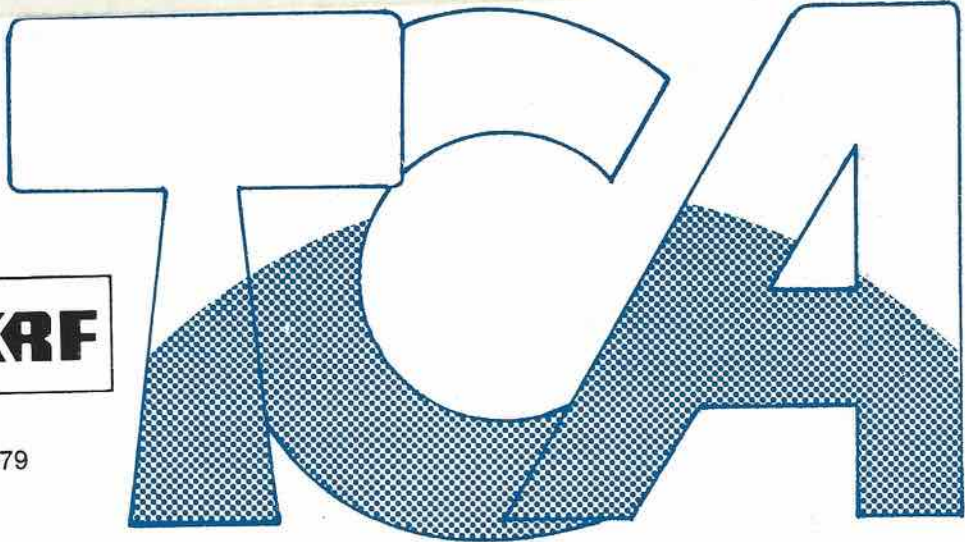


Canada Post / Postes Canada
Postage paid / Port payé

Third class / Troisième classe
PICTON
23



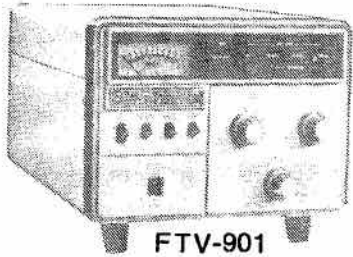
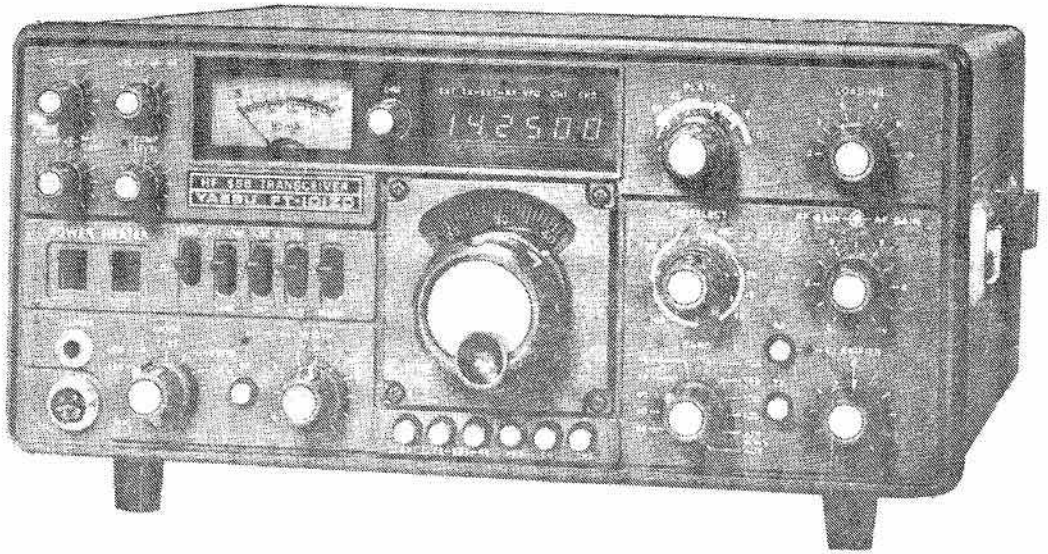
May 1979



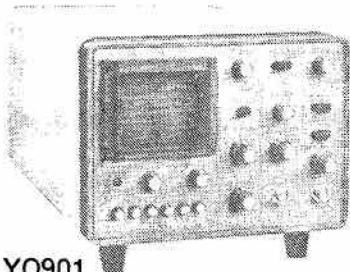
THE CANADIAN AMATEUR

Way Up North





FTV-901

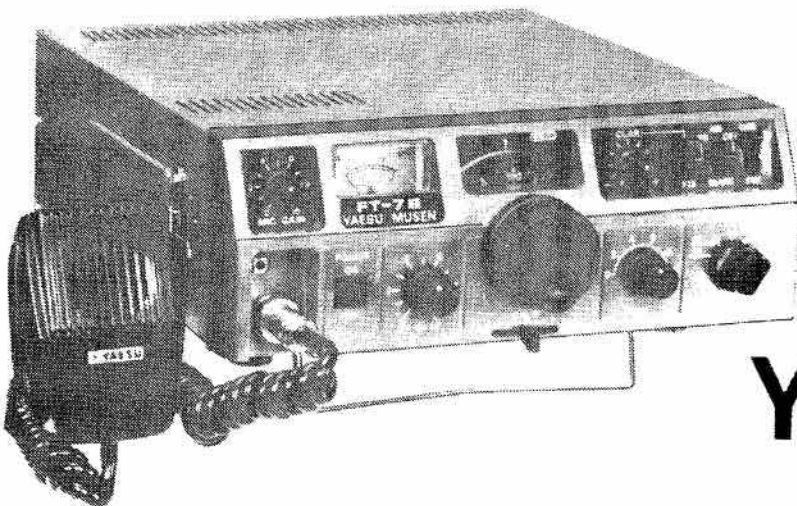


YO901
MULTISCOPE

Write for Catalogue Sheets
c/o J.H. Williams VE3XY
Wayne Deactis VE3JFV

C.M. PETERSON CO. LTD.

Communications Electronics Division
Head Office C.M. Peterson Co. Ltd.
220 Adelaide St. North, London, Ont. N6E 3H4
519-434-3204
Toronto Amateur Dept.: 47A Colville Road
Toronto 15, Ont.



YAESU

BEARCAT® SCANNERS ANNOUNCE CANADA'S ONLY 50-CHANNEL, MICRO PROCESSOR CONTROLLED SCANNER. IT SEARCHES, STORES, REMEMBERS AND ALL BUT THINKS FOR YOU.

The new *Bearcat* 250.
An unbelievable advancement
in no-crystal scanning.

Bearcat's new, 250 is fully synthesized
for punch-in programming. It searches,
stores, and recalls every bit of programming,
on a vast, 50-channel spectrum.
Automatically.
Unbelievable? Read and
believe.



CRYSTAL-LESS.

Micro processor controlled. Brings in every local frequency automatically, without a crystal.

50 CHANNELS. Scans up to 50 channels in banks of 10 each. Scans any combination of banks at the touch of a button.

SEARCH/STORE. Seeks out and stores up to 64 active local public service frequencies automatically.

SEARCH/RECALL. Retrieves stored frequencies for simple entry into scan program.

PRIORITY CHANNEL. Samples a designated priority frequency on channel 1 every two seconds.

DIGITAL CLOCK. A genuine, LED quartz crystal digital clock. Shows hours, minutes, seconds.

S-BAND COVERAGE. Low, high, UHF, UHF-T. Plus 2 meter amateur ham band, and other UHF frequencies.

COUNT. Transmissions on each frequency counted automatically to determine which are most active.

SCAN/SEARCH LOCKOUT. A unique feature. Not only locks out channels while scanning, it also eliminates unwanted frequencies while searching.

AND

MUCH MORE!

Selective Scan Delay
Direct Channel
Selection, Scan Speed
Control, Automatic Squelch,
Track Tuning Circuitry, Front-
Mounted Speaker, Decimal
Display, Quality Construction,
AC/DC. UL listed. FCC Certified.

THE INCREDIBLE, NEW BEARCAT® 250 SCANNER.

LEADING THE WAY TO REAL EXCITEMENT.



YEARS OF PROGRESS

A.C. SIMMONDS & SONS LTD.

975 Dillingham Road, Pickering, Ontario L1W 3B2 · Telephone (416) 839-8041 · Telex 06-981383

YET ANOTHER GLENWOOD FIRST.



TS-120V

\$899.00

FEATURES

Innovative single conversion PLL system

The TS-120V design is based on single conversion technology using a PLL system which multiplies, divides and mixes the reference frequency (10 MHz) oscillator output, eliminating the need for a heterodyne crystal element for each operating band. The single conversion system also improves the spurious characteristics during transmission and reception.

All solid-state design

The TS-120V features all solid-state design and compact styling. The final stage has a wide bandwidth and requires no tuning during operating.

A protective circuit is also provided to protect the final stage against damage due to deterioration of SWR.

Built-in 3.5 - 30 MHz amateur bands and JYJ/WWV band
Transmission and reception of signals in 3.5 - 30 MHz band in LSB/USB/CW mode. Reception only of signals in JYJ/WWV band.

Simplified operation

No preselector or P.A. tuning is required on any operating band. The main dial is carefully designed to prevent frequency drift due to vibration during mobile operation. The rubber feet and the adjustable leg on the cabinet base permit adjustment of the height of the front panel.

CW semi-break-in operation

Semi-break-in operation in CW mode is provided with the use of the VOX circuit and CW side-tone.

CW filter YK-88C available as an option:

Built-in IF shift system (pass band tuning).

Built-in noise blanker circuit.

Built-in VOX circuit.

Built-in 25 kHz marker circuit.

The TS-120V accepts both high and low impedance (500Ω ~ 50 kΩ) microphones.

SPECIFICATIONS

Frequency Range:

3.5-4.0MHz
7.0-7.3MHz
14.0-14.35MHz
21.0-21.45MHz
28.0-29.7 MHz
WWV (15MHz)

Mode:

SSB/CW

Power Requirements:

R: 0.7A 13.8V DC
T: 4A 13.8V DC

RF Output Power:

10W

Audio Input Impedance:

500Ω - 50kΩ

Audio Output Impedance:

4-16Ω

Audio Output:

1.5W

RF Output Impedance:

50Ω

Frequency Stability:

Within 100Hz during any 30 minute period after warmup
Within ±1kHz during the first hour after 1 minute of warmup

Carrier Suppression:

Better than 40dB

Side Band Suppression:

Better than 50dB

Spurious Radiation:

Better than 40dB

Harmonic Radiation:

Better than 40dB

Audio Freq. Response:

400 to 2,600Hz within -6dB

Receiver Sensitivity:

0.25μV S/N 10dB

Image Ratio:

Better than 50dB

IF Rejection:

Better than 70dB

Receiver Selectivity:

SSB: 2.4kHz (-6dB)

4.2kHz (-60dB)

*CW 0.5kHz (-6dB)

1.8kHz (-60dB)

Dimensions:

W241×H94×D235 (mm)

Weight:

4.9kg (11.7lbs)

*(CW Filter Option)

GLENWOOD TRADING COMPANY LTD.

278 East 1st St., North Vancouver, B.C. V7L 1B3

If you have not yet received our latest catalogue write for your free copy, today.

Special List of Amateur Radio Covers



SERVING AMATEURS EVERYWHERE



Alpha

70A	77	77SX	374A
76	77D	78	Vomax
76A	77DX	374	

Atlas

350XL	350-PS	210, 215 w/AR/117 Console
-------	--------	---------------------------

Collins

30L-1	32S-3	75S-3	516F-2
30S-1	51S-1	312B-4	KWM-2
312B-3	75A-4	312B-5	KWM-2/PM2

DenTron

160-10AT	160-XV	DTR-3000L	MT-3000
160-10AT-3K	AC-1200	MLA1200	W-2
160-10L	DTR-1	MLA2500	Clipperton "L"
160-10M-3K	DTR-1-AC	MT-2000	

Drake

C4	MN2000	RV-7	WH7
FS-4	MS-4	SPR-4	WV4
L4B	MS7	T4X	UV3 1-Band
L4B/P.S.	PS7	TR3	UV3 2-Band
MN4	R4	TR4	UV3 3-Band
MN4C	R7	TR7	UV3 P.S.
MN7	RV-4	W4	

Heath

DX60B	HS1661	SB101	SB401
HD-10	HW7	SB102	SB600
HD-15	HW8	SB104	SB604
HD1410	HW12	SB200	SB610
HG-10	HW16	SB220	SB614
HM102	HW22	SB230	SB620
HM2102	HW32	SB301	SB634
HM2103	HW101	SB303	SB644
HR10B	HW104	SB313	SB650

Icom

IC21	IC22	IC211	IC701 P.S.
IC21	IC22	IC701	
w/DV21	w/P.S.		

Kenwood

AT200	SM220	TR7400	TS820
QR666	SP-70	w/P.S.	TV502
R300	SP520	TS520	TV506
R599	SP820	TS520/DG5	VFO-520
R820	T599	TS600	VFO-700
S599	TL-922	TS700	VFO-820

Swan

117XC	500	Cygnat	WM2000
250	700	WM1500	WM3000
300	1200X		

Tempo

Tempo I	2K Ultra	2020	K2000
Tempo I P.S.	2KD5	8010	RBF-1
2K3	2001	8120	T2000
2K4			

Ten-Tec

276	252M	405	670
240	262G	505	KR5
242	262M	509	Argonaut
244	277	540	Century 21
247	315	544	Triton IV
252G			

Yaesu

LL301	FRG-7	FT901	SP101
FC301	FRG-7000	FTDX560	SP401
FC901	FT7	FTDX570	SP901
FL101	FT101	FTV250	Ycom 80
FL2000	FT221	FTV650	YC355
FL2100	FT225	FTV650B	YC601
FLDX400	FT301	FTV901	YO100
FP301	FT401	EV101	YO301
FR101	FT620	FV301	YO901
FRDX400	FT625	FV401	YPT50

Miscellaneous

CDE	KLM	Signal I	Robot 400
Ham II	2700	CX7	Astro 200
Ham III	Force 5	CX11	
Ham X			

UNDERLINED COVERS IN STOCK - ALL OTHERS 3 to 4 WEEKS DELIVERY
FOR OTHER COVERS USE OUR "MADE TO ORDER" COVER SERVICE

COMM/PLUS

Division of 86235 Canada Ltd.,
3680 Côte Vertu,
St. Laurent, Quebec. H4R 1P8
1-514-337-7255

The Age of Affordable Personal Computing Has Finally Arrived.

