday repeater systems had been shut down and teams of Amateurs began to dismantle equipment. By 20:00 hours the chief marshal confirmed that he no longer needed assistance, and all communications ceased.

Many of the Amateurs that participated were not previous volunteers and gained much valuable experience in handling communications in a situation similar to a disaster. Although most of the hams were not Catholic, a spirit of 'can-do' enthusiasm permeated the Amateur radio ranks.

Officials that were accompanied by operators praised them generously for their skill and it was remarked many times that the success of the Papal Mass was



Bob VE7EMD, in the Amateur Radio HQ control room, is Regional Amateur Communications Coordinator and author of this article.

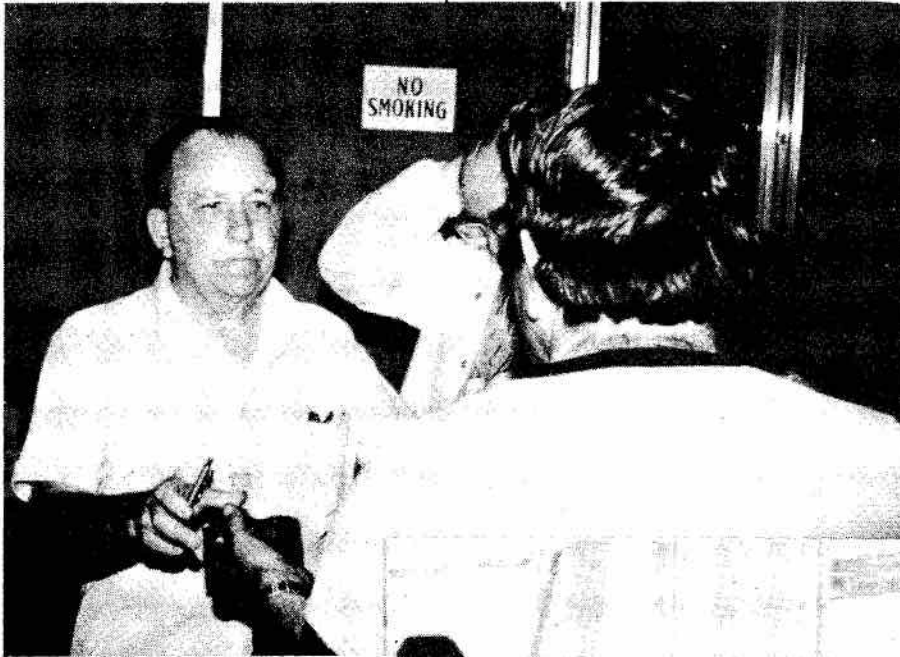


due in large part to the rapid and accurate communications provided by the Amateurs.

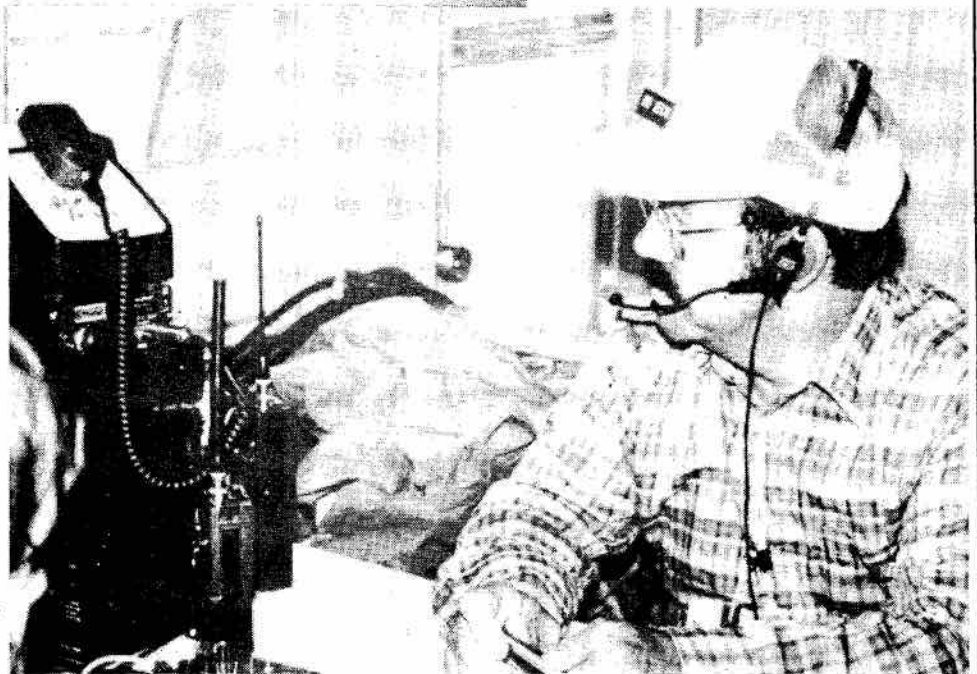
Lessons learned were invaluable for Amateurs planning disaster response communications. The problems of organizing a large-scale public event were made manageable by the efficient use of radio Amateurs who are now better prepared to handle emergencies. From every point of view, the exercise was an unqualified success. △



*George VE7CSX takes an order for flowers of the field for the Chairman, Decorating commission.*



*John Wright (unlicensed) tends store in the battery room.*



*A man under authority: Bob VE7CYU, Net Control Operator.*



**T**wo factors have contributed to further curtailment of AMSAT Oscar 10 transponder hours of operation. Increased Mode B activity has caused greater battery drain coming at a time of lower solar charging due to an extended eclipse period of about one and one half hours. As a result, operation now conforms to the MA count shown in the table.

These parameters are changing too rapidly for this delayed column to be current. For those with a need to know, it is a must to monitor the AMSAT HF nets or the beacon itself. In order to position the satellite for optimum sun angle charging, some off-angle aiming of the transponder antennas has occurred. This has caused a noticeable decrease in signal but fortunately the situation is temporary.

Mean Anomaly Count	Transponder Mode
15 - 51	B
52 - 68	L
69 - 200	B
201 - 014	off

## Helix

Previous reference was made to the excellent features of the helix antenna for 70 cm. Because of its high performance and ease of construction, it has become very popular by users. At this station, material costs were only in the vicinity of \$25, a significant saving when compared to the cost of commercial circularly-polarized yagis on the market at this time.

Moreover, it is claimed the helical generates true circularity whereas metal booms and interlocking elements produce a more elliptical pattern. If you would like to have construction details, drop a business size SASE to this QTH.

## Mode L

We have neglected to mention this mode to any extent for a good reason. It is a step one will take after gaining expertise via Mode B. By that time, the user will have acquired the necessary detail and knowledge which is beyond the intent and purpose of this column. Mode L activity should increase greatly with the next launch of Phase III C when more power will be used and with luck none of the glitches the present Mode L has experienced.

## U.S.S.R.

Good news and bad comes to us via the usual Russian spokesman UA3CR relayed by G3IOR RS5 is not long for this world due to very rapidly deteriorating battery condition. It is expected to stop within the next two-week period. RS7 is stated to be in fair condition. A recent check at this station found the RS7 robot still workable. RS8 remains to be operating normally. The good news is that RS9 is now being regularly tested in Moscow and might even be heard directly on 29.400 when a good propagation path opens to Europe. Also in the future offing is RS10 which may have Mode B in addition to Mode A.

## Gateway Stations

Last spring the apparent first ever handheld to handheld 2 metre cross-country QSO's resulted, relayed by two Gateway satellite stations, KD8GL in West Virginia and N6JFD in Los Angeles. The HT signals were relayed through local repeaters to each Gateway satellite station. FM is converted to SSB and sent up via Oscar 10 across the country to be received and converted back to FM feed to the local repeater, the process being reversed for full duplex operation.

This is truly opening up the world to the 2M QRP stations. More Gateway stations are becoming operational, giving many the thrill of actual satellite

operation. To quote AMSAT's President WA2LQQ, "Nothing can beat the flexibility of your own Oscar station but for those starting out, this seems a good way to taste the wine before one buys the bottle."

## Satellite Situation Report

This excellent report, Vol. 24 #4, is available free of charge by writing to NASA, Public Affairs Office Code 130, Greenbelt, Md. 20777. It contains data on all satellite launches since 1958.

## General Items Courtesy AMSAT

The 1985 Project Oscar Calendar is now available for a minimum donation of \$10 U.S. This publication contains all the equator crossing longitudes and times for Phase II satellites RS5, 7, 8 and UOSAT 9 and 11. For Oscar 10, the subsatellite longitude and latitude for each apogee time is listed. This information is required for manual plotters such as the Satellipse for Oscar 10 and the Oscarlocator for RS and UOSAT.

## New Publication

A new news source is due to appear in mid-January. *Amsat Satellite Journal* will become the new official organ of AMSAT. This replaces *ORBIT* magazine which ceased with issue #19. The Journal automatically comes with membership. For more information write to AMSAT, P.O. Box 27, Washington D.C. 20044.  $\Delta$

## OLD BOOKS

The Halifax ARC asks each member to donate an old radio book to their club. The books will be given to prospective Amateurs during the fall and winter. The club will have a call sign i.d. plate made-up for every donor.