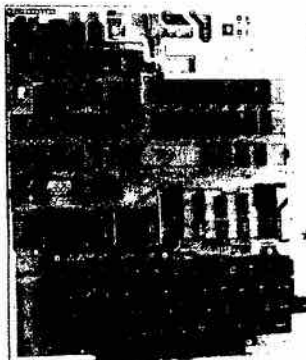
Ohio Scientific has made a major breakthrough in small computer technology which dramatically reduces the cost of personal computers. By use of custom LSI micro circuits, we have managed to put a complete ultra high performance computer and all necessary interfaces, including the keyboard and power supply, on a single printed circuit board. This new computer actually has more features and higher performance than some home or personal computers that are selling today for up to \$2000. It is more powerful than computer systems which cost over \$20,000 in the early 1970's.

This new machine can entertain your whole family with spectacular video games and cartoons, made possible by its ultra high resolution graphics and super fast BASIC. It can help you with your personal finances and budget planning, made possible by its decimal arithmetic ability and cassette data storage capabilities. It can assist you in school or industry as an ultra powerful scientific calculator, made possible by its advanced scientific

math functions and built-in "immediate" mode which allows complex problem solving without programming! This computer can actually entertain your children while it educates them in topics ranging from naming the Presidents of the United States to tutoring trigonometry all possible by its fast extended BASIC, graphics and data storage ability.

The machine can be economically expanded to assist in your business, remotely control your home, communicate with other computers and perform many other tasks via the broadest line of expansion accessories in the microcomputer industry.

This machine is super easy to use because it communicates naturally in BASIC, an English-like programming language. So you can easily instruct it or program it to do whatever you want, *but you don't have to*. You don't because it comes with a complete software library on cassette including programs for each application stated above. Ohio Scientific also offers you hundreds of inexpensive programs on ready-to-run cassettes. Program it yourself or just enjoy it, the choice is yours.



Ohio Scientific offers you this remarkable new computer

three ways.

** Challenger 1P \$519

Fully packaged with power supply. Just plug in a video monitor or TV through an RF converter to be up and running.

** Superboard 2 \$419

For electronic buffs. Fully assembled and tested. Requires +5V. at 3 Amps and a video monitor or TV with RF converter to be up and running.



** Challenger 1P Disk \$1,779

Complete mini-floppy system expandable to 32K RAM. (16K RAM Standard config.)

Standard Features

- Uses the ultra powerful 6502 microprocessor
- 8K Microsoft BASIC-in-ROM
Full feature BASIC runs faster than currently available personal computers and all 8080-based business computers.
- 4K static RAM on board expandable to 8K
- Full 53-key keyboard with upper/lower case and user programmability
- Kansas City standard audio cassette interface for high reliability
- Full machine code monitor and I/O utilities in ROM
- Direct access video display has 1K of dedicated memory (besides 4K user memory), features upper case, lower case, graphics and gaming characters for an effective screen resolution of up to 256 by 256 points. Normal TV's with overscan display about 24 rows of 24 characters; without overscan up to 30 X 30 characters.

Extras

- Available expander board features 24K static RAM (additional), dual mini-floppy interface, port adapter for printer and modem and an OSI 48 line expansion interface.
- Assembler/editor and extended machine code monitor available.

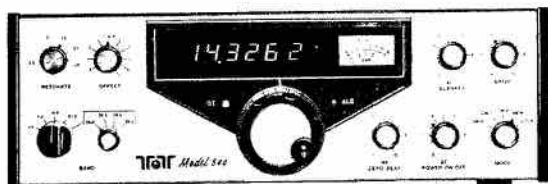
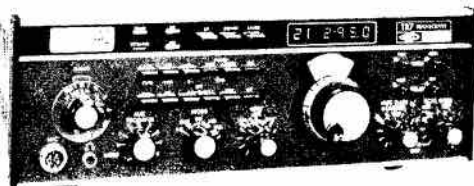
ORDER TO D.C.B. ELECTRONICS

333 Denison St. Unit 3
Markham, Ontario
Canada, L3R 2Z4
416-495-1599

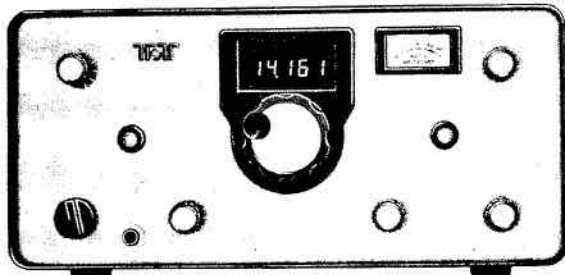
Interested in a bigger system? Ohio Scientific offers 15 other models of microcomputer systems ranging from single board units to 74 mega byte hard disk systems. Call OMEGA Computing Ltd. 416-425-9200 for detail informations.

** These prices include import duty, federal sales tax & 90 days full warranty service by D.C.B. Electronics. Ontario residents add 7% Sales tax. Price subject change without notice.

WSI — WSI — WSI — WSI — WSI — WSI — WSI



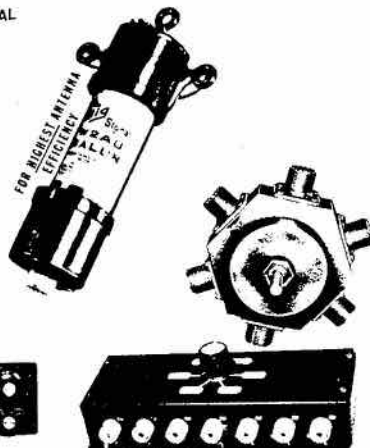
BRAND NEW



THE **BIG** SIGNAL
UNADILLA
"W2AU" Baluns

DEMANDED BY
PROFESSIONALS
WORLD-WIDE
OVER 12 YEARS

- The Original Lightning Arrest
- 650⁺ Strength
- Stainless Hardware
- Sealed
- GUARANTEED



670



KR50



Swan 100MX



W S I SALES COMPANY

FREE
CATALOG

\$ 40 000.00 STOCK IN KITCHENER !!!!!!!
STARTING APRIL 1st, '79 WE'LL BE OPEN
DURING THE DAY, WITH THE XYL,
WINNIE, RUNNING THE SHOW
TO DISCUSS TRADES CALL

→ 519-579-0536 ←

AT NIGHTS OR ON SATURDAYS
ASK FOR DOUG, VE3EHC WE STOCK
DRAKE—TEN-TEC—SWAN—
BARLOW WADLEYS—McKAY DYMEK
RECEIVERS—MFJ—B&W—TELEX—
PALOMAR ENGINEERS—NYE—

SEND
TODAY!

W S I SALES COMPANY
SWL—HAM RADIOS & ACCESSORIES
18 SHELDON AVENUE NORTH,
KITCHENER, ONTARIO, N2H-3M2
ATTENTION DOUG WISMER VE3EHC
PLEASE SEND ME YOUR CATALOG!!!

I'm
CALL
ADDRESS
TOWN
IGLOO
POSTAL CODE

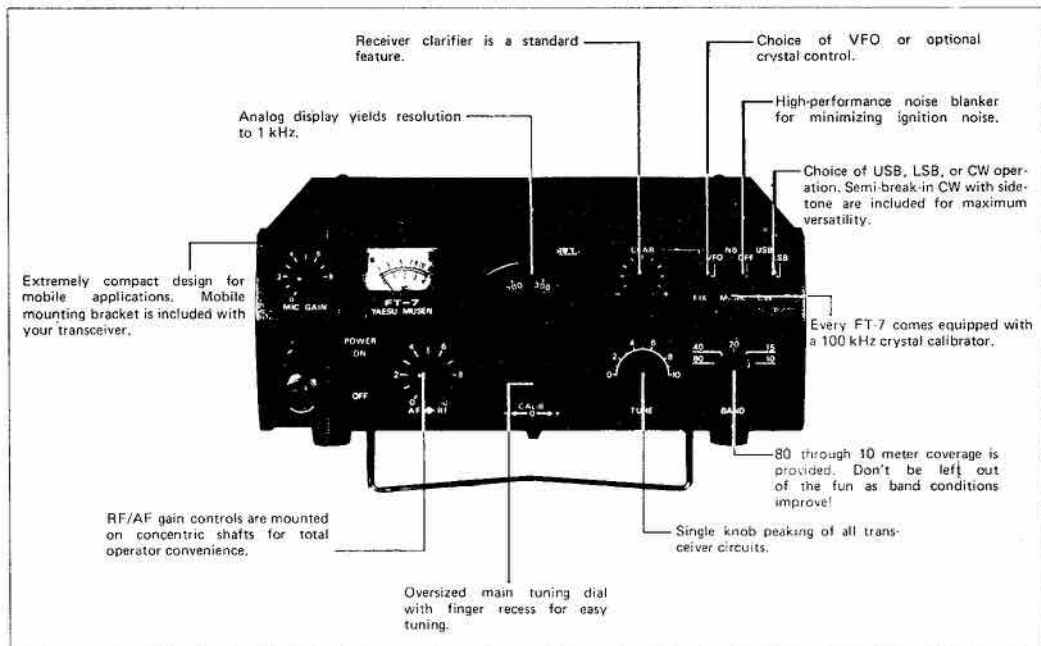
(please note: our catalog is no rag sheet!)

WACKID RADIO

312 Parkdale Ave. Ottawa,

613-728-1821

MONDAY TO WEDNESDAY 8:30 A.M. TO 5:30 P.M.,
THURSDAY & FRIDAY 8:30 A.M. TO 9:00 P.M.,
SATURDAY 8:30 A.M. TO 5:00 P.M.



For the ultimate in operating ease while HF mobile, go with the exciting new FT-7 from YAESU. Extremely small size, light weight, and uncompromising performance are the hallmarks of the FT-7. With mobile activity on the upswing, don't be left behind! Join the fun with the perky FT-7, the latest from the back room at YAESU.



YAESU

HF Mobile FT-7

■ Broadband Design

A single knob peaks all transceiver circuits for the frequency in use. No more fumbling for plate and load controls while in traffic!

■ Ready When You Are

The FT-7 comes ready for mobile operation on 80 through 10 meters, SSB and CW. Just hook up an antenna and 13.5 volt DC power source, and you're on the air.

■ High Performance Noise Blanker

A state-of-the-art noise blander effectively minimizes impulse noise that can ruin reception while mobile.

■ Superb Receiver Performance

The receiver front end features MOS FET and Schottky diode circuitry for maximum sensitivity and immunity from overload.

■ Compact Solid-State Design

Fully solid state, the FT-7 draws less current on receive than your auto dash lights. What's more, the FT-7 is not much larger than many 2 meter rigs.

■ Versatility Features

Built-in convenience features include a 100 kHz crystal calibrator, semi-break-in CW with sidetone, and receiver offset tuning (clarifier). You have the choice, too, of the velvety-smooth VFO or an optional fixed channel for frequency control.

■ Engineered for Mobile

The rugged, no-nonsense front panel and case are built to withstand the rigors of mobile operation.

■ Operate from Car or Home

You can use your FT-7 as a compact base station, too, with the FP-4 AC power supply. And for high-power operation from base or mobile, the FL-110 solid state amplifier may be used to secure 100 watts of output power.

SPECIFICATIONS

GENERAL

Frequency Coverage: 80 m 3.5 - 4.0 MHz, 40 m 7.0 - 7.5 MHz, 20 m 14.0 - 14.5 MHz, 15 m 21.0 - 21.5 MHz, 10 m 28.5 - 29.0 MHz installed, any 500 kHz segment between 28.0 and 29.7 MHz available as option.
Power Requirements: 13.5 VDC \pm 10%, (100/110/117/200 220/234 VAC 50/60 Hz with FP-4 AC power supply).
Power Consumption: 13.5 VDC - 3 A transmit, 0.4 A receive.
Dimensions: 230(W) x 80(H) x 290(D) mm.
Weight: Approx. 5 kg.

TRANSMITTER

Emission: LSB, USB, CW
Input Power: 20 Watts DC
Carrier Suppression: Better than 50 dB below rated output
Unwanted Sideband Suppression: Better than 50 dB @ 1000 Hz
Spurious Emission: Better than -40 dB
Distortion Products: Better than -31 dB
Transmitter Frequency Response: 350 - 2700 Hz - 6 dB
Frequency Stability: Less than 300 Hz drift from a cold start; less than 100 Hz over a 30 minute period after warmup.

Antenna Output

Impedance: 50 ohms nominal
Microphone Input Impedance: 600 ohms nominal

RECEIVER

Sensitivity: 0.3 μ V for S/N 10 dB or better
Image Rejection: Better than 50 dB
IF Rejection: Better than 80 dB
Selectivity: -6 dB: 2.4 kHz, -80 dB: 4.0 kHz
Audio Output: 3 Watts @ 10% THD
Audio Output Impedance: 4 ohms

**ICOM****THE ULTIMATE!****ICOM'S DIGITAL ALL SOLID STATE
HF TRANSCEIVER**

IC-701

ICOM's superior LSI technology takes the lead in Amateur HF. The extremely compact IC-701 delivers 100 watts output from a completely solid state, no tune (broad band design) final, on all modes and all bands, from 160-10 M. With single knob frequency selection and built-in dual VFO's, the LSI controlled IC-701 is the choice in computer compatible, multi-mode Amateur HF transceivers.

The IC-701's single frequency control knob puts fully synthesized instant turning at a single finger tip. **Wide** bandspread, with 100 Hz per division and 5 KHz per turn, is instantly co-ordinated between the smooth turning knob and the synthesizer's digital read-out with positively no time lag or backlash (no waiting for counter to update: less operator fatigue). And at the push of the electronic high speed tuning button, the synthesizer flies through megacycles at 10 KHz per step (500 KHz per turn).

The computer compatible IC-701 LSI chip provides input of incremental step or digit-by digit programming data

from an external source, such as the microprocessor controlled accessory which will also provide remote band selection and other functions.

Full band coverage of all six HF bands, and continuously variable bandwidth on filter widths for SSB, RTTY, and even SSTV, help to make the IC-701 the very best HF transceiver ever made. IC-701 includes two CW widths, all of this standard at no extra cost.

Sold complete with the high quality electret condenser base mic (SM-2) and AC power supply/speaker as shown, the IC-701 is loaded with many ICOM quality standard features. Standard in every IC-701 are two independently selectable, digitally synthesized VFO's at no extra cost. Also standard are a double-balanced schottky diode 1st mixer for excellent receiver IMD, and RF speech processor; separate drop times for voice and CW VOX, optionally continuous RIT, fast/slow AGC, efficient IF noise blanker fast break-in CW, and full metering capability.

**ICOM IC-280 remotable
2m FM mobile**

Frequency 143.90-148.11 MHz • Power: 10 watts HI, 1 watt adj, Low • Power requirements: 13.8 VDC at 2.5 amps • Main PLL control head may be detached and remotely mounted • With microprocessor, stores 3 frequencies • Easy to read LED's.

**ICOM IC-211
2m transceiver**

• 144 to 148 MHz coverage • Modes SSB, CW, FM • LSI synthesizer PLL • 4-digit LED readout • Pulse-type noise blanker • VOX w/adjustable gain • SWR bridge • CW monitor • Automatic power control • AC/DC power supplies • Antenna impedance: 50 ohms unbalanced • TX output: 10W PEP.

**ICOM IC-215
2m FM transceiver**

Features: • 15 channel capacity • MOS FET RF amplifier & 5 tuned circuits in the front end for optimum sensitivity and selectivity • S-meter on front panel • Dual power level, 3 watts HI for long distance, 0.5 watt LOW for local • Uses C batteries or rechargeable cells.

1 Skyridge Rd., West Hill, Ont. M1E 4N7
Udo Frank, VE3FFA (416) 284 7388

CANADIAN COMMUNICATIONS COMPANY

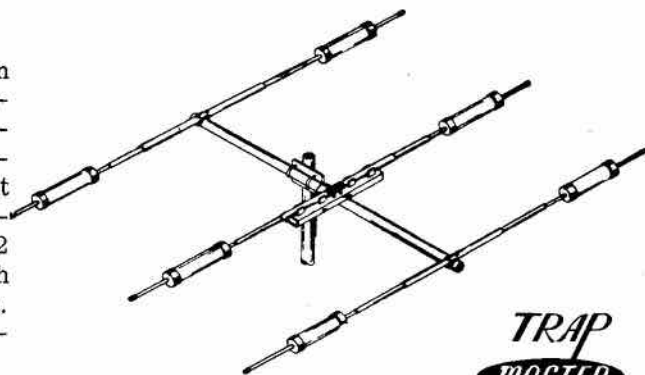
The Classic 33 10, 15, and 20 meters

Beam designed to provide the extra gain for working hard-to-reach DX. Incorporates exclusive Mosley 'Weather Proved' traps with resonant frequency stability. Features new boom to element clamping and balanced radiation. Hardware is stainless steel. Feed with 52 ohm RG-8U coax. Fits up to two inch mast. Use with most heavy-duty rotors. 1 KW AM/CW or 2 KW P.E.P. SSB input.

Forward Gain: Full 8 db compared to reference dipole or 10. 1 db over isotropic source.

Front-to-Back: 20 db or better on 15 & 20; 15 db on 10 metres.

Standing Wave Ratio: 1.5/1 or better.



**TRAP
MASTER**

MAXIMUM ELEMENT LENGTH: 27 ft.
ASSEMBLED WEIGHT: 42 lbs.
SHIPPING WEIGHT: 47 lbs.
WIND LOAD (80 MPH
EIA Std) 120 lbs.
WIND SURFACE: 6 sq. ft.
MATCH: Broad band
capacitive.
Pat. Pend.

BOOM LENGTH: 18 ft.
TURNING RADIUS: 16 ft.

(Note: Beam is not designed for 40 metre or other type of conversion.)

TA 33 Jr.	239.00
TA 33	329.00
CL-33	369.00
CL-36	459.00

MPK-3 pwr kit for TA-33Jr.	85.00
RV4C 10-40 mtr vertical	98.00
RV8C 80 mtr adapter	59.00
DI-2 2 mtr groundplane	39.00
MY-144-9 EL. YAGI	43.00
MM-144 mobile c/w trunk mount coax, etc.	47.50
Larsen 2 mtr mobile c/w mag mag mount	47.50

CUSHCRAFT

ATB-34	329.95
A-14-3 3el. 14 MHz YAGI	199.00
A-28-4 4el. 10 MHz YAGI	112.50
A-147-2 mtr 4el. YAGI	29.50
A-147-11 2 mtr 11el. YAGI	44.50
ARX-2 Ringo Ranger	47.50
A-147-22 Power Pak 2 mtr	129.00
ATV-5 80-10 mtr vertical	149.95
Unadilla KW-40 all band trap antenna with wire, etc.	42.50
#12 copperweld (40%) 700 B.S.	8¢ ft.

Shure #444 Ham mic	69.95
Optoelectronics OPTO-7000 600 MHz counter	149.50

Prices subject to change

TS-520S



KENWOOD Transceiver TS-520S
160 thru 10M

KENWOOD RADIO

TS-520-S	1149.00
TS-820S	1595.00
TS-820	1350.00
R-599D	859.00
T-599D	839.00

Order any unit above & receive a Shure 444 microphone N/C

TR-7500	399.00
TR-7400	579.00
TR-2200A	369.00
AT 200 tuner	219.00

ROTORS

Tail Twister	379.00
Big Talk	125.00
CD-44	169.00
Ham III	199.00
Rotor wire	.25/ft
RG-8U	.29/ft
RG8U foam	.32/ft
RG-213 DND Specs	42¢

H.C. MacFarlane Electronics LTD. RR No. 2 Battersea, Ont.
Phone (613) 353-2800
VE3BPM

YOUR ONE-STOP HAM SHOP

ANTENNA SYSTEMS INSTALLED WITHIN RADIUS 150 KM.

EXPERTISE FREELY GIVEN ANYWHERE



DELHI

HAM TOWERS

Heavy Duty Self-Supporting Towers For Amateur Arrays

Delhi Ham Towers use the six larger and stronger sections of our standard eight section 68 ft. TV tower Model DMX-68. Each section is eight feet long and has beaded channel legs riveted together with "X" braces. Legs and braces are high tensile steel, heavily galvanized before fabrication. Rivets are solid heat treated aluminum. Sections fit accurately together and are joined by heat treated nuts and bolts. The new uniform tapered design eliminates the offset leg bends used previously and together with evenly spaced "X" braces give the tower greater strength and reliability.

Three models are available all using a No. DMX3T top section with rotor plate, and top plate with mast bearing installed. Each tower comes with three 4 ft. concrete base stubs.

Load Limits

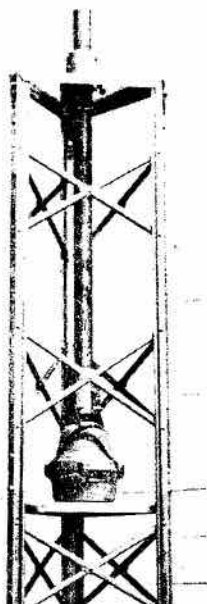
Delhi Ham Towers are designed to support the following loads under severe wind and ice conditions.

- A single amateur array with a wind surface area not over 9 square ft. or a net weight over 50 lbs.
- Any make of heavy duty beam rotor.
- A 1½" to 2" OD x .134" wall mast 8 ft. long with not more than four feet extending above the top of the tower.

If any load is needed above these figures the tower should be guyed.

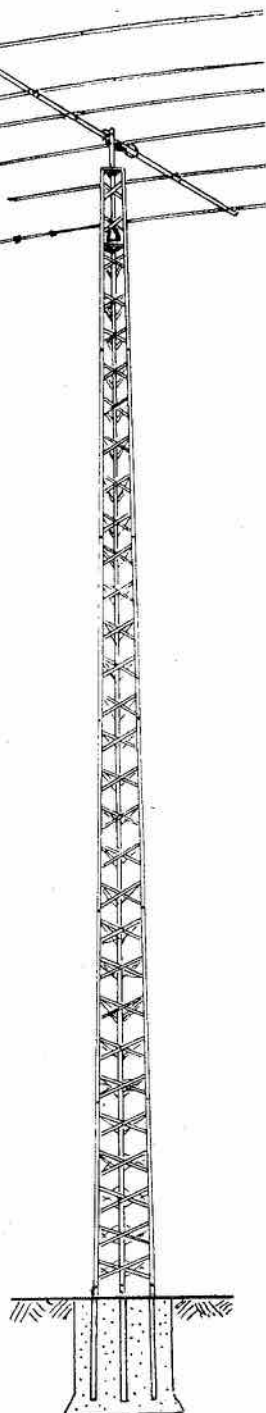
At left is shown the top section of a Ham Tower with a Ham-M rotor, mast and a ball bearing mast bearing installed.

Ham Towers are shipped in one compact nested package containing: 8-foot tower sections, three concrete base stubs 4 ft. long, all nuts, bolts and washers. Top bearing plate and rotor plate are assembled in top section. No mast is supplied.



DELHI TOWERS

DMX-HD-48	285.00
DMX-HD-40	245.00
DMX-MD-56	309.00



concrete base

DMXHD-48

H.C. MacFarlane Electronics LTD.

RR No. 2 Battersea, Ont.
Phone (613) 353-2800
VE3BPM



ICOM 701.

*It's HF, Digital, Solid State, compact, and reliable.
It's also the most advanced piece of Ham gear in the World.*

And it is here now.

IC-701 \$ 1885

IC-701PS \$ 299

IC-RM2 (remote controller)... \$245

See your nearest ICOM dealer or contact us...

Dollard Electronics Ltd.

Prices subject to change without notice

7087 VICTORIA DRIVE - VANCOUVER, B.C. V5P 3Y9 - (604) 321-1833

EDITOR

Doug Burrill VE3CDC
151 Fanshaw Ave.
Ottawa, Ont. K1H 6C8
(613)-733-7108

DESIGN & PRODUCTION

Steve Campbell
RR#2 Bloomfield,
Ont. K0K 1G0
(613)-399-2209

ADVERTISING
REPRESENTATIVE

Don Slater VE3BID
3 Kirkstall Ave.
Ottawa, Ont. K2G 3M2
(613)-825-1686

TECHNICAL EDITOR

Ed Hartlin VE3FXZ
P.O. Box 356,
Kingston, Ont.
K7L 4W2

PRINTED IN CANADA

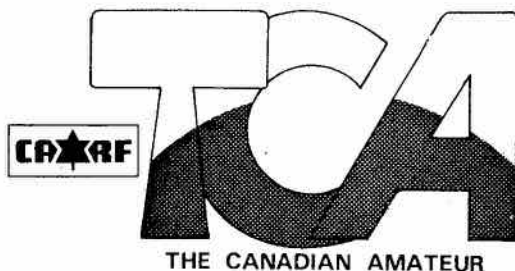
'TCA - The Canadian Amateur' is published in Canada 11 times per year to provide Radio Amateurs, those interested in radio communications and electronics and the general public with information on matters relating to the science of telecommunications.

Unsolicited articles, reviews, features, criticism and essays are welcomed. Manuscripts should be legible and include the contributor's name and address.

The contents of this publication are copyright and may not be reproduced without prior consent except by a bona fide Amateur organization which may reproduce them provided the source is acknowledged.

'TCA - The Canadian Amateur' is published by the Canadian Amateur Radio Federation Inc., P.O. Box 356, Kingston, Ontario K7L 4W2. It is available for \$7.00 per year or 75¢ per copy. A signed article expresses the views of the author and not necessarily those of the Federation.

Indexed in the Canadian Periodical Index: ISSN 0318-0867.



May 1979

Vol. 7 No. 4

Contents

Transcan Net	14
Membership cards	14
Symposium bears fruit	15
5-10-15 wpm? Don't despair	15
All About Awards	16
Notice: Annual General Meeting	16
Eclipse Tests	19
Wanted: Symposium Topics	20
A Letter to DOC	29
Way Up North -Cover Story -	30
Canadian QSL Bureaus	33
Solid State Beam Aimer	34
A Memorable QSO	35
The PLers go DXing	35
Beacons	37
The Exam - Then & Now	38

Technical Section

Code Practice Oscillator	21
Wire Antennas -G5RV-	26
Solar powered QRP	28

Departments

Letters to the Editor 12, CRAG 14, News Briefs 17, From the Clubs 18, The Canadian Contest Scene 20, DOC News 20, 33, Social Events 34, WARC Update 36, Swap Shop 40, Advertiser's Directory 41, Advertisers' Corner 41, CARF Information 46.

LETTERS:

Arctic Amateurs

It has just come to my attention that the biggest Scientific attempt in Canadian Arctic research is going to take place this summer at the North Pole. Forty scientists will spend two months on drifting ice carrying out their experiments. The results of this expedition will take two years to compute and also will make Canada the leader in Arctic science.

I would like to know if the Canadian Amateurs are to be represented in this venture like the Russian expeditions which are granted a special call sign and a special QSL card to make the world aware of their endeavours, or is the Military again going to set up a VE8RCS (Royal Canadian Signals), and leave us out in the cold?

S. Mackriss VE8YM
Box 745, Frobisher Bay
N.W.T. X0A 0H0

(Tx for the tip. An old Arctic hand now with CARF is following this up. VE8RCS by the way, while on a military post is a bona fide Amateur station operated by Amateurs in the Forces)

Russian tickets

I would like to reply to John Leslie VE3GPA (Letters--March TCA) regarding Soviet Union Amateur operators. His assumption that Amateur licences in Canada are give-aways is quite erroneous as statistics bear out; -- the average failure rate is about 65% of those writing the exams.