Has your club appointed a field day coordinator yet? Bring a white-caner with you to the next club meeting.





# CONTEST SCENE

By John Connor VE1BHA



**T**his month we will take a look at the CQ WPX SSB Contest, which will be held this year on March 30-31.

WPX stands for Worked All Prefixes. This contest has a unique multiplier scheme, based on the number of different call sign prefixes worked.

The new call sign structure in the U.S. has produced a bonanza of new multipliers. A quick calculation shows that it is possible, in fact, to work some 800 multipliers in the United States and possessions alone.

The WPX Contest has grown by leaps and bounds in the past ten years, with the result that the level of activity is now very high. As a result of the increased activity, and the growth in the number of available multipliers, scores have increased quite a bit in the past few years. All these facts have combined to make this a very popular contest.

As well, the WPX Contest seems to be not quite so competitive, or at least not so cut-throat, as the DX Contests can be. Thus, it provides a good opportunity to try out new equipment or new ideas for increasing your performance in the other contests. All in all, this contest can really be a lot of fun.

Conditions have been anything but spectacular lately, and so it seems likely that most of the competition in this contest will be on the lower bands. The rules of the WPX contest provide double points for QSO's on 160, 80 and 40, so there is some compensation for not being able to work huge numbers of people on ten metres.

Below is a listing of the current Canadian records for the WPX SSB Contest. If you are in the

mood to set a new record in this contest this year, I wish you luck. It might be possible on 160 or 80, but the other records look fairly safe to me. The only way I'll take on VE3BMV and his razor beam is if Radio Canada International will let me borrow their curtain array for use on 40 metres, hi!

It used to be that the WPX marked the unofficial end of the contest season. This isn't quite as true as it used to be, what with the WPX CW in May and the Radiosport in July, but it still seems to me that another contest season has come and gone when the WPX contest is over.

Hope that you did well in the ARRL Contest this year, and that you make a big score in the WPX. Let me know how you made out, and we can get some scores into print.

That's it for this month. Next month we will have the records for the WPX CW Contest.

## CQ WPX CONTEST RULES

**Dates:** March 30-31 for SSB

May 25-26 for CW

**Contest Period:** Only 30 hours of the 48-hour period permitted for single operators. The 18 hours off-time may be taken in up to five periods any time during the con-

test, and must be indicated in the log. Multi-operators may operate the full 48 hours.

**Classes:** Single operator, single band; single operator, all band; multi-single; multi-multi.

**Exchange:** RST plus a three digit serial number, starting with 001.

**Points:** Contacts inside North America count 2 points on 10, 15 and 20M, and 4 points on 40, 80 and 160M. Contacts outside North America count 3 points on 10, 15 and 20M, and 6 points on 40, 80 and 160M. Contacts with your own country count zero points but are permitted for multiplier credit.

**Multiplier:** The multiplier is the number of different prefixes worked during the contest, regardless of band. A prefix is the three letter/number combination which forms the first part of a call sign, eg. N1, W2, VE3, Y54, Y55, KH6 etc.

**Score:** Total QSO points times multiplier. Stations may be worked once per band, but prefixes are counted only once. Logs must be accompanied by an alphabetical list of prefixes, and go to *CQ Magazine*. Complete rules in January *CQ*. △

## CANADIAN RECORDS CQ WPX SSB CONTEST

CATEGORY	CALLSIGN	SCORE	YEAR
ALL BAND	VE6OU	5,253,399	1982
28 MHz	VE3BMV	2,796,255	1980
21 MHz	VE3BMV	3,690,450	1982
14 MHz	VE3BMV	2,332,400	
7 MHz	VE5DX	814,657	1983
	VE3BMV	2,842,464	1984*
3.5 MHz	VE3KZ	617,796	1983
	VE3IY	721,392	1984
1.8 MHz	VE3MFT	84,906	1981
	VE3CDX	205,824	1984*
MS	VE1DXA	8,272,704	1982
MM	CK7WJ	16,545,370	1979

\* Claimed score, not yet official



# The CARF Phone Commonwealth Contest

**When:** From 1200 Z Saturday to 1200 Z Sunday second weekend of April. Contestants can use all 24 hours of contest.

**Eligible Entrants:** Only Amateurs within the British Commonwealth. **Contacts:** SSB only in the 10-80M bands. Suggested frequencies are plus or minus 20 KHZ of 3600; 3780; 7080; 14180; 21200 and 28400 kHz. Only one contact per band per station worked is all right. Duplicated contacts must be clearly marked and not claimed for points. Contacts may be made with any station using a Commonwealth call sign, except within the entrant's own call area. e.g. a VE3 should not work another VE3. U.K. stations may not work each other for points.

**Exchange:** A contact consists of an exchange and acknowledgement of an RS report and a three figure serial number from 001. Do not send a separate series of serial numbers on each band.

**Scoring:** Each completed contact will score five points. In addition, a bonus of 20 points may be claimed for the first, second and third contacts with each Commonwealth call area on each band. See the accompanying table for a list of Commonwealth call areas.

**Logs:** Separate logs are required for each band. Each band log should be separately totalled and should include a checklist of call areas worked on that band.

**Entries:** Entries can be multi or single band. Single band entries must show contacts for one band only. Only single operator entries will be accepted. Each entry will consist of the separate band logs, call area checklists, a summary sheet and dupe sheets. Entries should be sent to:

CARF Contest Committee, c/o N. Waltho, Box 1890, Morinville AB TOG 1P0.

Under no circumstances will entries for this Phone contest be sent to the RSGB which sponsors the CW Commonwealth contest.

The closing date for entries is June 1. The CARF Phone Commonwealth Contest Plaque will be awarded to the top-scoring station in the multi-band class. Certificates will be awarded to top-scoring station entrants in each class in each Commonwealth call area.

The results will be published in *TCA* prior to the next contest. Non-members of CARF may wish to include an SASE with their entry for a copy of the results.

The decision of the Contest committee shall be final in all cases of dispute.

Forms are on Pages 33 and 34.

## Social Events

### DURHAM REGION FLEAMARKET

The fourth Durham Region Fleamarket will be held on Saturday April 13. General admission 8 a.m.-1 p.m., \$3, includes chance at the door prize— an FT 209 HT. Vendors only 6-8 a.m., table \$5 plus admission. Refreshments available. To be held at the Pickering High School; leave the 401 at Church Street North, exit 400. Talk-in 52 simplex, 147.975-375 VE3SPA, 147.12-72 VE3OSH. Details from and reservations payable to VE3HAA, 416-683-3368. Jointly sponsored by the North Shore ARC Inc. and Oshawa-South Pickering ARC Inc. (Renew your CARF membership at our booth).

### CALENDAR

**April 13 1985:** 4th annual Durham Region Fleamarket. Details this page.

**May 11:** Ontario Trilliums 20th Anniversary Dinner, Howard Johnson's Hotel, Progress Court, Scarborough.

**May 19:** Southern Ontario Repeater Team Fleamarket, Medway High School, Arva.

**June 21, 22, 23:** RCN Reunion, Hotel Nova Scotian, Halifax. Write P.O. Box 297, Dartmouth B2Y 3Y3. Details January *TCA*.

**June 27-30:** YLISSB Convention, Sugarloaf/U.S.A. Write P.O. Box 805, Presq'ile, ME. 04769. Details January *TCA*.

**Sept. 27-29:** RSO/CRRL Convention, London, Ontario. P.O. Box 73, Hyde Park NOM 1Z0. Details January *TCA*.

*TCA* will publish an announcement of your get-together in this column. Please let us know at Box 855, Hawkesbury K6A 3C9 at least two months in advance of the date— preferably three months.

## Could TCA be improved?

*TCA* has a short form, distributed at Hamfests, conventions, and similar get-togethers, that asks that question.

Of a recent batch of 50 of them, 23 responses were the general comment "good," or "I like it," or similar. Nine people wanted more technical articles, two more maintenance and repair articles. (We will do our best to see to this.)

There were two complaints about mailing. Two wanted CARF and CRRL to join (see *TCA* March 1984.) The editor was told to check articles for accuracy, do better proofing and let readers know when their subscriptions run out. More biographies were called for (which we will try to supply) and a section for newcomers. Well, there's an beginner's antenna series starting now and a how-to on PCBs is running.

### LO, HEAR THE GENTLE LARC

Would-be Amateurs in London ARC area can receive code practice 24 hours a day on 146.565 MHz. VE3KSQ is in charge.

—From the London ARC bulletin.





CANADIAN AMATEUR RADIO FEDERATION INC.  
FEDERATION DES RADIO AMATEURS DU CANADA INC.