To gain a proper perspective however, one has to look a little more closely at the two societies mentioned. The first reason for the statistics quoted about USSR Amateurs (and this applies equally to all 'non-democratic' countries) is that they are not about to give

may 1979 - 12

the privilege of free speech (in the case via radio) to proponents of free speech. On the contrary, countries such as the Soviet Union make it as tough as possible to get on the air or, to quote the author, to even listen. You can also be certain that those who do qualify to try for their licence are members in good standing with Big Brother and you can also be sure Big Brother watches closely.

Secondly, the main reason radiotechnology in the Western world is so far ahead is because we have the freedom to experiment in an 'unsupervised' environment regardless of our qualifications.

Our licence requirements are not a give-away by any means. Ten wpm is a very reasonable morse code rate for beginners as are the other exam requirements. My only beef with the examination proceedings lies with the format used. I think we should go back to the Multiple choice type exam for some very basic reasons. 1. The range of linguistic abilities and inabilities encountered in those writing exams. 2. The range of educational levels of the examinees, and 3. The ability or inability of an examinee to express him or herself with pen and paper. There is very little wrong with the way our organization operates, or for that matter our society operates. If the 'learned' Amateur from Burlington would like to give up all his freedom (Foremost of which is freedom of speech) so that he can boast of being able to copy 18 wpm (a rate any Amateur worth his salt can do) plus brag about being able to build advanced transmitters and receivers (according to their standards or ours?) then I hope he'll contact Canadian Immigration for a visa to that glorious land of milk and honey across the pond. There is a veritable mass of people in the Soviet Union just praying for a chance to trade places with him. I emigrated to this fair land in 1954 and I'm not about to go back.

Canada needs a few more people

TCA welcomes Letters to the Editor. For speedy processing, send correspondence directly to Doug Burrill VE3CDC, Editor TCA, 151 Fanshaw Ave., Ottawa, Ont. K1H 6C8.

to herald its Pros and fewer people to bitch and complain about its Cons. That goes without saying about our Amateur organization also.

Andreas Sponselee VE6BLV
Box 1606 Medley,
Alberta T0A 2M0

(Hooray for our side, code or no code!)

TCA Format

As I was reading TCA, a few ideas came to me to help out us young Amateurs. One: put the address of the author on articles published in TCA because readers could then write direct to them and exchange experiences and ask questions on technical articles. Two: On advertisements, please quote the Canadian prices because it saves a phone call or writing. Three: What happened to the prefixes in the USA? Would appreciate a reply.

Floyd VE3KKA,
RR2, Box 400, Ottawa

(1. Tx Floyd, from now on we will show names and addresses as noted. Anyone writing to authors must, however, send a self-addressed, stamped envelope if they expect a reply. 2. Advertisers, please note. 3. We've got enough trouble trying to sort out kooky commemorative Kanadian calls without worrying about the weirdo assortment in the United States. We suggest a new Call Book and a magnifying glass. 4. As for the reply, this is it, as you didn't give us a last name in your address!)

Equipment Reviews

Re the December Equipment Review by Fred Towner VE2NM: In my opinion a pat on the back for telling it like he found it to be. After reading many kinds of Radio magazines over a period of 50

odd years (nearly 24 years an Amateur) it is nice to read an article that gets down to the nitty-gritty -- telling about the good points and the bad ones, and not just repeating the manufacturer's advertisement specs.

I believe there are hundreds of Amateurs who would welcome a department in your magazine on a regular basis -- equipment review if you like -- that would "tell it like it is" about Amateur gear.

Dr. G.W. Davis VE3EHM
Sydenham, Ont.

(Sorry, Doc, we've missed out on this feature lately ... Ed.)

Affiliation

Our club has formally voted to affiliate with CARF and we would like to keep up to date on computer hobby activities and the new Digital Operator's Certificate as noted in the February issue.

H.E. (Ted) King VE1BPW
President, Slemon Park ARC,
Slemon Park, PEI

(Thanks for the club's support, Ted. Although the Digital Op and packet radio activity got off to a start, not too much has been heard about it. CARF will act as a clearing house for notice of such activities and experiments if individuals and clubs will write to us about it.)

CODE EXAM

Some regional offices are now permitting aspiring Amateurs to write the code portion (receive only, now) at various times other than the theory exam dates. Some Ontario offices are giving the test on the last Friday of each month. If you are writing the exams in the future, check with your District Office for the code dates.



News from the west dominates this months column. The East Kootenay ARC who operate VE7CAP (34/94) are putting another repeater on the air from Fernie, B.C. The call and frequencies have not yet been determined; its purpose, however, will be to fill in the gap between VE7CAP on Mt. Baker and the Alberta border.

A new repeater in Alberta is VE6PP on 146.22/146.82, located in Willingdon. Doug Appleton, VE5DA, has passed along a wealth of information from Saskatchewan. Three additional two-metre repeaters should be on the air this summer as well as one on 450. There is also a new repeater on the air from Ituna, VE5ABO, on 146.31/146.91. The antenna is located 2460' ASL and with an ERP

of 90 watts it puts out a good signal. (Thanks to VE5ACY for the above.)

By the end of the summer, it should be possible to drive from Winnipeg to Calgary, Lloydminster and Waskasiu in Prince Albert National Park and have a repeater available for most of the trip. As well, VE5SS in Regina (146.28/146.88) now has autopatch facilities, the first in the province.

Finally, this month, Gord VE3EYW advises of two new repeater in Sault Ste. Marie; VE3SAP is on 146.46/147.06 and VE3YAK is on 147.75/147.15, the latter with autopatch facilities. Next issue we plan to have an updated copy of Canadian repeater listings in time for your summer travel.

Transcan Net

Despite the fact that "Murphy" has taken up permanent residence in this QTH we were finally able to get the Transcan Net off the ground. We won't recite all the trials and tribulations sent to try us because we are embarrassed by the sight of grown people crying!

Right down to the wire your net manager was sweating out some problems created by Murphy and at the final moment was dealt the coup de grace and this station had to start with the CW stuff and was heard by our esteemed Communications Chairman, Frank Merritt VE7AFJ, who took over and fired the net up. The momentous occasion then occurred at 1800z 3rd March 1979 on or near 14,098 kHz with VE7AFJ in the hot seat. QNI were VE6ALR, and VE7YB with the writer eavesdropping. There was one piece of traffic, the first ever, in the form of a QNC by VE7AFJ to the net.

Well, it was a start anyway. Conditions have been very poor around twenty and somedays one can copy the East and somedays one can copy the West. Both at the same time have eluded us.

The following weekend this station managed to get on the air and take the net control. On Saturday, March 10th, may 1979 - 14

we had VE2QO and VE3OCU and the first piece of formal traffic for retransmission was passed from this station to VE3OCU. The next session, on March 11, saw W0CQN who relayed in VE6SA. Not what might be described as a very large start, but a start nevertheless. Very obvious that the only way to go is up becuz there ain't anything under us!

All humour aside we hope this is the very start of bigger and better things for the CARF Traffic System and that from this modest start we will grow to a reliable, efficient traffic system. There will be lots of growing pains. Now what we need is participants every Saturday and Sunday, 1800Z on or about 14,098 kHz. TTY, 5 level 45 baudot or 60 WPM. Won't you join us????

de Art VE7DKY

Manager -- Transcan Net.

Memberships

For administrative reasons, your Federation no longer encloses a blank membership card with an initial notice of renewal. Members wanting a wallet-sized membership card should request one with their renewal.



Symposium bears fruit

DOC intends shortly to publish for comment proposed changes to Part II of the General Radio Regulations. These proposals stem from discussions at the 1978 National Amateur Radio Symposium convened by CARF last October in Calgary, and representations from individuals. Official notice will appear in Part 1 of the Canada Gazette and 60 days from its date of publication will be allowed for interested parties to comment on the proposals.

Proposed amendments would delete mobile logging and would re-word Sections 61 and 62 to recognize that modern rigs have built-in metering devices. These Sections at present call for meters to be permanently installed to measure the d.c. power to the final plate if running more than 400 watts and for 'a reliable frequency measuring device' and an 'over-modulation' meter to be part of station equipment.

There will be a proposal to delete Sections 63 and 64, which govern the operation of portable and mobile stations, with the exception of the part forbidding mobile stations on board pleasure vessels to use 1800-2000 kHz.

Changes are also proposed which would permit Amateur and Advanced Amateur operators to use F1 (FSK teletype) emissions on 160 metres and in addition would expand its use by Amateur class operators to match that permitted to Advanced Amateurs.

Other proposed changes would extend phone (A3) operation on 40 metres by permitting it between 7050 and 7100 kHz, in addition to the present allocation of 7150 to 7300 kHz. The phone endorsement for Amateur class would be permitted on 1800 to 2000 kHz which is now exclusively A1 emission for them.

Although the official notice asking for comment will be in the Canada Gazette, the only way to bring these changes to the Amateurs as a whole within a

practical time frame which would permit them to meet the DOC's 60 day deadline is through TCA and CARF News Service bulletins.

Clubs and individuals who wish to comment on these proposed changes could, therefore, get a head start in assessing them. Comments may be sent to: Director, Operations Branch, Telecommunications Regulatory Service, Department of Communications, 300 Slater St., Ottawa, Ont. K1A 0C8. The closing date will be announced in the Gazette and will be carried by CARF News Service radio bulletins and newsletter.

In view of your Federation's keen interest in the outcome of the symposium, it would be appreciated if copies of any comments could be sent to CARF, Box 356, Kingston, Ont. K7L 4W2.

5-10-15 WPM?

Don't despair!

For those of you presently struggling through the morse code requirements in preparation for the DOC exam, or those of you who are just trying to raise your speed to a higher plateau, here is something that might give you some added incentive, and may even brighten up your day.

According to the 'Guinness Book of World Records': "The highest recorded speed at which anyone has received Morse code is 75.2 wpm, over 17 symbols per second. This was achieved by Ted R. McElroy (U.S.) in a tournament at Ashville, North Carolina, on July 2, 1939." So come on guys, don't give up; and who knows, someone out there just might break this 40 year old record!

-Joe Driessens VE2FMW

All About Awards

First of a series

When one thinks of a typical Amateur shack, visions of receiving and transmitting equipment, log books, soldering guns, keyers, microphones, clocks, pencils, pens, tools, scrap paper, coax, and meters all come to mind. But look on the wall! Is there a map? Could it be there are ZSL's too? Yes ... possibly from that first QSO, or some of your favourite radio pals, or from exotic DX contacts

Complete? No, not if it is a typical Amateur station. Every Amateur should display proudly at least two certificate awards. Firstly, your 'Certificate of Proficiency in Radio', be it digital, Amateur, or Advanced or all of these. Secondly, let's see your station licence prominently displayed. Yes, that's a good looking Amateur shack.

A growing number of Amateurs, however, have carried on with interest in certificates and awards. They have found that working towards such awards is an incentive to more and better operating practices (both listening and transmitting). They increase their circle of air friends, improve their knowledge of geography and more. The colourful diplomas, certificates and plaques they earn are attractive additions to the décor of their Amateur shacks.

Visitors to your shack are fascinated by awards! You too will find you will be proud to talk about them with your

radio friends or 'normal' people. (hi!) Thus, they become conversation pieces as well as wallpaper.

In the coming months this awards column will make our readers aware of present and new operating achievement awards available to them.

Award hunting is another fascinating facet of this wonderful hobby of ours!

In the meantime, if you and your club sponsor a Canadian award please send a sample copy and complete rules, etc. to VE3GCO so that we can suitably publicize it.

(VE3GCO is a 'qualified' DX op and he and VE3HLL have co-authored the first 'Canadian Amateur Radio Awards Directory'. This 8 1/2 X 11 duo-tang booklet contains rules and maps, checklists, etc. of the more than sixty Canadian awards available. It's available from Garry for \$3.00

VE3GCO Garry V. Hammond
5 McLaren Avenue,
Listowel, Ontario N4W 3K1

Exams

The next set of examinations for the Amateur Certificate will be held July 11. Because some DOC offices may have to restrict the number of places for Candidates, applications should be made as soon as possible.

Notice

Notice is hereby given that the Annual General Meeting of the Members of the Canadian Amateur Radio Federation Inc. will be held in Ottawa on Saturday, May 26, 1979, at 9:00 a.m. at a place to be announced in the next issue of 'TCA' for the purpose of receiving and considering the Operating Report and Financial Statement, revising section 4 of By-law Number 2 to provide that all Directors of the Federation be elected by the Full Members, approving Supplementary Letters Patent to change the name of the

Annual General Meeting

Federation to include the name of the Federation in French, appointing Auditors and transacting such other business as may properly come before the meeting. Those planning to attend the Meeting should advise the General Manager of the Federation by May 14, 1979. Dated at Ottawa this 17th day of March, 1979.

Joan Powell VE3FVO,
Secretary.



news briefs

Central Ontario ops should save their pennies for the annual flea market to be held on June 9 at the Centennial Arena, College Avenue West, Guelph. The affair, complete with prize draws, is sponsored by the Guelph ARC.

* * * * *

Paper hangers will be interested to find that VE3HLL is sponsoring a 'Ski Canada Award'. Amateurs must work two stations from each major ski area in Canada for a total of eight contacts. The bite is \$2.00. Write Eric Walden VE3HLL, RR1 Gagetown, Ont. N0G 1Y0 for details. Be sure to send a SASE.

* * * * *

HR Report notes that 'folded audio' or 'Narrow band voice modulation' equipment is now available in the U.S. Henry Radio is the source.

* * * * *

After holding the line for more than two years at \$7.00 for CARF membership, the 21% rise in postal rates and the ever-ascending publication, operation and administration expenses, your Federation has been forced to consider a raise in membership dues. Recommendations to this effect will be before the Annual meeting on May 27 and a decision as to amount and effective date will be an important item on the agenda.

* * * * *

The U.S. FCC has stated that it will 'revisit' the matter of a low level, no-code communicator class of Amateur ticket later this year despite rejection by Amateurs four years ago. Although WARC '79 is convened for frequency matters, the FCC is proposing, as previously reported, to have the mandatory code requirements, now in ITU Regulations, deleted.

* * * * *

Pakistan has been removed from the banned countries list. Austria, India and Indonesia now have reciprocal operating privileges with Canada.

On the West Coast, the Chilliwack ARC, for those who believe that the Loch Ness monster and the Sasquatch are alive and well, is providing the 'Sasquatch Award'. Details for SASE to Chilliwack ARC, 317 Marshall Avenue, Chilliwack, B.C. V2P 3J5. \$1.00 covers the cost.

* * * * *

To promote the Radio Society of Ontario's convention this fall in Canada's capital, the Ottawa ARC will sponsor the National Capital Region Award for 20 contacts with the special station, VE3 NCR (what else?!), commencing May 1. Certificates and prizes will be featured. A SASE will bring details from RSO Convention Committee, Box 5076, Sta. F, Ottawa, Ont. K2C 3H3.

* * * * *

Sailor and world-cruising Amateur Willi de Roos, after failing in an attempt to land on the Antarctic Peter I Island due to the hazardous conditions, sailed around Cape Horn and at press time plans to leave Mara del Plata on the eastern South American coast to head for the Brazilian island of Trinidad where, if all goes well, sometime in May he will be heard with a Brazilian call on the DX bands. Harry Beardsell VE7ZG, who has been associated with Willi in his Amateur activities, will be flying to Mara del Plata on April 13 to sail with Willi on April 15.

* * * * *

During a recent business trip to the New England states, CARF Vice-prez Fred Towner VE2NM spoke to clubs there and spent an enjoyable afternoon looking over the American Radio Relay League's station W1AW and visiting with ARRL officials including General Manager Dick Baldwin and ARRL Foundation president York Chapman.

* * * * *

The American Radio Relay League's 'Ad Hoc Committee on Canadian Affairs' was scheduled to meet on April 20. (HR Report)

from the clubs



Above: Left is Mayor Roy, centre is club prez Mel Christian VE3JTY, with XYL Josie applauding in the background.

-Photo by Leroy Braun VE3GTB

- Many clubs are recognizing the efforts of the 'do-ers' in their ranks by presenting 'Amateur of the Year' awards to them. The Niagara Peninsula ARC did it up right at a dinner at which St. Catherine's mayor Roy Adams presented the current trophy (sponsored by the famous tube manufacturer (807s), Labatt's) to Chuck Hobbs VE3CUU.

- The Northern Alberta ARC carries the whole deal a lot farther and, starting off with cocktails and dinner on April 21, the Edmonton boys will go through eight awards for the year ... the Home Brew Award, the Technical Award, a Personal Achievement Award, one for the highest scores in the various classes of the VE/W Contest, a Public Service award, the President's Award for contributions to the hobby and, last but not least (and probably the ones causing the most hilarity)... the Boner Award and the Spouse's Award; the latter for the best letter, poem or speech or whatever pertaining to the advantage or otherwise of being married to an Amateur.

- The Ottawa ARC, in collaboration with other clubs in the area and with the Montreal repeater VE2RM, provided

safety and administration communications for the annual 90-mile Weekend National Ski Marathon along the Quebec shore of Ottawa River to Hull. Despite a record February cold spell of -32 C with a -57 C chill factor which culled out three quarters of the 5,000 entrants, the nets ran like clockwork. The sponsors say that the event could not be staged without Amateur radio communications which provided a vital safety factor in a potentially hazardous sports event.

- The Lakehead ARC's HI-Q carries a rather unusual ad. It's swap shop features a TWENTY-EIGHT FOOT Kennedy dish antenna .. price for the works, dismantled, can be negotiated with the prez of the club. Address letters to Box 2571, Thunder Bay, Ont. (Try this one on your neighbours.)

- Amateurs around Port Hope, Roseneath and Brighton, Ont. have formed a club and invite area ops to join. It meets on the first Monday of each month. Contact VE3HPR Charlie Kilgour, RR 1

Grafton, Ont. KOK 2G0, ph: 349-2036.

- The B.C. ARA writes that the B.C. Provincial Emergency Program (PEP) will be given the results of a questionnaire recently sent out by the Association. It will be incorporated in a government telecommunications resource inventory which includes all radio services in B.C. that may be useful in a disaster. Those participating will eventually receive a list of addresses and phone numbers of local authorities to contact in the event of emergency. Local EMOs will in turn receive a list of all participating Amateurs.

- The Quinte ARC 'QRM' editorializes that "It is difficult to believe that DOC is not aware of the new 'ham' band 27.405-28.000 MHz. I guess that's where you go when you fail the Amateur exam. A look over that band today produced 'VE31477' in Edmonton working 'W6174' in California. There was a Wellington, Ont. station working 'WS' and a Belleville station working Florida. They were all running linears. How come they don't take the exam? ... and no \$13.00 yet!"

(Editor's note: What with DOC closing down at least one monitoring station and only two shifts at others, it's small wonder that this flagrant bootlegging goes merrily along thumbing its nose at the law.)

- Heading west again, the Calgary ARA's 1978 annual Heathkit WPX Trophy goes to R.J. Beck VE7IG of William's Lake for his score of 1,819,104 points, which helped to make B.C. the high-scoring western province. The award goes to the high scoring individual op who scores highest in the highest scoring province.

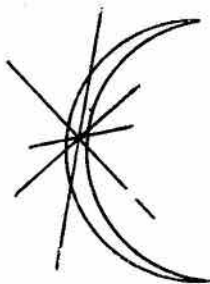
- The South Pickering ARC along with others have been able to get enough Dominion Store cashier's tapes to purchase an electric wheelchair for Don Green VE3HDV. Special thanks to Howie Vardon and Tom Rosebush VE3KZE.

- One way to finance a repeater and have fun at the same time has been worked out by supporters of VE2RMB (formerly VE2XW). On the tenth anniversary of the machine going on the air, the users are holding a big evening, complete with banquet and dance at the St. Basile Golf Club on May 15.

- Oakville ARC reports that the May

12 EMO exercise in which Amateurs will participate features a scenario with a hurricane sweeping through Southern and Eastern Ontario, with a four-day 'clean-up'. Rowland Beardow VE3AML in Sarnia already has a net drill on 40 metres.

- The South Vancouver Senior Citizens' ARC through the federal New Horizons grant program has set up repeater VE7RSR on 144.81/145.41.



Eclipse Tests

During the recent solar eclipse, many Amateurs in Canada and the U.S. did some experiments to see if there was any change in propagation. Amateurs in Manitoba were brought together by VE4 MR of Brandon, who was the eclipse co-ordinator. Ontario participant was Bob VE3JAB. Communication was with W3LH, a staff member of NASA who was stationed in Red Lake. This was the scene of many rocket shots to explore the atmosphere.

Kenora Amateurs assisted in these tests by putting an AM signal on the air on 3.750 MHz, which W3LH was to monitor both before and after the test. This signal was very weak and was probably not very useful during the tests.

The Manitoba net operated on 3.765 MHz starting at 6 am until after the eclipse, with similar operations on 7.195 MHz. Bob VE3JAB reported that 80 metres was virtually dead all day with 40 metre signals weak in the early morning, completely lost for a while, and then about 11 am they came up again, to a S-9 by the time the eclipse was in progress. This was a reverse of what was expected of the propagation. The signals were strongest as the eclipse came near Brandon.

Ten metres was very poor by the time of the eclipse and 20 was almost dead during the whole day.

-Lakehead ARC 'Hi-Q'

CONTEST CALENDAR

May 19-20 ARRL EME Contest
May 26-27 WPX CW Contest
June 9-10 VHF QSO Party
June 23-24 ARRL Field Day
July 14-15 IARU Radiosport
Aug. 4-5 VHF Contest

The CQ WPX phone contest is over, and by the looks of it, it was a record breaker. Contacts and multipliers seem to be way above last year's averages. I hope to compile a list of high claimed scores for this contest, which will serve as a more accurate indication. If you participated, please drop me your QSL card with your score as soon as possible.

I do however have some rough scores

from the West Coast. CK7WJ, in another tremendous effort, seems to have broken the multi-multi record they set last year. This score looks to be somewhere between 10 and 11 thousand contacts and well over 100 new multipliers. VX7 UBC, an old voice in RTTY contests, made their debut in SSB contesting. In the multi single class, they came up with what looks like a new record for Canada. Unduped, they have 4,412 QSOs and around 450 multipliers.

This year marks the beginning of a new contest. 'CQ Magazine' has introduced a matching CW portion for its WPX contest. The rules are the same as the phone portion, and the date is the 26-27 of May.

Wanted: Symposium Topics

Planning for the Third National CARF Amateur Symposium this fall is now in progress. The Federation has asked the provincial societies for offers to host the Symposium and on the basis of discussions so far it is likely to be held in Eastern Canada, ie. east of Ottawa.

Clubs are now invited to propose items for the Symposium Agenda and to send in papers making recommendations for discussion and adoption. To start things rolling, it is proposed that the following items be discussed.

1. Antennas -- the powers of municipalities vs. those of the Federal Government (DOC & MOT) to control or prohibit Amateur antennas.

2. Interference -- the need for susceptibility standards for non-Amateur consumer radio, TV and other electronic equipment and the application of Regulation #48 in cases of interference with commercial stations.

3. Packet Radio -- the review and updating of the technical characteristics of digital/packet radio and the establishment of protocols.

4. Examinations -- the improvement of training of prospective Amateurs and
may 1979 - 20

of the examination and review procedures as well as the possible assistance of clubs in the conduct of exams.

Suggestions from clubs and individuals for other topics to be included in the agenda should be sent to CARF no later than the end of June. The Symposium workshops will then be arranged and topics allotted to them in such a way as will enable the best discussions possible. Correspondence should be addressed to Symposium, CARF Inc., Box 356, Kingston, Ont., K7L 4W2.

DOC News

Overlooked in the general interest in 'packet radio' last year was the fact that the same Canada Gazette putting it into effect also removed the narrow band restriction on FM operation in the lower two metre band; plus or minus 15 kHz deviation is now permitted on 144.1 to 146 MHz, as well as on 146 to 148 MHz. The same deviation is also now permitted 220-225 MHz and 420-450 MHz. The amendment keeps the same for 52-54 MHz. This amends Radio Regs Part II section 59(3)(b).

The Junkbox

(WELL, ALMOST)

Code Practice Oscillator

OR HOW A 555 IC WORKS

By Ed. Hartlin VE3FXZ

With this article, one integrated circuit, and a few odd parts from your junkbox, you can make a code practice oscillator suitable for individual practice with your new key (or bug or keyer) or for group instruction.

Sort out the bits required for this project. Then refer to Figure 1 and the parts list and start building. If you'd like to know a little more about why the

circuit works, read on.

I make no claim to originality for this circuit; it or something very similar has appeared many times in both Amateur and non-Amateur publications. I have added to the usual brief article a reasonably understandable description of circuit operation and some indication of the amazing willingness of the 555 to work well over a wide variety of parts values.

How It Works

The 555 timer integrated circuit (IC) contains the equivalent of 23 transistors, 16 resistors and two diodes. Even at about \$2, not a bad buy. The circuit of Fig. 1 is redrawn in Fig. 2 to show how the components inside the IC (inside the dotted lines) are arranged and where the parts you add outside connect to what's inside.

Inside the IC there are three equal resistors which form a voltage divider from V_{cc} to ground. Since the resistors are equal, one-third of V_{cc} will appear

across each. For example, if $V_{cc} = 9$ volts, the point marked VA will be at 6 volts and VB at 3 volts with respect to ground. These voltages are applied to what we will call the reference inputs of two blocks marked Comparators. A voltage comparator is a circuit which produces an output signal when its two inputs are at the same voltage. Thus comparator A will produce an output when the voltage at pin 6 of the IC is equal to VA, and comparator B when the voltage at pin 2 is equal to VB.