*CARF Contests and Awards Committee*

# CARF PHONE COMMONWEALTH CONTEST

## Summary sheet

Callsign: \_\_\_\_\_ Operator: \_\_\_\_\_

Class of entry: \_\_\_\_\_ Multi-band

\_\_\_\_\_ Single-band \_\_\_\_\_ MHz

Score Summary:

Band Valid QSOs Bonus QSOs

3.5		
7		
14		
21		
28		

Total valid QSOs \_\_\_\_\_ X 5 = \_\_\_\_\_ QSO points

Total bonus QSOs \_\_\_\_\_ X 20 = \_\_\_\_\_ bonus points

QSO points + bonus points = \_\_\_\_\_ TOTAL CLAIMED SCORE

Station: Equipment: \_\_\_\_\_

Antennas: \_\_\_\_\_

Comments: \_\_\_\_\_

Name: \_\_\_\_\_ Callsign: \_\_\_\_\_

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

I declare I have operated my station with in the conditions of my licence, and in observance of the rules of the CARF Phone Commonwealth Contest.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_



# CARF Phone Commonwealth Contest

CALL: VE  
CALL AREA CHECKLIST FOR \_\_\_\_\_ MHz

Enter QSO serial number sent for each of the first three QSOs with each call area. Please use separate sheets for each band.

A2			VK8			ZK2		
A3			VK9N			ZL1		
A5			VK9X			ZL1/k		
C2			VK9Y			ZL2		
C5			VK0/h			ZL3		
C6			VK0/m			ZL3/c		
G			VO			ZL4		
H44			VP2A			ZL4/a		
J3			VP2E			ZM7		
J6			VP2K			3B6/7		
J7			VP2M			3B8		
J8			VP2V			3B9		
P2			VP5			3D2		
S2			VP8/f			3D6		
S7			VP8/sg			4S7		
T2			VP8/se			5H		
T3			VP8/sa			5N		
V3			VP8/sh			5W1		
VE1			VP9			5X5		
VE1/s i			VQ9			5Z4		
VE1/sp			VR6			6Y5		
VE2			VS5			7P8		
VE3			VS6			7Q7		
VE4			VU2			8P-8		
VE5			VU/a			8R		
VE6			VU/1			9G1		
VE7			VY1			9H		
VE8			YJ8			9J2		
VK1			ZB2			9L1		
VK2			ZC4/5B			9M2		
VK2/1h			ZD7			9M6/8		
VK3			ZD8			9V1		
VK4			ZD9			9Y4		
VK4/w			ZE			Ant.		
VK5			ZK1/c					
VK6			ZK1/m					
VK7								



# On expanding our numbers

By Russ Pastuch VE3FSN,  
Bill Roork VE3MBF,  
Dan Holmes VE3EBI

There is concern in Canada and elsewhere that there are too few radio Amateurs. Here are three articles dealing with the subject. VE3FSN reviews the call for a new class of licence akin to the American novice class. VE3EBI looks at ways of attracting young people to our ranks. VE3MBF sets out the highlights of a discussion of the subject at the Scarborough ARC meeting of Jan. 14, 1985.

All Amateurs should review these papers, and make up their mind about these possible changes to our service.

Your input will be valuable too. Please send letters and articles bearing on the points brought out in these articles to Box 855, Hawkesbury, Ont. K6A 3C9.

In this way, our members will be able to submit rational, informed, comments to DOC, (through CARF,— DOC's request).

## A New Class Of Licence?

By Russ Pastuch VE3FSN  
47 Cymbeline Drive  
Nepean K2H 7X9

Once again, someone has decided that the Canadian Amateur population needs a new class of licence, akin to the American Novice class. This is intended to attract vast numbers of new people to the Amateur service. It appears that there is a large group of prospective radio operators out there, who are unable to learn either the code or theory, as presently required for the Amateur class of licence.

### The Large Eager Reservoir

First, I find it hard to believe that this large, eager reservoir of kindred spirits really exists. Amateur radio has always been and will always likely remain a rather specialized avocation. If you look at the types of activities you get involved in, you can see what I am getting at.

It tends to appeal to introverts (apologies to the extroverts in the club, but my opinion). You tend to spend your time in dark basements, trying to dig signals out of the mud or else assembling some circuit or other. I can't see how

such a pastime could ever have wide appeal.

Second, "the code and theory are too difficult for people to learn." Here I can agree to a point, but refuse to agree that the standards should be drastically reduced. In the olden days, the code took upwards of six months to learn, plugging away at it for hours each day.

With the 15 WPM character speed, increased space method that we use in the course, people can attain a 10 WPM ability in 15 weeks. This is 15 weeks of spare time study at maybe 20 to 30 minutes a day. I know, as I can see how the students in the course have progressed from no code knowledge to 10 WPM. So, so much for the code.

The questions regarding the theory could certainly be revamped. There is far too much emphasis on the technical aspect of the subject. I can hear the old-timers screaming. Twenty years ago, there was a definite need to know the inner workings of a transmitter or receiver in great detail. You probably built the

equipment and, if it failed, you fixed it yourself rather than sending it to a repair depot.

Have you looked inside a new piece of Japanese equipment lately? Even if you could find the problem, you couldn't get your mitts in close enough to fix it, even if the parts were available closer than Tokyo. "When I got my licence, I built my own station from scratch," and what kind of Japanese rice burner are you running?

If you check on the availability of parts to build equipment, you can't in many cases find the required components, not to mention you can't afford them if you do find them. And after all, why are you running that Kenwood or Icom radio and not the old 807 TX with regen receiver?

Technology demands improved equipment and if you have to buy it and have it repaired by an expert, why do you have to know exactly how it operates?

In addition, something that I was taught in University comes

*Continued on next page ▶*



back to me. You are here to learn how to look for the answer, not memorize information that becomes obsolete in a year or so.

### 8 W.P.M. + Regs + ?

Let's teach people the regulations, and the rudimentary information necessary to keep from killing themselves or causing interference; the stress should be on operating, safety and so on. After all, I shouldn't be asked to design a Cyclotron on the exam and in case you hadn't noticed, we haven't been called the Amateur Radio Experimental Service for quite a while.

Yes, I suppose there may be a requirement for a Novice-type class of licence, but not a freebee. Reduce the code to 8 WPM, ease up on the theory for all classes of licence and **no voice privileges!** The idea is to attract people to the Amateur ranks, not set up a new GRS service. It's sad fact that many Amateurs never get their advanced after finding out about two metres. If you listen to two meters, you'll agree we don't need more yoyos on the band.

So there are my thoughts. I do not agree with the "I went through Hell to get my licence and you should too" philosophy but also do not agree with a total relaxing of the rules.

From Ottawa Valley Mobile  
RC Rambler

### SHORT-CIRCUITS



# Crabbèd Age and Youth

It has been suggested, and with some evidence, that we are attracting fewer members to Amateur radio and in particular the young. This is of course a dangerous condition for any avocation. If Amateur radio is to be a growing and vital service we must reverse this trend.

Politicians and products are sold these days on their 'image.' The image of Amateur radio must be a progressive one if we are to attract people to it. The image we have projected in the past is that of the past.

We glory in our 'spark gap' days and in how we developed much of radio as it is today: but does that mean a hill of beans to the younger generation? Any of us with children will know that the 'old man' may be a sweet old thing *but*, "he ain't with it." The kids couldn't care less what we

have done but *are* interested in what we have to offer them.

### Today's Reality

We must project an image that more nearly reflects the reality of Amateur radio today. That is an image of Amateur radio in the forefront of the parade of technology. We would do well to talk up the high tech aspects of ham radio such as satellite, EME, slow and fast scan TV.

How many people outside of Amateur radio are aware of the Oscar Satellites for instance? However, after having stated the above, we can still be aware that there is still an interest in radio communication, as witnessed by the CB phenomenon. We can make a pitch for the serious 'CBER' who is tired of the chaos on those bands.

Everywhere we turn we hear stories of kids and computers.

# Save our Frequencies!

Jerry VE3MBL gave a very interesting talk at the Scarborough ARC meeting of Jan. 14, 1985, followed by a lively discussion. Here are some of the highlights:

- The existing TRC-24 was accepted by the DOC after it was jointly recommended by CARF and CRRL.

- Any changes desired should be given to CARF and CRRL, as DOC recognizes they speak for the Canadian Amateur Community. Do *not* write to DOC direct (their request and agreed to by CARF and CRRL).

- It is widely believed in both U.S. and Canada that the only way to save the Amateur frequencies for Amateur use is to get a large number of new people from all age groups, including young people into the pursuit. The target by ARRL as we understand it is to

add 50,000 new licenced Amateurs per year for the next three years, with a target of 600,000 by 1990. Canada, too, will need to add many new licencees.

- In order to attract so many new people, it is felt that a new "Beginners Licence" will have to be added, with lower code and technical requirements than in effect for the existing Amateur licence which requires knowledge of over 200 technical subjects, plus code at 10 WPM.

- Unused bands will have to be used.

- Discussion brought out the need for one strong national organization, not two.