The outputs of the two comparators

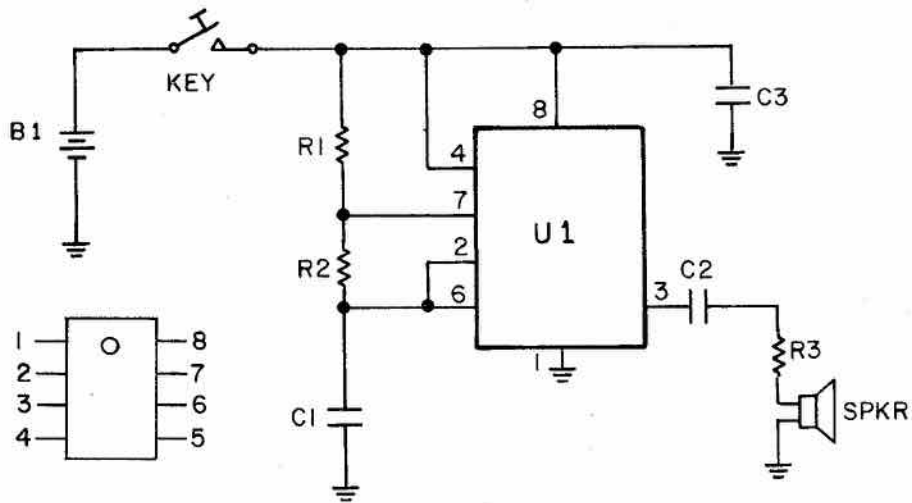


FIG. 1 THE CPO CIRCUIT

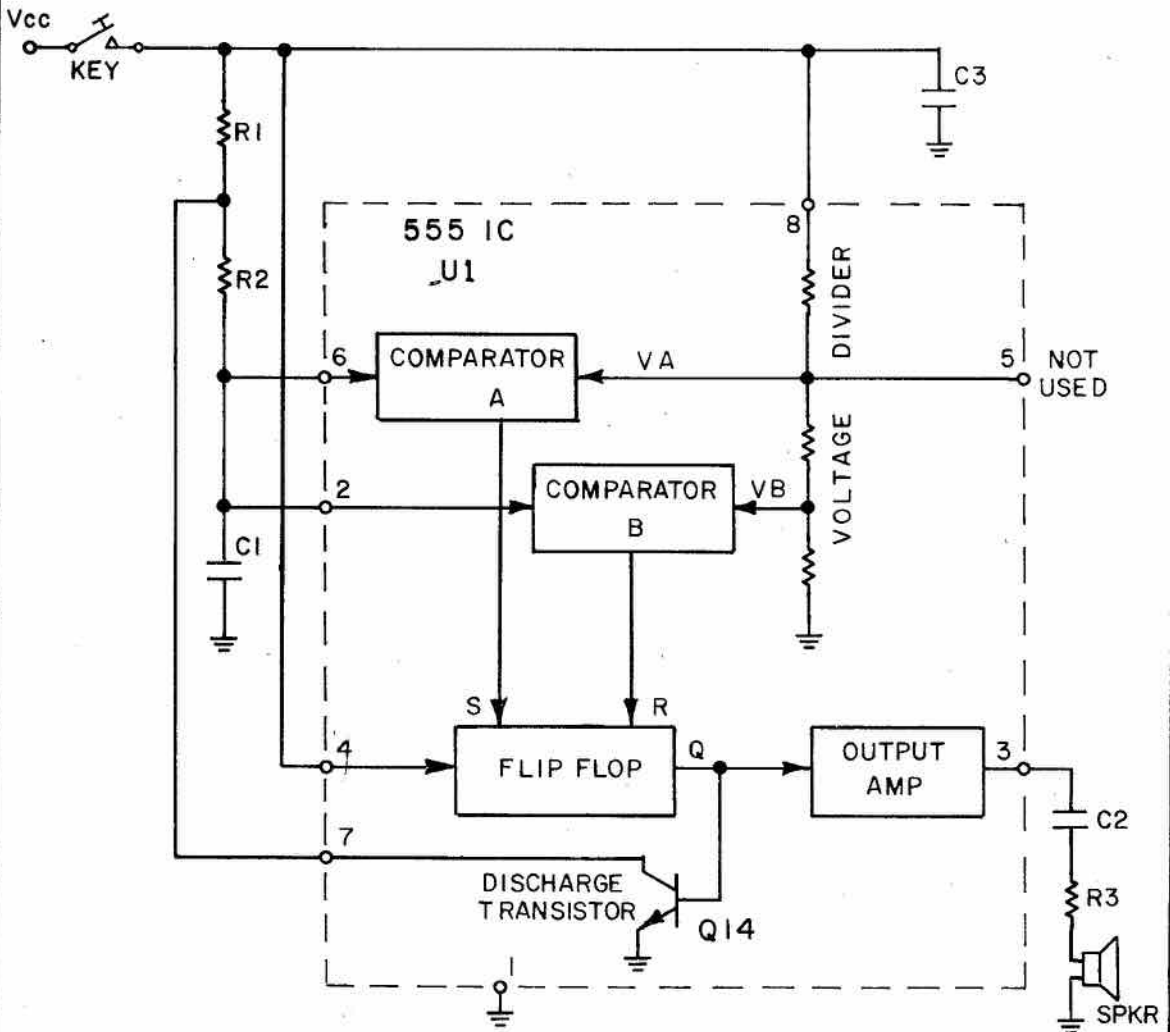


FIG. 2 CPO CIRCUIT REDRAWN

are applied to inputs marked S and R on a block marked Flipflop (FF for short). A FF is a circuit which has an output (Q) which can be switched rapidly between a LOW voltage (near ground) and a HIGH voltage (near Vcc). If a signal is applied to the S input, the Q output will go HIGH and remain HIGH until a signal is applied to R. If a signal is applied to R, Q will go LOW and stay there until a signal is applied to S. (If we apply signals to S and R at the same time we can have a problem, but that can't happen in this circuit.)

All that remains inside the IC is an output amplifier which produces enough output to drive a small speaker, and a lone transistor (Q14) which we'll come back to shortly.

Outside the IC we add two resistors, R1 and R2, and a capacitor C1 all connected in series between Vcc and ground. If we close the key, we connect the battery to the Vcc line, and the capacitor begins to charge toward Vcc. Eventually the voltage across C1 will equal VA, so both inputs of comparator A will be equal and the comparator will produce an output which goes to the S input of the FF. This causes the FF output line, Q, to go

HIGH turning on transistor Q14. Current will flow from Vcc through R1 into pin 7 of the IC then through Q14 to ground (or electrons will flow from ground through Q14, out pin 7, through R1 to Vcc, whichever you prefer). In any case most of Vcc appears across R1 and only a very small voltage across Q14. This puts the junction of R1 and R2 almost at ground, and C1 will begin to discharge through R2 and Q14 - which is why Q14 is called a discharge transistor.

C1 will continue to discharge until the voltage across it is equal to VB. Now the voltages on both inputs of comparator B are equal, and the comparator generates an output signal which goes to the R input of the FF. The Q output of the FF switches rapidly from HIGH to LOW, cutting off Q14. We're back just about where we started, C1 will start to charge again toward Vcc and as long as we hold the key down, the cycle will keep repeating. The output of the FF will be a square wave, this signal is amplified by the output amplifier and applied to the speaker. The result is a 'musical' note from the speaker rather than the 'pure' note which would result from a sine wave.

Parts

The parts list gives a 'nominal' value and a 'useful range' of values for each part of the CPO. If your junkbox is well stocked, you may be able to find exactly the nominal value for everything. You can then select just the 'right' parts and assemble a perfectly satisfactory piece of equipment. If you're lucky, you won't have all the right values and you'll have a chance to do some experimenting.

There are no components in the circuit whose values are critical, the 555 works well with a wide variety of values of all the parts. In fact, if you don't make any wiring errors, it's easier to make the circuit work than it is to keep it from working. We'll discuss the components one or two at a time.

The chief function of R1 is to limit the current through the discharge transistor. Since this current comes from the battery, we don't want to waste too much. Values of R1 can be as low as a few hundred ohms, but a few thousand

will work just as well and give longer battery life.

The pitch of the note you'll be listening to as you use the oscillator is determined primarily by C1 and R2, with R1 having lesser effect since it is in the charge circuit but not the discharge circuit. The nominal values will give about a 1000 Hz tone. The 'useful range' figures here can be a bit misleading, if you use the low end for both C1 and R2 the note will be very high and if you use large values for both it will be so low all you'll hear is a click when you open the key. We can break the useful ranges down a bit:

if C is between	try R between	pot
0.047 and 0.01	47K and 270K	500K
0.1 and 0.025	18K and 100K	250K
0.02 and 0.05	10K and 50K	100K
0.047 and 0.1	4.7K and 33K	50K

Forget the pot column for a minute.
may 1979 - 23

Any combination of C1 and R2 in the ranges given above should give an easily heard tone. If it's too high for your liking, make either C1 or R2 larger; if too low make one or the other smaller.

You can add variable pitch to your CPO by using a potentiometer for R2. A volume or tone control from an old radio or TV will work fine, just find the nearest value in the 'pot' column above and try a value of C1 from the same row of the table. Connect one end of the pot to R1 and the tap (the centre one of the three terminals) to C1. If the pitch gets lower as you turn the control 'higher', you picked the wrong end to connect to R1.

If you would like to build your CPO to operate at a specific tone, or to know what tone a specific combination of R's and C will produce:

$$fRC = 700$$

where f is frequency in Hz

R is $(1/2R1 - R2)$ in Kohms

C is C1 in microfarads

This formula is not exact, but it's almost certainly closer to exact than the value stamped on your capacitor.

Capacitor C2 is used to prevent direct current from flowing through the speaker voice coil. It can have a value from anywhere from 1 to 100 microfarads, so will probably be an electrolytic. Connect the positive end to pin 3, then connect the speaker between R3 and Vcc instead of between R3 and ground as shown in the circuit. It will work equally well either way.

Resistor R3 is a volume control. If

your neighbours complain about the noise, make R3 larger to cut down the volume. If you can't hear the CPO because the kids are making too much noise, decrease the value of R3 and drive them crazy too. Or you can use a variable resistor, another potentiometer, with a value of anywhere from 1000 to 5000 ohms, and control the volume as you choose.

The speaker should have an impedance of between 3.2 and 50 ohms, more or less, and a diameter of somewhere between two and eight inches. Almost any speaker you can salvage from an old radio, tube or transistor, or old TV or wrecked car will do fine, as long as the voice coil isn't open. If the cone is torn or warped it will add a little character to the sound.

Capacitor C3 probably isn't essential, especially if your power source is a battery. If you're using a low voltage power supply which is also being used to run other equipment, like a keyer, it should be included to provide bypass for switching transients that might otherwise get back to the power supply. In that case, keep it on the low side -- not more than 1 μ F.

The battery can be any voltage from 4.5 to 15 volts or you can use a DC supply from the shack. The higher the ampere-hour rating of the battery and the lower you keep the volume, the longer the battery will last. For occasional use, a 9-volt transistor radio battery will last quite a while, for relatively frequent use, a 6-volt lantern battery or two will be more economical in the long run.

Keying

If the key is put in the circuit between the battery and Vcc as shown in the diagram, there is no drain on the battery when the key is open and you don't need an on/off switch. If you listen carefully, though, (or even not so carefully) you will hear an odd 'tail' each time you open the key. Connect a large capacitor, about 500 microfarads or more, either in parallel with or in place of C3 and you will quickly see why. You may prefer to let the oscillator run continuously and key the output. Put a switch in the

circuit where the key is shown on the diagrams, then move the key somewhere in the line from pin 3 through the speaker. For example, unsolder the wire from the speaker to ground, connect it to the hot terminal of the key, and ground the base of the key. Your battery won't last as long, but you might prefer the new keying characteristics.

Pin 4 of the 555 is a RESET for the internal FF. If you remove Vcc from pin 4 and ground pin 4 instead, the FF will flip not, neither will it flop. So you

can also key pin 4, except that if you connect it to ground through the key you will have audio from the speaker while the key is open and it will stop when you close the key. Most people, even Ama-

teurs, find it relatively difficult to send good code this way, but it does have interesting possibilities if you'd like to use the CPO as a monitor for a TTL keyer.

Construction

The CPO is as tolerant of the type of construction used as it is of component values. It makes a perfect project for a first try at printed circuit design, all you need is an experimenter's kit such as is available from most electronic parts stores. Or it can be assembled using solder and perforated circuit board, just make sure you get a board with holes on 0.1 inch centres so the IC socket will fit. You can also use pre-punched copper-clad circuit board, again with 0.1 centres. The cheapest way, other than just soldering all the parts together in mid-air, is to get a small piece of plywood and a dozen or so copper nails. Drive the nails through the plywood at appropriate intervals, twist wires and ends of leads around the nails and solder. Soldering to the pointed ends rather than the head ends makes it much easier to change parts and wiring.

Whatever method of construction you

choose, protect the money you have invested in the 555 by getting a socket for it. The chip is very tolerant of a lot of things, but not of excessive heat. Do the soldering to the socket before you install the chip. If you have a 14 or 16 pin DIP socket, you won't need to buy the 8 pin mini-DIP socket, just make sure you plug the chip into the same pins as you have wired to. You can also by the 555 in a metal can with wire leads, the so-called 'TO-5' package. You won't need a socket, but will need an effective heat sink during soldering.

The 555 is truly a fun circuit to experiment with, but beware you don't get lured by its versatility into trying to use it as the basis for an electronic music maker. You could be lost to Amateur radio for months!

Ed. Hartlin VE3FXZ
Milton Ave.
RR 1 Kingston, Ont.

Parts List

Part	Nominal Value	Useful Range
B1	9 volts	4.5 to 15 volts
C1	0.022	0.0047 to 0.1
C2	10	1 to 100
C3	0.5	0.1 to 10
R1	3.3K	1K to 12K
R2	33K	4.7K to 500K
R3	330	100 to 5000
U1	Type 555 timer integrated circuit	

All capacitor values in microfarads (uF)

Capacitors should have a voltage rating of at least twice the voltage of B1. There is probably no real maximum, except that as voltage rating increases so does physical size. C1 and C3 can be any type, C2 will normally be an electrolytic.

All resistor values in ohms, K is 1000. Resistors should have a wattage rating of 1/4 watt, 1/2 watt or even 1 watt.

The 555 IC sells for about \$2.25 in Canada; the 8-pin DIP socket sells two for less than a dollar. You shouldn't have to buy anything else.

Wire Antennas

THE REAL G5RV

(The third article in a series by Bob Eldridge VE7BS)

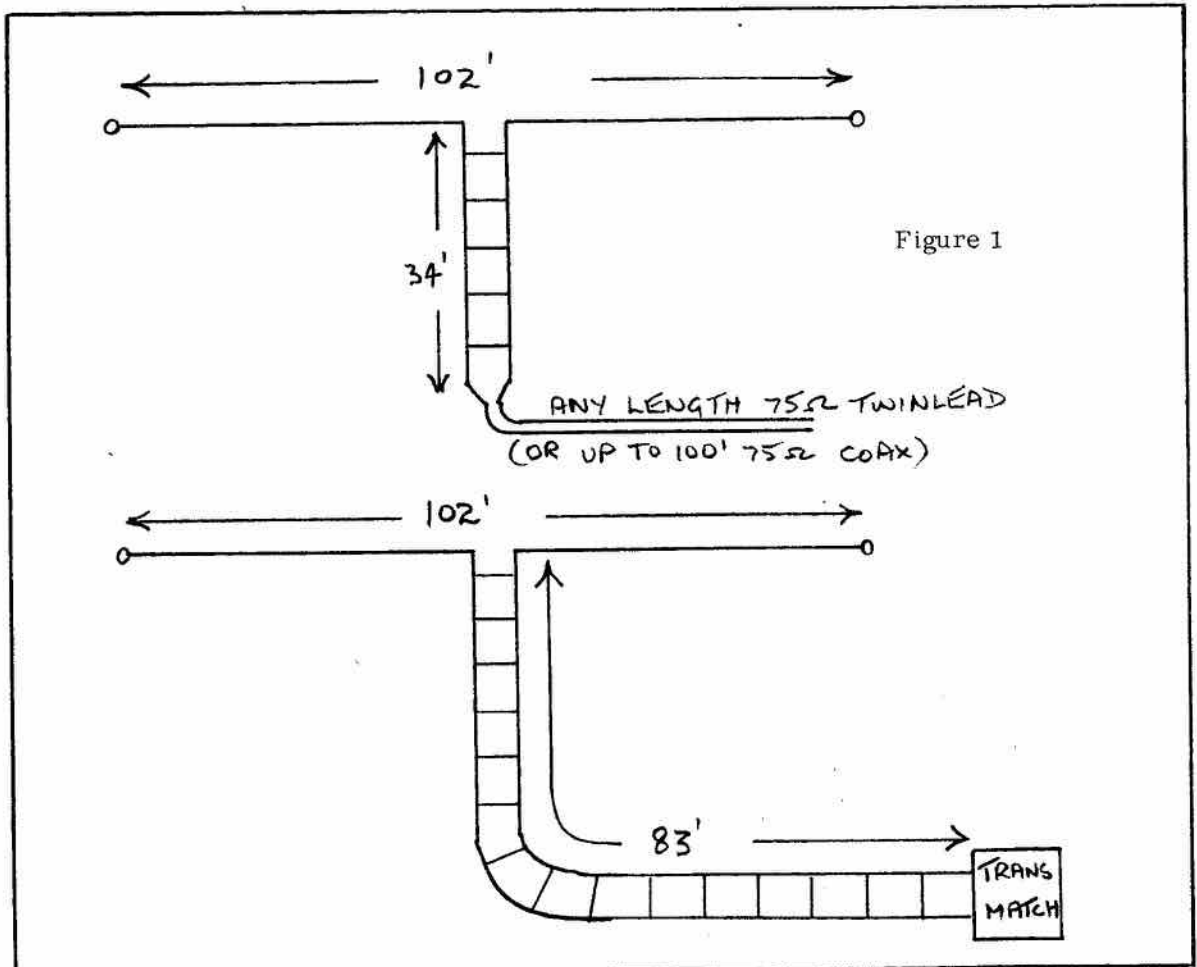
There must be thousands of Amateurs in all parts of the world saying: "Antenna here is G5RV", but when asked to describe what they have, the answers are so varied that one begins to wonder which is the real G5RV.

So, on the principle that Louis Varney (the flesh and blood G5RV) should know, I searched for and found a description published by him. It is in the RSGB Bulletin of November 1966 (one of the

previous names of the present 'Radio Communications').

One thing his article does is dispel some of the rather wild claims that have been made about the constancy of the impedance appearing at the bottom of the matching stub. As a matter of fact, quite a lot of space is devoted to a description of a suitable antenna tuning unit!

The full size version looks like this:



There are no traps or chokes, so the dipole portion becomes electrically longer as the frequency of operation increases. This has two advantages:

1. There is some gain in the main horizontal lobes (about 3 dB in the case

of 14 MHz, the best band on which this all-band antenna performs);

2. On higher bands the vertical take-off angle is progressively lower, which is just what one needs for DX.

Construction

You need three good insulators. Don't forget that this dipole is not always low impedance at the centre, so leakage across the centre insulator will cause problems.

The spacing of the ladder wires is not important: two inches to six inches is convenient, but use good insulating material for the spreaders. It is best

for the ladder to drop straight down, but not essential; part of it can run parallel to the ground if that is more convenient. If it is made of something other than open wire, don't forget it has to be shortened in accordance with the velocity factor (300 ohm TV twinlead is about .88 velocity factor, so the length should be .88 of that shown for open wire.)

VSWR

The VSWR on the 75 ohm twin lead or coax will be as high as 10:1 on some frequencies in the 3.5 MHz band, but the impedance at the transmitter end of it can be brought to a reasonable figure by pruning the length. On other bands it will run from 5:1 to 1.5:1. The best match (that is, the lowest VSWR) will be on 14 MHz for the full size version, 28 MHz for the half size (all dimensions scaled down to half). Of course, VSWR on the ladder stub will often be high, but this

is no problem at all, as it is balanced and low loss. G5RV's own preference is to run a convenient length of 75 ohm twinlead from the base of the ladder to a transmatch and then 75 ohm coax from there to the transmitter, with a low pass filter and a VSWR meter in the coax.

There are so many transmatches around now, it hardly seems necessary to show G5RV's recommended design, but if anyone is interested in that, say the word.

Operation

On 1.8 MHz, tie the wires at the bottom of the ladder together and it works as a top loaded vertical against ground.

As with any dipole, the thicker the wire the better for the top; as for the ladder. G5RV considers 16 gauge as adequate. An open wire stub is better than 300 ohm twinlead, especially on 21 and 28 MHz (I must say that I have tried to use twinlead several times for stubs and feeders, and have always regretted it --constant whipping in the wind causes

the wire to break, no matter what methods I have tried to 'spread' the points of bending, so except for very temporary antennas, I am through with 200 ohm TV twinlead). I have put up several G5RV's, and the best reliability has been from the ones where I took a single piece of wire all the way from one end and down to the bottom of the stub, avoiding joints altogether. Wire seems to get brittle when it is soldered.

An advantage of the 83-foot stub over the 34-foot is that the transmatch at the

end of it may be parallel tuned for all bands from 3.5 to 28 MHz.

The recommended maximum of a 100-foot run of coax (unbalanced) feeder is to keep down radiation from 'antenna current' flowing on the outside sheath, although of course at the higher frequencies there will also be some attenuation because of high VSWR. If a transmatch is used at the junction between ladder and coax, the coax can be as long as you need.

If space is not sufficient for the 102-foot top, each end may be dropped vertically for up to 10 feet. My own best G5RV is in the form of a shallow inverted Vee, about 100 feet at the apex and 70 feet high at each end, but that's another subject.

On 3.5 MHz, it works as a half wave dipole with part of it folded into the top half of the ladder. Unfortunately, the heavy current part of the dipole is in the ladder and therefore radiation from this section cancels out, but you can't have everything.

On 7 MHz, it works as two half-waves in phase, again with part of the half-waves folded into the dipole. The polar diagram is like that of a half-wave dipole but with a bit more gain and sharper lobes.

On 14 MHz, it is a centre-fed three-half-wave, with four major lobes and two minor ones, so good all-round directivity and a low vertical take-off angle.

The stub is now half of a wavelength long, so matches the 90 ohms or so impedance at the antenna to the 75 ohms twinlead or coax, the best match achieved on any band.

On 21 MHz, the top works like a five-half-wave but a high impedance at the base of the ladder.

On 28 MHz, it is two-and-a-half-wave long-wires in phase, so the polar diagram is like that of a single one-and-a-half wave but with sharper lobes and more gain in each lobe.

Don't forget that the angle of the lobes with respect to the direction of the top will be different on each of the bands.

* * * * *

So there it is, the famous and ubiquitous G5RV. I must say that although I have been using it in several slightly different forms for goodness only knows how many years, I didn't know until I found this article in the 1966 Bulletin that there was a version with an 83-foot stub straight to the transmatch.

That's something new to play with.

-Bob Eldridge VE7BS

Solar Powered QRP

By McRae McNaughton VE3EQQ

I have operated my Heathkit HW-8 for more than a year entirely on energy collected from the sun. I have had more than 250 QSOs without using any commercial power, which gives me a kind of self-satisfied feeling when I hear our fearless leaders telling us to save energy.

The solar panel I use is rated at 12 volts, 300 mA, and contains 32 solar cells. The panel sits in a south-east window at a 50 degree angle and is connected to a 12 volt lead-acid auto battery in the basement. There is a blocking diode in the panel that prevents the battery from discharging through the panel when the sun isn't shining. It is best not to have the rig too close to the panel as the RF output of the transmitter could destroy the blocking diode.

I also have another solar panel, rated at 14.7 volts and using 36 solar cells, which supplies power for lights in the garage. I use sealed beam headlamps with one element burnt out. You can get them at any service station or garage just for taking them away. I think this bigger panel is a better value. Both my panels were manufactured by Solarex in Md., and are available from Edmund Scientific.

In all my solar-powered contacts, I have never worked another 'SP' station, or anyone who has worked any other 'SP' station. It is easy to run a QRP rig on solar power, so I will be looking harder than ever now. Hope to hear YOU soon.

McRae McNaughton VE3EQQ
Box 307, Mitchell, Ont

A Letter to DOC

Last issue it was noted that CARF has made recommendations to DOC concerning the examinations. They are detailed here in the course of a letter from CARF vice-president Fred Towner VE2 NM to Dr. John deMercado, the Director General of the DOC Telecommunication Regulatory Service:

"The Federation feels that a number of procedural changes could be implemented that would aid both student and instructor and could also result in significantly reduced effort and expense on the part of your department.

"The syllabus as published by DOC appears to be too general in nature and is not sufficiently specific as to depth of knowledge required. The Federation would be pleased to undertake the re-writing of the syllabus in a manner that would be more indicative of the depth of knowledge required by the examinee.

"In addition, the Federation also recommends consideration be given to setting up a committee to assist in setting examinations and examination procedures. It could consist of a DOC representative, to ensure the Department's criteria are met, a Federation representative to assist in insuring the relevance of the examination to current Amateur requirements, and an academic, with qualifications such as your own, to ensure a professional setting of the examination paper.

"We also suggest a committee be established to review disputed papers. This committee could be made up entirely of Amateurs who would screen disputed papers and, if warranted, pass these papers on to the appropriate DOC personnel for official review. Later, exam papers, along with a copy of the suggested answers, could be returned to the examinee. This could be done on an 'on demand' basis with appropriate fees for cost recovery. The Federation would be willing to undertake this task.

"Further, in districts where the Department is unable to hold an exam

sitting, it is suggested that the DOC appoint a responsible local person, not necessarily an Amateur, as examiner or monitor. This would require no changes to regulations as they already permit the deputy minister to appoint examiners. This would prevent hardships being inflicted upon those residing in areas remote from examination points.

"It would appear from the failure rate that candidates are just not properly prepared for the examination. In order to help turn these figures around, the Federation is in the process of a complete re-design and re-write of the Amateur Study Guide, the Advanced Amateur Study Guide and the Regulations Handbook. In addition, we are preparing a completely new Instructor's Package, designed by professional teachers. It will contain a Course Syllabus, with information we feel is lacking in the present syllabus, a Detail Syllabus, containing information on topics to be taught during each lesson, and a complete set of lesson plans, along with tips to the instructor on how to put across any particularly difficult concepts to be taught during that lesson. Training aids will also be a part of the new Instructor's Package. It is also planned that this package will contain a mini-course on instruction techniques.

"The Federation is also well into the planning stage of developing a course built around the concept of learning by doing, whereby the student would reinforce his knowledge of theory by the practical application of that knowledge, building a power supply, small low power CW transmitter and a simple receiver. We are endeavoring to keep the cost of the course and the kit to less than \$100. We hope that by utilizing this concept of 'learning by doing' we will be able to instill in the new Amateur sufficient knowledge of building techniques to enable him to proceed to more advanced experimentation."

Way Up North

By John Gilbert VE3CXL (ex VE8OW,
VE3BOH)

On September 20th, 1978 at 0324 Co-ordinated Universal Time, Isaachsen Weather Station on Ellef Ringnes Island, 78 48N, 103 32W was officially closed, bringing to an end a chapter in the history of the Canadian North which started 31 years before.

Back in April, 1947, a ski-wheel equipped C-47, followed by a C-54 landed on the ice of Slidre Fiord to establish the first joint Canadian--U.S. weather station at Eureka, Ellesmere Island, in the Northwest Territories. Over the next four years a total of five such stations were established and became known as 'JAWS' (the Joint Arctic Weather Stations). These stations, in order of establishment, and including their permanent Amateur call signs were:

Eureka, Ellesmere Island. VE8MA, Est. 7 April, 1947.

Resolute Bay, Cormvallis. VE8MB Est. 31 August, 1947.

Isaachsen, Ellef Ringnes. VE8MD Est. 3 April, 1948.

Mould Bay, Prince Patrick. VE8MC Est. 11 April, 1948.

Alert, Ellesmere. VE8ML Est. 20 April, 1950.

Amateur Radio played a unique role in the history of these far north stations and continues to play a role to this day as the operations from VE8RCS at Alert can testify.

I was fortunate to be at Resolute Bay early in 1956 and then moved to Eureka until the spring of 1958. Until early 1957 communications and re-supply for Eureka, Isaachsen, Mould Bay and Alert had remained virtually unchanged since the stations were established. (Resolute had become a supply centre for the other stations some years before). Mail service was quite regular. Twice a year
may 1979 - 30

by plane, plus a special air-drop at Christmas time, with Eureka and sometimes Alert having the additional luxury of a visit from an icebreaker in the late Summer. Radio, commercial and Amateur provided the only link with the rest of the world. After the spring of 1957 the situation, at least at Eureka and Alert changed dramatically. This was the period of the International Geophysical Year which brought with it relatively large numbers of scientists and other visitors. By 1958 the very nature of communications had started to change. Teletype was starting to replace CW as the main form of traffic handling and aircraft flying into the North began to use voice communications instead of CW.

It is interesting now to look back on the period 1956-58 as perhaps the heyday of Amateur Radio in the far North. It was much simpler then. Final tubes, such as the 813 glowed cheerfully and offered a supplementary source of heat. Danny Weil, VR2VB etc., the original YASME was still sailing around the world (his QSL manager was Dick Spenceley, KV4 AA). It cost 4 cents to send a QSL card (3 cents in the U.S.). The well heeled 'elite' had started to use SSB and had carved out a small piece of territory as their own at the high end of 20 metres. There were suddenly dozens of new stations and prefixes to work in the form of Russian call signs. Until late 1955 Russian stations would not respond to calls from other countries. Above all, 1956 saw the beginning of a new sunspot cycle, cycle 19, and DX had never been better.

Amateur Radio in the North in this period played three major and distinct roles. Firstly, Amateurs were a major source of radio operators for the commercial stations. Secondly, Amateur radio substituted for the mail and telephone

Cover Story

Eureka, N.W.T.
1957



service and thirdly, it provided a means of recreation.