- The requirements and privileges of a new "Beginner's Class" licence are being considered by Amateurs across Canada. If we stick to what we have in the way of requirements, based on the idea



By Dan Holmes  
33 Crownhill St.  
Ottawa K1J 7K5

Computers are the 'in' thing and radio is 'old hat.' However, if we can't "fight 'em" why not "join 'em"? Let's tell the young people how they can put computers to new and fascinating uses when joined to Amateur radio. We know about packet radio, satellite tracking and so on, and by promoting this aspect of our interest perhaps we can once again attract the young people.

Having stated the thesis that we have to project ham radio into the community; we must project it with a new, fresh face. It should be seen at the national and local levels as modern up-to-date and in time of need offering a highly sophisticated service to the community.

Local and national clubs and organizations should review their liaison with the media and ensure that they are aware of and encouraged to cover Amateur activities

and in particular those of a public service nature.

In addition to this, a pitch should be made to illustrate the attractions of Amateur radio. Perhaps consideration should be given to displays of all modes of Amateur radio at local and regional hamfests, aimed at the non-Amateur public. Good working displays with an informed commentary could well attract public attention.

#### Other Channels

Public TV broadcasting networks, such as the Provincial TV channels and the local community cable services might be approached to do documentaries on Amateur radio and the community. The series by TV Ontario on computers comes to mind in this respect and though this

might be aiming a little high, something similar might be accomplished.

If we are aiming at recruiting younger members, perhaps we should go where they are. Good videotapes of ham radio activities might be made available to high schools, Boy Scouts, etc., with the aim of encouraging the introduction of radio courses into the high school curriculum.

The existence of Amateur radio courses all across the country could be more widely publicized. Listing these in national Amateur publications would enable us to steer our friends towards a licence.

Amateurs have never been reluctant to pitch in whenever their city or country needed them. Let us demonstrate publicly that Amateur radio is useful, even vital, to society, and is also fun. However, we must ensure that we get credit for our activities. This is not vanity, but rather self-interest, since our very existence depends upon being seen as relevant for the 80's.

By Bill Rook VE3BMF  
4 Cudham Dr.  
Agincourt M1S 3J6

that "we had to do it so new people should too," we ourselves possibly will preside over the demise of Amateur radio.

- We will have to guard against and control abuses as on GRS (CB).

- DOC has announced changes in the Canadian Amateur Radio Service will be forthcoming. Nature of changes will be in a soon-to-be-published DOC discussion paper.

- As we understand it, DOC has said only technical questions approved by both CARF and CRRL will be used on exams.

- Effectively, responsibility for definition of depth of knowledge on technical part of DOC exams is now on CARF and CRRL through their respective study guides.

- Jerry will have a questionnaire for SARC members at the next meeting.

- This is a very serious matter. All Clubs should poll their members and advise CARF and CRRL of members' feelings.

- It's up to us, fellow Amateurs. Let's move the service forward, not let it fade away.

*There have been letters and articles on this general subject in previous TCA's. In TCA, March '83 page 13, Fred VE6XX writes about the quality of Amateurs. In TCA, September '83 page 31, Leigh VE1XN compares the Canadian system of licensing with those in Great Britain and Japan, where the Amateur population and band usage is well and growing. In October '83 TCA, VE1ATP writes a letter setting out quite a different viewpoint.*

## Two Important Numbers

For TCA Subscription problems, call the Kingston office  
613-544-6161  
anytime.

For enquiries and membership information, please quote top line of TCA label.

If you have news of interest to Canadian Amateurs, call the TCA newslines at 613-632-9847.



# DX

D.W. Griffith, VE3KKB



## Bits & Pieces

**P2, Papua-New Guinea**— Jim Smith, P29JS, reports that he can be found most days on 3504 KHz around 1300 Z. Also, under good conditions stations in N.A. can work him on 14.220 MHz, around 0615-0745 Z.

**SV, Togo**— SV7NG often meets his QSL manager, WB4LFM, on 14265 KHz on Mondays at 2100 Z, and Wednesdays at 2130 Z.

**XU, Kampuchea (XU1SS)**— There has been no word on the welfare of Kimsan since Ampil Village was overrun by the Vietnamese. We can only hope and pray that she escaped before the occupation, and that she will be active in the near future.

**9Q5, Zaire**— 9QSJE maintains a sked with his QSL manager, DK0HT, Mondays at 1500Z, on 21.345 MHz. He will be there for about 6 months.

**ZS, Marion Island**— Unconfirmed reports have ZR6AOJ going to Marion for a year. The callsign of course is ZS2MI.

**VK9X, Christmas Island**— VK9XW has been reported VK6RU every Saturday at 2330 Z on 14.245 MHz. He is said to have made attempts to contact North American stations on 75 metres around 1100 Z.

**3B9, Rodrigues Island**— 3B9CD has been active almost every day on 3505 KHz. Look for him around 0100 Z.

**ZS3, Namibia**— ZS3E has been reported on 1824 KHz daily, between 0400-0445 Z. QSL via K8EFS.

**YJ, Vanuatu**— YJ8RG has been reported on the 3787 KHz DX Net from time to time, from around 0700 Z. The YJ0 prefix has been set aside for visitors.

**VU, India**— The Prime Minister

elect of India is VU2RG. One can often find his countrymen, VU2VCP, VU2JNA, VU2GO and VU2GI on 14.220 MHz around 1300-1400 Z.

**7X, Algeria**— 7X2LS can often be found at 0200 Z on 3800 KHz. He is occasionally joined at 0300 Z by 7X5AB. QSL the latter via W2KF.

**EP, Iran**— Two stations have been reported active from Iran. EP2MRD on 14180 around 1730 Z, and EP2MMK on 14214 at 0800 Z.

**TT8, Chad**— If you still need this rare African country, TT8CW can be found on 21335 at 1800 Z, and again on 14236 at 2000 Z. For CW, try 14004-14030 from 1600-2130 Z. For 40 M, try frfm around 0300 Z. ARRL has apparently received documentation for the operation, and it will count for DXCC. QSL's go to his manager: F6GXB.

**5R8, Malagasy Republic**— 5R8AL, Alain is active once more. Try 7050 from around 0230 Z, and 21335 at 1800 Z. Also, 14185 is a favourite frequency. He reports that no 80 metre activity is permitted. QSL to WA4VDE.

**KP1, Navassa Is.**— A group of ten operators are scheduled to go on a DXpedition to this Caribbean island from April 4-9 1985. They apparently have U.S. Coast Guard permission to land on the island. Most of the operators are rumoured to be from Jamaica, but there will be 3 US ops.

**KP5, Desecheo Island**— Another expedition to Desecheo has been announced, this time by members of the Texas DX Society. The operation is scheduled for 5 days, commencing March 5, 1985. The call signs are expected to be

K5LZO/KP5 for CW, NR5M/KP5 for SSB and KA5SBS/KP5 for VHF. No QSL route has been announced yet.

**FT8, Kerguelen Island**— FT8XA and FT8XB have both been reported around 14190 at 1900 Z. The QSL route for the latter is Michael Monceau, Box 83, F-95103 Argenteuil, France.

**C9, Mozambique**— SMODQE/C9 is available to N. American stations Tuesdays from 1800 Z on 14205 KHz. Often Lars is having a sked with VE3ICR. Neither Lars nor AB4Y have official licences yet, but hope to soon. QSL to SM4CLR.

**5T5, Mauritania**— 5T5CJ, Jaques often near 1830 KHz from 0700-0800 Z most days. QSL via W4BAA.

**TR8, Gabon**— Look for TR8DR on 21.335 MHz daily at 2000 Z. Also, try 14.210 at 2100 Z. QSL to W2PD. TR8IG is often found on 7.050 (listening 7.175) at 0200 Z.

### Special Prefix:

Ontario Amateurs may use the prefix 'VO3' from March 1-17, 1985. This is to mark the occasion of the Ontario Winter Games, being held in St. Catharines. This particular prefix was last issued in 1949, so expect a fair bit of interest from prefix collectors.

### ZC4— British military bases on Cyprus.

Stations operating from the British bases at Akrotiri and Dhekelia on Cyprus from August 16, 1960 will count for the new DXCC country 'UK Sovereign Base Areas on Cyprus.' The DXCC desk of the ARRL will accept applications for credit from June 1, 1985. WBOTEC hopes to have ZC4MR on 14277 at 1600 Z often.





• The DX Group of Rome says that Italian Amateurs can only use the 3613-3627 KHz and 3647-3667 kHz portions of 80 metres.

**New Prefixes in France:**

The letter following the 'F' indicates the class of licence. FA: No code license, 2 metres only; FB: a few CW segments on 10 & 40 M, SSB on 28.400-29.000 MHz, and 2 metres; FC: VHF only; FD: all privileges; FE: all privileges, held a class 'D' license for three years.

• The International Amateur Radio Society meets daily for a DX net at 2300 Z on 14.243 MHz; and Sundays they meet on 7230 kHz at 0745 Z.

**Kudos:**

Canadian Top Band News is published twice a year by Ivan Payne VE3INQ. A work of love, the newsletter is full of information, both operating, and technical, on and about 160 metres. Ivan welcomes correspondence and support (in the form of articles and band news) and suggests that all information should be forwarded by March 15 (for the Fall issue) and September 15 (for the Spring issue) to Ivan Payne VE3INQ, Box 276 Stn 'A', Weston, Ont. M9N 3M7. If you want to see a copy, send an SASE to Ivan. Keep up the good work Ivan.

**Kudos, Part II:**

My sincere compliments and best wishes to Yuri Blanarovich VE3BMV on his new monthly 'Radiosporting' magazine, and the International Radiosport Association (IRSA). IRSA membership (new) is \$12 (in Canadian funds for us domestic types; U.S. dollars elsewhere), and \$5 annually thereafter. A subscription to 'Radiosporting' magazine costs \$16 for a single year, and \$30 for two years. The magazine is very worthwhile, and in time, at its present rate of growth, could become one of THE journals of Amateur Radio for the ACTIVE Amateur. The mailing address is: Radiosporting, Box 65, Don Mills, Ont. M3C 2R6.

I have included a copy of the purpose and objectives of IRSA, and the current list of officers and contributing staff of both the organization and the magazine. Very well done, and good luck in the future, Yuri.

**DX Edge (with Beam Headings):**

The latest version of this popular operating aid contains a great circle slide which allows the user to determine beam headings to any location in the world with enough accuracy for almost any purpose. It also shows the beam heading to use for pointing the antenna along the Gray line.

Slides for QTH's 60, 50, 40, 30, 20 and 10 degrees North or South Latitude, and 0 (equator) degrees are available.

My own opinion of the new version is that it looks too cluttered, and is more difficult to use than the original. Also, the 5 degree error that we in Ottawa experience is too great for accuracy.

• The District of Columbia (DC) will count as a multiplier in the ARRL DX and 10 M contests. (Nothing said about the ARRL 160M contest).

• 4U1VIC will be reconsidered for DXCC status. Discussion continues on the KL7-Pribilof question.

• As of this writing (Jan. 1985), there has been no change to TRC 25 regarding 160M in Canada. Until further notice, the band and power restrictions outlined in the regulations still apply.

• Recently, the ARRL Awards Committee and DX Advisory Committee began maintaining records with regards to any decisions dealing with new DXCC countries. These will be available to the Amateur radio public.

Acknowledgements this month to Long Skip, DX Report, QRZ DX, Radiosporting (IRSA), CQ Magazine, QST, CIDXA, ODXA and last but not least, Dave VE2ZP/3 for material appearing herein.

I have not had an opportunity to respond to any of the correspondence received in the last 2 months, but I will be catching up at the earliest possible moment.

Don't forget the CQ WPX SSB Contest at the end of the month.

See Page 14 for a full-size tearout sheet of 160 Metre DX Operating Practices.

**DX Information**

CALL	QSL	CALL	QSL	CALL	QSL	9L1SL	BOX 18, FREETOWN, SIERRA LEONE
IABKN	IABGN	I 5DK	F6EGM	T3BAT	G4GED	9M2CC	ADRIAN, BOX 18777, KUALA LUMPUR, WEST MALAYSIA
I29A	JAB11M	FMSWS	F2BS	TEIC	T12CF		
JAZEE	F9RN	FN7ND	M3HMK	TF/AH3AC	KBZRV	9Q5MA	K1YSK, 188 N. SMITH, W. SMITHFIELD, R.I., 02895
J36AM	MC4Y	F0BQQ	W7CCB	T69MX	N4FKZ		
3X4EX	N4C1D	FS/F65DL	F6ARI	T69VT	M3HMK		
4K1ADE	UY5DJ	FS7/F581JR	W3BT1	T69YHQ	J44FGD	9Y4LM	P.O. BOX 1167, PORT OF SPAIN, TRINIDAD
4K1F	UQ2GAG	HS4JQ	Z56BD	T11C	K6VMI	A4IKD	BOX 991, MUSCAT, OMAN
4K1GAG	UQ2OC	HK8WEU	HK8FDF	T12/KD7EY	K7UU	A92DT	BOX 515, MANAMA, BAHRAIN
5H3DH	SM8EAL	HK5BYM	KE5KK	TR8DR	W2PD	BY12H	P.O. BOX 2654, PEKING, P.E.O. REP. OF CHINA
5H3DR	VE7GM	HP11AW	K1RQ	TR8OP	F8BC	BY8AA	P.O. BOX 687, CHENGDU, P.E.O. REP. OF CHINA
5R8AL	WA4VDE	HP11XR	J47AGD	TR8CW	F6G1B	CE8FV	BOX 59, EASTER IS., CHILE
6W7/F8H1T	F6EYS	HT1AR	K7UU	TZ6FC	F6CRS	CO2DM	BOX 4940, HAVANA, CUBA
7P8DC	DJ9SH	HT1ZMR	K7UU	V2A/KA2D1V	W84OSN	ET2PB	P.O. BOX 22976, ADDIS ABABA, ETHIOPIA
8P6JQ	N8DCJ	HV2VO	I28BJ	V3ZZ	KE5KK	HP2SM	SANTIAGO, BOX 155, COLON, PANAMA
9Y4VU	W3EVM	IQ1RA1	I11A	V13EZ	VK3 BURD	JT1AD	BOX 944, ULAN BATOR 13, MONGOLIA
AZ2NE	AK1E	J87BS	KE5KK	VP2V/K9SL	K4UEE	Q13XM	KNUD, P.O. BOX 183, GODHAVN 0K3953, GREENLAND
AP2EB	CHLST	JW6VDA	L4SNM	V89DG	W4JHP		
AH8A	K6EDV	K6ATI	W5GSS	YMSRR	HT5JAR		
AH8B	NE4S	KX7/KH6ZB	KH6ZB	I21AO	VE2HK	9Y5TH	P.O. BOX 4411, RECIFE, BRAZIL
CG4/M4BP	N4BP	NP2AB	K8DCC	ZD7CW	N4C1D	YMICC	P.O. BOX 282, RHODES, GREECE
CE8BL	W8JCCM	PY0/PY1VQY	PY1VQY	ZD8SB	84K1V		BOX C-39, MANAGUA, NICARAGUA
CE9AJ	CE3AA	PY8TE	PT7WA	ZD9CC	ZS2DK		P.O. BOX 292, GIBRALTER
CG4AE1	VE4EX	PZ5ES	N8DE	ZF2AQ	MAJYA		BOX 413, GIBRALTER
CD7RG	CN7RG	SW7M	AK2F	ZF2FK	K9QVB		BOX 374, GIBRALTER
EC9FS	EA91B	S99/SV8AC	W84GCP	ZF21K	K5WA		PETER BOX 37, NIUE ISLAND, S. PAC.
							P.O. BOX 1165, TSURUB, NAMIBIA, SOUTHWEST AFRICA



# French Departments:

Here are the 96 departments that can be used to qualify for the REF's Diplome des Departments Francais de la Metropole (Worked All Departments) award. Abbreviated DDFM (also SBDDFM). Another award is the Diplome des Provinces de France. (Worked all Provinces award DPF or SBDDFM). This table identifies each department by number (01-95), and its Province. TNX QRZ DX

NO	DEPT	PROV.	NO	DEPT	PROV.	NO	DEPT	PROV.
01	Alsace	Rhone-Alpes	34	Herault	Languedoc-Roussillon	68	Naut-Rhin	Alsace
02	Aisne	Picardie	35	Ille-et-Vilaine	Bretagne	69	Rhone	Rhone-Alpes
03	Allier	Auvergne	36	Indre	Centre	70	Saone-et-Loire	Franche-Comte
04	Alpes Haute Provence	Provence-Cote d'Azur	37	Indre-et-Loire	Centre	71	Saone-et-Loire	Bourgogne
05	Alpes (Hautes)	Provence-Cote d'Azur	38	Isere	Rhone-Alpes	72	Sarthe	Pays de Loire
06	Alpes-Maritimes	Provence-Cote d'Azur	39	Jura	Franche-Comte	73	Savoie	Rhone-Alpes
07	Ardeche	Rhone-Alpes	40	Landes	Aquitaine	74	Haute-Savoie	Rhone-Alpes
08	Ardenes	Champagne	41	Loir-et-Cher	Centre	75	Ville de Paris	Ile-de-France
09	Ariege	Midi-Pyrenees	42	Loire	Rhone-Alpes	76	Seine-Maritime	Haute-Normandie
10	Aube	Champagne	43	Naute-Loire	Auvergne	77	Seine-et-Marne	Ile-de-France
11	Aude	Languedoc-Roussillon	44	Loire-Atlantique	Pays de Loire	78	Yvelines	Ile-de-France
12	Aveyron	Midi-Pyrenees	45	Loiret	Centre	79	Deux-Sevres	Politou-Charentes
13	Bouches-du-Rhone	Provence-Cote d'Azur	46	Lot	Midi-Pyrenees	80	Somme	Picardie
14	Calvados	Basse-Normandie	47	Lot-et-Garonne	Aquitaine	81	Tarn	Midi-Pyrenees
15	Canal	Auvergne	48	Lozere	Languedoc-Roussillon	82	Tarn-et-Garonne	Midi-Pyrenees
16	Charente	Politou-Charente	49	Maine-et-Loire	Pays de Loire	83	Var	Provence-Cote d'Azur
17	Charente-Maritime	Politou-Charente	50	Nanche	Basse-Normandie	84	Vaucluse	Provence-Cote d'Azur
18	Cher	Centre	51	Narne	Champagne	85	Yonne	Pays de Loire
19	Correze	Limosin	52	Narne (Haute)	Champagne	86	Vienne	Politou-Charentes
20	Corse Sud	Corse [Corsica]	53	Neyrone	Pays de Loire	87	Haute-Vienne	Limosin
21	Corse (Nante)	Corse [Corsica]	54	Meurthe-et-Moselle	Lorraine	88	Vosges	Lorraine
22	Cote d'Or	Bourgogne	55	Meuse	Lorraine	89	Tonne	Bourgogne
23	Cotes du Nord	Bretagne	56	Morbihan	Bretagne	90	Territoire de Belfort	Franche-Comte
24	Croix	Limosin	57	Moselle	Lorraine	91	Essonne	Ile-de-France
25	Dordogne	Aquitaine	58	Nievre	Bourgogne	92	Haute-De-Seine	Ile-de-France
26	Doubs	Franche-Comte	59	Nord	Nord	93	Seine-Saint-Denis	Ile-de-France
27	Drome	Rhone-Alpes	60	Oise	Picardie	94	Val-de-Marne	Ile-de-France
28	Eure	Haute-Normandie	61	Orne	Basse-Normandie	95	Val-d'Oise	Ile-de-France
29	Eure-et-Loir	Centre	62	Pas-de-Calais	Nord			
30	Finistere	Bretagne	63	Puy-de-Dome	Auvergne			
31	Gard	Languedoc-Roussillon	64	Pyrenees-Atlantique	Aquitaine			
32	Haute-Garonne	Midi-Pyrenees	65	Pyrenees (Hautes)	Midi-Pyrenees			
33	Gers	Midi-Pyrenees	66	Pyrenees-Orientales	Languedoc-Roussillon			
		Aquitaine	67	Ras-Rhin	Alsace			



## INTERNATIONAL RADIOSPORT ASSN.

P.O. Box 65, Don Mills, Ontario, Canada M3C 2R6 Tel. (416) 438-6313

### Purpose and objectives:

- To promote international friendship and goodwill through sportsmanship, radio contesting and DXing.
- To improve the quality of amateur radio operators and operating through education and experience, by voicing the opinions of radio amateurs that are experienced and have contributed to the hobby.
- To promote amateur radio contesting and other operating-related activities as a sport, and to provide the publicity and recognition that it deserves in the public media.
- To publish timely articles in the monthly magazine "RADIOSPORTING" on various subjects of interest to Contesters, DXers, SWL, VHF, UHF and microwave enthusiasts, on RTTY, SSTV, computers in communications, fox hunting and anything of interest to the active ham striving for self-improvement. To feature technical articles on equipment design and modifications, antenna construction, radio-wave propagation, and commercial equipment reviews by qualified people.
- To organize, as an annual event, the "International Contest Symposium," which would run parallel (evenings) with the Dayton Hamvention; to feature timely topics with the participation of some of the world's leading amateurs at the Symposium.
- To hold an annual Awards Dinner with an entertainment program, where awards for various achievements will be presented.
- To maintain and publish all time record tables for significant contests.
- To sponsor and run an annual World Contest Championship, based on results of a number of major contests, with annual the "Contester of the Year" awards in various categories.
- To administer the "Contest Hall of Fame" and vote on awarding membership to those who have significantly contributed to the sport of contesting.
- To coordinate and assist in the scheduling of international contests.
- To hold regular weekly meetings on air on 20 and 80 m. (14.199, 3.799)
- To provide an automatic, computer controlled bulletin station that transmits the latest DX and Contest news on CW and RTTY. (14.098)
- All in all, the IRSA will be dedicated to the pursuit of excellence and quality in amateur radio by promoting, publicizing and leading the way.
- Attractive numbered membership certificates and badges will be issued to members.
- IRSA will be run by contesters who are selected for their accomplishments and it will be independent of any national or commercial organizations.
- IRSA will assist and sponsor Contests/DXpeditions, Trophies and other radio sporting and publicity events.
- IRSA is a non profit organization, with all proceeds to be used to finance events and awards sponsored by IRSA and to cover expenses incurred by Association.
- IRSA members can display the IRSA logo on their QSL cards and correspondence; members agree to obey the Contester's Code of Ethics and to promote it.

The initial fee to join the IRSA is US \$12; it includes the cost of a certificate and a badge. The yearly membership dues are US \$5.  
 Honorary Life Membership will be awarded to those who significantly contribute to IRSA and the sport of contesting.  
 Members will be entitled to be elected and to elect officers of IRSA. They will also enjoy many services and privileges offered exclusively to members.

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 BY AND FOR ACTIVE RADIOAMATEURS

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# TECHNICAL SECTION

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Frank Hughes VE3DQB



## Part 3

# Amateur Design of Printed Circuit Boards

By John Iliffe VE3GES

In this installment, at last, we finally get to the actual construction of the circuit board.

A circuit board is composed of a layer of copper glued to one or both sides of an insulating back. The copper can be of several thicknesses; usually it is either 1 oz. or 2 oz., which works out to .0014 or .0028" of copper. The substrate, or insulating layer, can be of about any thickness from 1/64" to 1/8". The usual is .062, which with two sides copper will fit into a standard edge connector. The substrate may be made of phenolic, fibreglass-epoxy, or teflon (PTFE). Phenolic is a paper-plastic compound that is inflammable and as a result is not approved for commercial use any more. It is sometimes found in surplus supplies and in some hobby supply stores. It also has the drawback that it will bend, making it quite difficult to lay out rigid parts accurately.

### Substrates

Fibreglass is the common material in commercial boards and, as a result, from surplus suppliers. It will not bend, is generally heat resistant during soldering, and is not inflammable. It can be found both in a semi-transparent green version that is nice to work with, since you can see your traces through the board and figure out where to mount the

components, and in an opaque grey version which the author finds considerably more difficult to work with. The descriptions in the catalogues will call this G10, GF or FR4 material. For Amateur purposes there doesn't seem to be much difference.

Teflon (a Dupont trademark), more generally called PTFE, is used in high temperature locations or where special insulation and capacitance characteristics are required. For example it is used for transmission lines for power combiners and matching circuits in power amplifiers. The cost is substantially higher than fibreglass board and it is rarely found in surplus. For transmission line service, the thickness is a critical factor as it affects the capacitance, and consequently the impedance, for any specific pattern.

### Etchants

The objective in constructing the circuit board is to etch the copper off the areas where we require insulation and leave it where we need wires. The etchant can be either ferric chloride or ammonium persulphate. Either is available in dry powder form, and ferric chloride is also available premixed. Ferric chloride is a yellow-brown powder which dissolves into a brown, almost black, liquid when mixed with water. To

prepare it, fill a container with very hot water and keep adding and stirring in the ferric chloride, until some precipitates and cannot be made to dissolve. The resulting liquid is corrosive and must be kept in a plastic or glass container. (It will attack aluminum or stainless steel containers.) You should stir it with a plastic or wooden spoon. The liquid is mildly poisonous. It will work hot or cold. About a pound of Ferric Chloride crystals will make about 1/2 gallon of the mix.

Ammonium persulphate is a much more gentle material with which to work. It will not attack stainless steel, etches only when hot, and gives an indication of the remaining life by its colour. It is foggy white when new, changing to blue as it dissolves more copper. It is only available as a powder since it has a relatively short shelf life after mixing (about a year).

### Procedure

The pattern to be etched is first drawn on the copper using any material that will not dissolve in water or the selected etchant. The author has used 'resist', nail polish, banana oil (model airplane dope), waterproof marking pens, 'laundry pens' and masking tape. There is also at least one line of dry transfer stickers that claims to

*Continued on next page* ▶



be water resistant for direct etching. A laundry pen is the same thing as a resist pen, so far as I can see, but costs about 30% as much and can be found at the five and dime.



*Dry transfers in three different patterns. These are by Ceresist but other types are available. Standard DIP pads at left, narrow pads for passing traces between, and pads that allow traces between pads as well as between rows. These latter are very difficult to use and are not recommended.*

The copper board must be completely clean or the dirt will serve the same purpose as a resist and prevent the copper from being etched. If the board is only mildly dirty, then soap and a plastic scouring pad and some elbow grease will soon have it bright and ready to go. Do not use sandpaper or steel wool because this will leave microscopic cracks in the completed work that will drive you nuts when you come to debug your project.

If the board is somewhat more dirty due to oxide, a frequent case with surplus board, but it does not have any material actually spilled on it, then a bath of 10% by volume, hydrochloric acid will clean the surface in about five seconds. Be careful, HCl is extremely corrosive, and extremely poisonous. Finish off by thoroughly cleaning the surface with soap and water.

Do not use the presoaped kitchen cleaner pads as the soap in them tends to leave a residue on the copper.

Be sure the oil from your hands does not get on the cleaned surface; you may wind up with a beautiful fingerprint in burnished copper.

Assuming you drew the board as described last month, on squared paper, carefully place the paper over the board, copper

side up, tape the paper in place and use a fine centre punch to mark each pad location on the copper. Just press the punch with your hand, do not hit it with a hammer or you will crack the board. Press hard enough so that a slight dimple will be left to guide the drill bit later.

You can check that the pad has been punched by looking at the holes in the paper, and I recommend that you do so at least twice before moving the paper. Now remove the paper and carefully use your chosen medium to form a pad at each centrepunch hole and join them by reference to the drawing. The choice of drawing media is primarily one of personal preference, but keep in mind that a nail polish brush will not give the same level of detail that a marking pen will, and that if the pattern is detailed, then you may have problems of overlap between traces.

If you accidentally connect two traces, the resist can be scraped off with a hobby knife (X-acto knife).

#### Two-Sided Board

If the board is double-sided, the only way to ensure that the two sides register with each other is to drill the holes first. If you do this, then you will have to use a slightly larger drill to take off the burrs on the back side or they will

destroy your resist pen tip.

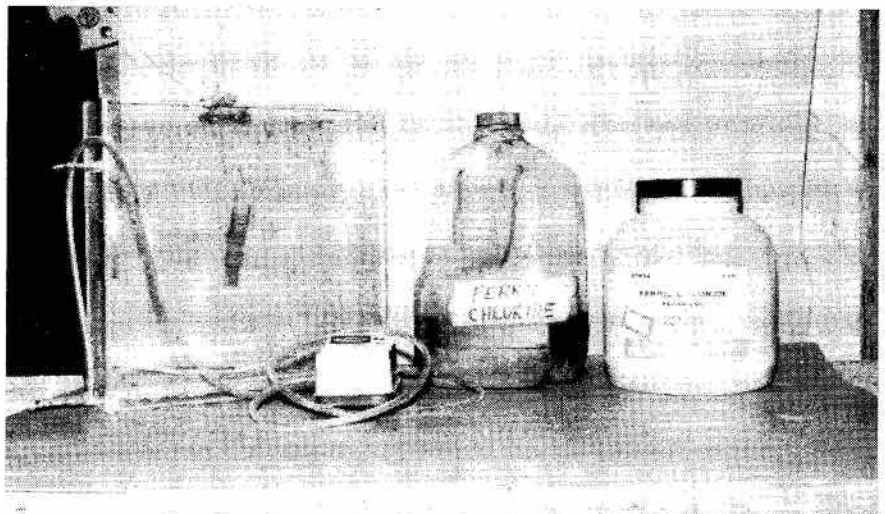
If the pattern is in a magazine, then conceivably the same technique can be used. If you try to avoid damage to your magazine by making a photocopy, be very careful that the resulting copy is exactly the same size as the original. Most photocopiers do not have tight enough tolerances for this. Keep in mind that the pads on a DIP IC are .1" apart, and if you have an error of 3/100 inch in your final layout, the odds are the IC will not fit on the pattern.

One technique that I have never used is to glue the page to the copper with rubber cement. Rubber cement has the advantage that it will peel cleanly. Now cut through the pattern along the lines and peel off what you do not want. The remainder will be the copper masked with rubber cement. For long runs, use a straightedge to guide the knife.

#### Fill in the Blanks

When you have the entire pattern transferred to the copper, take a brush and some nail polish and fill in the large blank spaces. This will reduce the total amount of etching to be done and consequently the amount of etchant that will be used.

Check your work once again, and if you are satisfied pour some etchant into a glass or plastic tray.



*Materials necessary to etch a printed circuit. From left, a bubble etcher (described in part 5), mixed ferric chloride, and as it comes from the supplier in powder form.*



Immerse the board in the etchant and rock the tray back and forth until the copper is all etched away where it is not protected. This can take up to an hour. If you do not agitate the tray the time will be longer and some resists, such as marking pens, will dissolve in the etchant and you will wind up with a blank board. You can build a tray rocker from a piece of wood and a slow speed motor. A better idea will be described in part five of this series.

When the copper is gone, remove the board from the etchant, being very careful to not spill it as the stains it leaves are not removable, and the XYL will let you know if you leave marks on the rug. Wash thoroughly under running water. Put the

remaining etchant in a container. If you bought ready-mixed ferric chloride, do not mix the used with the new, put it in a separate bottle and use that etchant until it stops working, then start again with new etchant. Clean the resist off with steel wool or soap and a scouring pad. The copper must be very clean before you will be able to solder to it.

Drill the holes with 1/32" bits for the IC, 1/4 watt resistors, and small transistor leads, 3/64" for the larger lead items such as the capacitors, and .025" square posts, and other holes as needed. If a hole larger than 1/16" is needed, then use a 1/16" pilot hole first.

The small drills are available from any electronic wholesale

house, and if you live in Ontario, they are a stock item at Home Hardware stores. Most hardware stores do not stock below 1/16", which is far too large for most purposes. I used a 3/8" drill for many years to turn these little bits, but such drills turn too slowly for efficient cutting and are difficult to hold in position. A better drill, although quite expensive, is a Dremel Mototool. These are available through hobby stores at about \$50. If there is a model railway enthusiast near you, he may have one he will lend. They have a capacity of 1/8" diameter.

Next month we will take a look at photographic methods of producing the circuit board.  $\Delta$

## More bang for your buck

# Antennas

By VE3DQB  
Box 855  
Hawkesbury K6A 3C9

### Introduction

The part of an Amateur rig which gives the best return per dollar invested is the antenna. A ten-watt rig with a first-class antenna can outperform a 100-watt rig with an average antenna, or a kilowatt with a downright lousy one. Many, probably most, hams are restricted in their antenna capabilities by the size of the house-lot available: few have the acres needed to attain the ideal on the HF bands—a rhombic for every continent.

An Amateur, then, pits his knowledge against his limitations, and the best signal heard halfway around the world is not always from the most powerful or most expensive transmitter.

An antenna is the structure associated with the change of a radio-wave from a guided-wave to a free-space wave and vice-versa. Its physical dimensions are closely associated with the wavelength of the frequency to be transmitted or received. The

lower frequencies—longer wavelengths—demand antennas of large dimensions, difficult to accommodate in the suburban lot. At the other end of the radio spectrum, microwave antennas are so small that, on reception, they capture only a very small amount of the available transmitter power, and are usually backed by a large reflector to improve their performance.

### Height

The height of an antenna above the ground is also an important factor. The minimum height is, for HF antennas, a substantial fraction of a wavelength and, in general, the higher (i.e. the larger fraction of the wavelength) the better. An antenna usually demands a mast or pole to support it.

Antennas can be made directional to throw the transmitter power in a desired direction, and to emphasize the signal received from that direction. This property

minimizes unwanted signals heard off the back of the antenna.

Antennas are rarely capable of operating efficiently on more than one band. Unless an Amateur's interests are restricted to one band, then a station will require several antennas tuned to different frequencies. These may be sometimes fitted together in convenient packages, being capable of rotation on the same mast, for instance, to point them in a desired direction. Electronic switches may be arranged to adjust a single antenna for multiple band use.

### What the eye doesn't see...

Sometimes an Amateur may find his neighborhood unfriendly to his operation. Antennas can be built so that their use may not be obvious to the uninstructed passer-by. Such 'invisible antennas' may make the difference between untroubled operation and bad feelings on the street.

*Continued on next page*  $\triangleright$



Antennas have to be connected electrically to the associated transmitter. This feedline has to be capable of taking full power from the transmitter and delivering it all to the antenna. Feedline selection and design is an important part of the antenna package.

### Transmatches

The 'matching' of an antenna and its feedline to the output stage of the transmitter often needs an antenna tuner or transmatch. This device is the gearshift that ensures that the antenna is able to accept all the power available from the transmitter without excess electrical strain on the transmitter's final circuits.

The electrical properties of an antenna are measured with suitable instruments. A few simple measurements can ensure that all the power possible is being sent out in the proper direction. If this is not so, the instrument tells what changes should be made to correct the error.

This is written for the Amateur with at least an Operator's licence, or the non-Amateur with equivalent knowledge. The antenna laboratory chapter is written on the assumption that the reader is licensed and can legally put a 420 MHz transmitter on the air. The common radio terms are not defined here; for clarification, refer to the CARF Study Guides.

## Chapter 1

### Electrons and Electronics

Electrons are minute (very small indeed), particles (they can be considered to act at a point), of matter (they can be weighed).

Besides these properties, electrons have another most interesting one: charge. Every electron 'repels'— pushes away— every other electron. This property is not usually shown directly, because the charge on an electron, conventionally called negative, is neutralized by an opposite— 'positive'— charge on the other constituents of matter. Ordinary matter consists of a vast number of electrons strongly held to their associated matter by charge.

Electrons can be separated from the matter they are normally associated with, and then the effects of charge are easily seen. An instrument which shows the effect of charge is an electro-scope. It is very easy to make an electro-scope. Take an ordinary glass jar or bottle, and push a piece of wire through the lid or cork. Bend the end of the wire into a hook and sharpen it. Hang two half inch squares of aluminum foil on the hook, and insert them into the bottle (Figure 1).

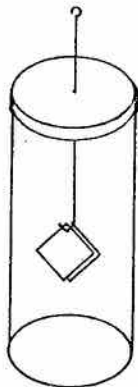


Figure 1: The simple electro-scope. Two squares of foil are loosely hung on a wire hook inside a glass jar. The jar supports them, insulates them, and keeps drafts off.

Now rub a plastic item— a pocket comb usually serves well— on your sleeve, and put it near the wire sticking out of the cork. The foil squares will lift away from one another (Figure 2). What is this?

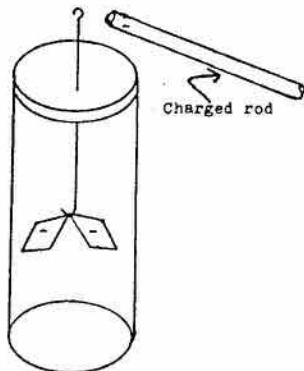


Figure 2: When the electro-scope is in an electric field, caused by an excess or deficit of electrons, the foil squares lift away from one another.

In all matter, there are equal numbers of electrons and positive charges on the atoms that neutralize each other— each electron is

balanced by positive charge in the material. When you rub one material like plastic on another like cloth, some of the electrons are rubbed from one material to the other. The plastic is then left with a charge; a negative one if it carries an excess of electrons, a positive charge if there is a lack of electrons.

### Metals

This cannot be done simply with metals. Metals allow electrons to pass freely along them, and are called conductors. To hold a charge on a metal, it must be supported by an insulator, so the electro-scope's metal wire is supported by glass.

Now the excess of electrons on the comb push away all other electrons. That means they push away those in the wire through the cork of the bottle. These in turn push away those in the foil, and the two pieces of foil, now holding more electrons than usual, push each other away, and we see this.

If the plastic has too few electrons, the positive charge left in it will attract electrons to the wire, with the same effect. The positive charges in the aluminum foil push each other away.

### Electrons in Steady Motion

Electrons can be made to move steadily along a metallic wire chemically. Chemical sources of electrons are usually called batteries. If a wire is connected between the terminals of a battery, a current of electrons flows along the wire from the terminal called negative (– sign, black) to the positive terminal (+ sign, red).

When electrons flow like this, they affect a compass needle near the wire. If you draw a circle round the wire and put the compass on the circle, the needle will point along the circular line. That is, the needle will set itself at right angles to the line joining it to the wire. Figure 3 shows the effect, and the rule: look down the wire in the direction the electrons are flowing, from negative to positive, that is, and a compass set with its north-seeking end pointing to the wire will deflect from north to east.



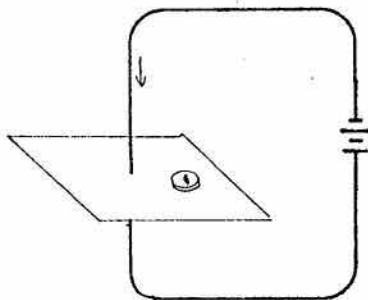


Figure 3a: How to set up the experiment.

Strictly, this is only true in field-free space. When we do the experiment in an ordinary room, the needle of the compass will not point directly along the circle, but somewhere between this direction and the north-south direction of the earth's magnetic field.

However, close to a wire carrying a strong current, the compass needle points very nearly along the circle. See Figure 3b.

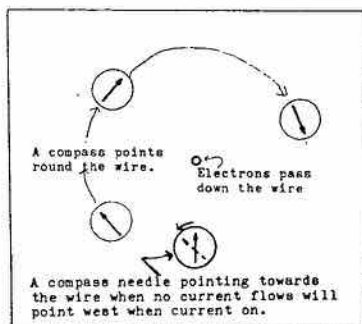


Figure 3b: What you will see.

#### Summary

Electrons move through metals but not through insulators. They repel all other electrons, and are attracted to the positive charges in atoms. They move a compass needle when they are in steady motion.  $\Delta$

#### Next issue:

Chapter 2 in VE3DQB's Antennas series.

When all the joints have cooled, and the thing checks out, tell Frank about it!

## The Watchmaker's Apron

If you have ever seen a watchmaker plying his trade, you may have noticed that it takes him a moment or two to leave his bench to attend to a customer. If you observe carefully you will see that he wears an apron, and that he fiddles with this before he comes and attends to you.

Watchmakers handle very tiny items, screws, wheels, things like that. Being mortal, watchmakers are liable to drop these tiny bits and rather than scrabble around on the floor for them, they wear an apron, tied round their waist, and fitted with two eyelets to the underside of their bench. So, when the inevitable happens and the balance staff slips out of their forceps, they know exactly where to look for it— in the apron.

In the use of this apron, they were undoubtedly preceded by several thousand years by jewellers. Jewellers also handle minute items, with the added point that many of them are extremely costly. The apron, round the waist and hooked to the bench, will save an awful lot of trouble and expense.

I first started construction when radio bits were of a decent, handleable size. If you drop an octal tube holder on the floor, it is plainly visible and easily retrieved. Working on these components, with a hundred watt pistol grip soldering iron, feeding 16 gauge bus wire through decent-sized holes in the terminal strips, your job was a cinch.

Not so today. Everything has shrunk. Since the invention of the transistor, components have been getting smaller and smaller. You handle them under a lens, and if you dare to solder them, it is with a tiny 30-watt iron.

I spent too much time on my hands and knees searching for minute and irreplaceable pieces before it dawned on me what the cure was. From the murky depths of my memory, I retrieved the picture of the watchmaker's apron. I made one, and believe you me, it was a life-saver. If a tenth-watt resistor, or a chip capacitor, or even an MPF 102, is dropped, I

know where to look for it. The watchmaker's apron saves time, energy and temper.

I have not made so elegant an apron as the watchmaker's do. Mine is a piece of denim salvaged from an old trouser leg, about two feet by 18 inches. One edge of this is thumb-tacked to the underside of the bench. The other, opposite, edge I hold round my waist with a clip lead. When I get round to it, I shall replace this with a nice length of tape. Anyone thinking of constructing something today, might well start by fitting themselves with an apron. They will find it as useful as I did.  $\Delta$

VE3DQB

## From The Bench

### INSTALLING A LONG GROUND ROD

When putting down a long ground rod, use a shorter piece of larger diameter pipe. Drive it into the ground about a foot and place water hose inside pipe. Letting the water slowly saturate the earth will enable you to keep pushing the pipe down farther. Put the ground rod into the pipe, leaving the water hose intact, and you can gradually ease the longer ground rod down as far as necessary.

VE3BTQ

### TOWER ANCHORS

There is a 3¼ ft. ground anchor used as a securing down for mobile homes. These sell for around \$4.50 new. They have a heavy screw flange on one end about 10" in diameter and a U and Bolt attachment for cable, etc. These can be screwed into soft ground, but would have to be dug into heavy ground. Use a post hole digger, if you put the anchor in at right angles to the cable. It will take a tremendous strain.

VE3BTQ

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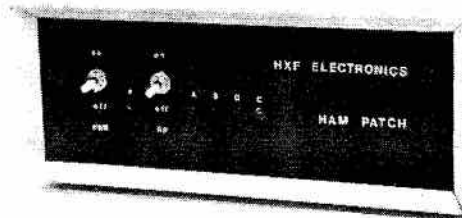


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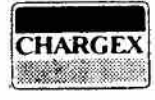
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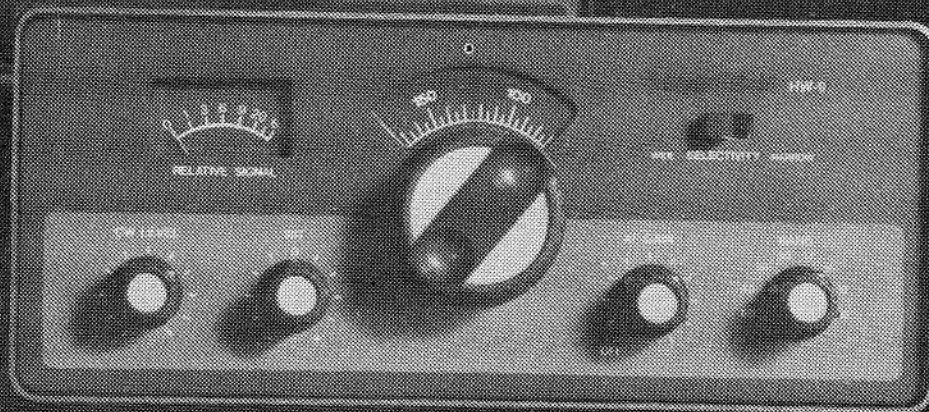
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