With the exception of Resolute, each of the stations had a permanent staff of eight. Four of these were upper air weather observers, one a cook, one a mechanic and two were radic operators. The two radio operators (and two of the upper air observers) were Canadians. Because of the gread demand during that period for commercial radio operators, it was becoming extremely difficult to find people to go into the North. The Department of Transport, who had to recruit new talent, was forced to find new ways of meeting the demand since the radio colleges were simply not turning out enough. Their solution was to create a new category of operator; the 'Radio Operator Learner'.

The basic requirements for entry into this category were to have a valid Amateur licence and to be able to send and receive morse at 22 words per minute. I suspect that there were two other requirements which certainly I met completely. The first was to have an abysmal knowledge of geography (I thought Eureka was in California) and the second was to have very little understanding of the value of money (the salary was \$2460 per annum --not much even in those days).

Several Amateurs were attracted to this new category, including Mitch Powell, VE8WN (now VE3OT) and myself. Mitch had preceded me into the North by a couple of years and had already built up an impressive reputation as 'Mr. Zone 2' by the time I arrived. I believe I was one of the last of the Radio

Operator Learners. Shortly after I arrived somebody came up with a creative solution to the operator problem -- to pay more money -- and this saw the end of the category and the role of Amateurs in it, although of course many Amateurs continued to go North either as commercial radio operators or in other jobs.

The major role of Amateur Radio at the 'JAWS' stations was personal traffic and phone patches. These activities were the main reason for the Collins 51J3 receiver and 32V3 transmitter which were standard equipment at each station -- top-of-the-line equipment at the time. It would be impossible to do justice to the dozens of Amateurs who gave so much of their time to traffic handling and phone patches. For many years they provided the only private link with the 'outside' world and virtually every human drama, from romance to bereavement was acted out over these vital communications links. In a very real way they were the mail service, the telephone service and the news service.

For Eureka at the time, four Amateurs bore the brunt of the traffic load. Bret Fader VE1FQ handled the traffic in Eastern Canada (as well as sharing the QSL manager chores with VE8AW in Whitehorse). Charlie Harris, VE6HM handled the Western traffic and Fred Bisset VE3AIU, in Goderich handled the Ontario and Central Canada traffic. All of these Amateurs worked phone and over the years their voices became as familiar to the North as family members.

A fourth Amateur, Stan Surber, W9 NZZ worked only CW and used to mail

messages throughout Canada, the U.S. and sometimes overseas. He spent, for many years in excess of four hours every day handling Northern traffic and in recognition of his efforts he was actually able to visit the Far North. In 1957 the U.S. AirForce treated him to a tour of the North, including a rare visit to the North Pole itself. These four and many others who have faded into the log books of time, provided the single most important morale booster for those serving in the North at the time.

The hobby or recreational role of Amateur Radio did not appeal to everybody on the stations, although I was always intrigued with the sudden interest in the hobby when we were in QSO with the nurses at the Padloping Island nursing station. For those of us that were Amateur ops, however, the period 1956-58 was a remarkable time to be in the North. Propagation conditions were excellent and my log entries at the time make interesting reading. Here is an example: "February 17, 1957. VS6DN, UN8KAA, 4S7WP, ZS6MG and VQ2JN"; all worked within a four-hour period and all QSL'd!

Since space was no problem (our nearest neighbour was 200 miles away) long wire antennas were the order of the day. After experimenting with a variety of wire beams, we decided at Eureka to erect Vee beams. Some far-sighted soul had ordered several thousand feet of copperweld wire some years before and most of this was soon 40 feet in the air. As is traditional the world over, we chose the coldest day of the year to complete the antenna work. The Vee array was made up of four legs, with 580 feet on each leg. The last leg was just being raised, in minus 57 degree Fahrenheit temperatures, when the rope raising at the far end broke. To this day I still have recurrent nightmares of 580 feet of copperweld coming toward me over the ice!

Some hours later, having raised the temperature around us with some rather choice vocabulary, we had it untangled and completed the job. The effort proved to be well worthwhile, leading as it did to several high contest scores over the following months and enabling me to work some very choice DX, including several countries which are on most people's 'most wanted' DX lists today.

may 1979 - 32

Of particular interest at Eureka was the chance to work some interesting DX on 80 and 40 metres. Since the station experienced three months of total darkness, it was possible to work the low bands almost all day, by simply working into those parts of the world which were also in darkness.

Radio operations in the Arctic are, of course, frequently marred by 'black-outs' --when the HF bands are virtually unusable for several days at a time. From Eureka, despite the blackouts, we were usually able to maintain contact with our two closest neighbours. The first, Jan UPOL-6 was a member of a team of Russian scientists on an ice island in the Arctic Ocean. We shared an interesting experience in the fall of 1956.

On October 29, 1956, the short-wave news services carried the news of the Suez crisis along with predictions of the possibility of a major war. During the news bulletin, the signals faded and we were plunged into a three-day 'blackout'. Our only contact for the three days was UPOL-6 and our contact with him was exclusively by 'Q' signals. We never did come up with a Q signal for "Is anyone still out there", but were quite relieved when the blackout finally lifted to find that we were not alone.

Our second neighbour arrived on the scene early in 1957. Nick K2MRF operated from KG1DT on T-3, or Fletcher's Island at 83 degrees 44 minutes North, 97 degrees West. One of the many curious aspects of T-3 was that it drifted around the Arctic Ocean at an average speed of 1.2 miles per day. I often wondered whether Nick was really fixed or mobile!

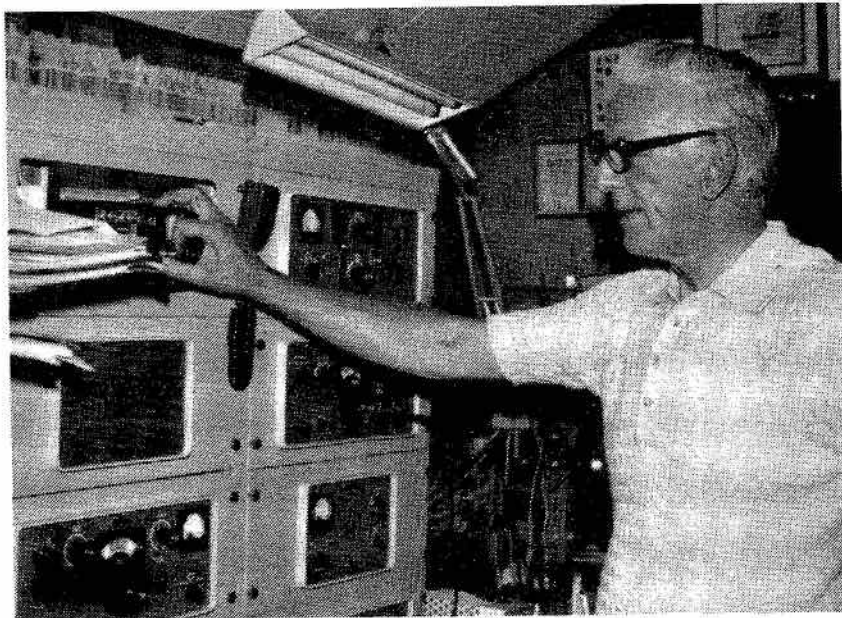
1958 now seems a long way off, and in recent years with the advent of regular air service, satellite telephone and television, the role of Amateur Radio has changed significantly. With the closing of stations like Isachsen, and the emergence of the Canadian Forces Affiliate Radio System (CFARS) as a better way to handle traffic for isolated posts, a chapter has closed in the role of Amateur Radio in the North.

(John is interested in hearing from Amateurs and non-Amateurs who have any knowledge of the history of the Joint Arctic Weather Stations. Write to him c/o CARF, Box 356, Kingston, Ont. K7L 4W2...Ed.)

Canadian QSL Bureaus

QUEBEC

A.G. Daemen VE2IJ,
2960 Douglas Ave.,
Montreal, Quebec.



By Garry Hammond VE3GCO

In this series of pictorial articles, we pay tribute to the volunteer workers who run the provincial QSL Bureaus. This is your opportunity to see the people who spend the countless hours opening mail, sorting and filing, and posting your QSLs to you.

Since 1972, VE2IJ has been handling about 50,000 cards per year for Quebec Amateurs. Al takes pride in sorting the cards the same day they are received. For particularly large numbers, he has one standby helper. Those with the minimum postage rate on their envelope will receive their cards faster than those

with higher amounts because Al waits until sufficient cards accumulate to justify the affixed postage.

Unclaimed cards are held for two years during which time efforts are made to locate the addressee. If this is not possible, they are destroyed in order to maintain an 'active' filing system.

Al strongly urges clubs and instructors to familiarize all new licensees with the existence and routines of the QSL Bureau in their call area.

Next month: Bill Stunden VE4BJ in Manitoba.

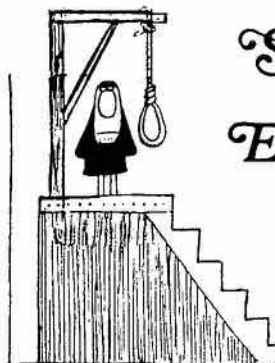
DOC News

Although the official final draft for Canada's WARC '79 frequency proposals noted that 3800-3900 kHz would be deleted from the Amateur Service and re-allocated to others, a recent DOC news release, dated March 5, contained a seeming contradiction in the course of outlining some of the WARC proposals. If it means what it says, then the outlook for the squeeze on 80 metres may not be so bad. This release reads in part:

"Currently, the frequency band 3.5-4.0 MHz is allocated to the Amateur Service. It is proposed to reallocate 10 per cent of this band (3.95-4.0 MHz) to

the Shortwave Broadcasting Service to obtain improved radio coverage of northern Quebec, southern Baffin Island and the James Bay areas. It is considered that this change will not unduly hamper the Amateur operations, and that the small loss is more than compensated for by the additional bands proposed for Amateurs at higher frequencies."

Whoever wrote that "will not unduly hamper" bit obviously had no idea of what either the official 200 kHz or this 50 kHz loss would do to jam up 80 metres.



Social Events

June 9 - Now an annual event, the Guelph ARC will hold its Central Ontario Flea Market in the Centennial Arena. Admission 75¢. Exhibitors \$2.00 additional. 8 am to 4 pm. Amateur radio and computer displays; prize draws.

July 7 - Ontario Hamfest at Milton Fairgrounds, Milton, Ont. Information from Box 836, Burlington, Ont. L7R 3Y7. Camping area available.

July 14-15 - Peace Garden Hamfest. International event for prairie Amateurs. (No other info received.)

July 20-22 - Naval Communication Reunion 1979. Primarily for naval communications types, past and present, but the proportion of Amateurs will be high. Follows the howling success of the 1976 event. Highlight will be Lord Louis Mountbatten of Burma as scheduled guest speaker. Info and application forms from Naval Communication Reunion, Box 2755, Dartmouth East, N.S. B2W 4R4.

July 27-29 - Moose Jaw ARC sponsors the 'Particifest 1979'. Info from Particifest, Box 150, Bushell Park, Sask. S0H 0N0. Prizes, banquet and dance. Workshops, etc. Saturday and Sunday.

July 28-29 - The Okanagan International Hamfest is back in Canada, this year at Gallagher Lake KOA campsite near Okanagan Falls.

August 17-19 - Quebec's provincial organization, Radio Amateur Quebec Inc. (RAQI), annual convention at 'Le Chatteau Montebello', Montebello, P.Q. Flea market, exhibits, ladies' program, technical workshops. Trailer park and camping area. For info call Charles Savard VE2FKC at 819-770-1315 or write Apt. 901, 680 Blvd. St. Joseph, Hull, P.Q. J8Y 4A9. All Amateurs, coast to coast, are invited.

Août 17-19 - Le congrès annuel de RAQI aura lieu du 17 au 19 août au Château Montebello, Montebello, Québec. Les activités comprennent un marché aux puces, conférences techniques et des exhibits de toutes sortes. Programme spécial pour les dames, danse et banquet. Pour de plus amples renseignements, communiquez avec Charles Savard, 819-770-1315. Tous les amateurs du Québec et de l'extérieur sont cordialement invités.

October 12-14 - Radio Society of Ontario convention, Skyline Hotel in Ottawa. Hosted by the Ottawa ARC. Info from Ottawa ARC Convention Committee, Box 8873, Ottawa, Ont. K1G 3J2. The club is sponsoring an award to publicize the event. The National Capital Award starts May 1 onward for contacts with VE3NCR. Highest number of contacts from May 1 to July 31, 1979 is eligible for prizes at RSO Convention. Details for SASE to the Committee.

Solid state Beam Aimer

To equip its club station VE1CGC, the Canadian Coast Guard College ARC in Sydney has a computer program which produces distances and Great Circle (radio) bearings to selected locations and is selling the following options:

1. A Global Grid - every 15 degrees of latitude and every 30 degrees of longitude - centred on your QTH\$1.
2. A list of Canadian, U.S. and world cities\$1.
3. A list of DX locations according to the ARRL countries list (376 locations)\$1.50
4. A combination of 2 & 3\$2.50
5. A distance and bearing to the location of your choice. Give lat. and long. of the desired location. Free with any of the above options or\$0.50
6. Options 1 & 4\$3.

Send a large (5x7") SASE with your name, call and QTH (lat. and long. if possible) to: Canadian Coast Guard College ARC, c/o P. Irons, P.O. Box 4500, Sydney, Nova Scotia B1P 6L1. Allow 10 days to two weeks for delivery.

A Memorable QSO

Canadian WARC '79 Committee members recently had a practical demonstration of Amateur Radio capabilities while half-way around the globe.

Ed Ducharme, head of the Canadian delegation to WARC '79, with Bob Jones VE3CTM and Arvin Bastikar of DOC were treated to Amateur radio deluxe style on March 30 while attending the International Telecommunications Union Region 3 Special Preparatory Meeting (SPM) for WARC '79 in Sydney Australia.

Through the cooperation of Harry Caldecott VK2DA (whose attendance at the conference as an observer had been arranged by Bud Punchard VE3UD through the courtesy of Ed Ducharme) a perfect 45 minute QSO was accomplished on 14170 kHz.

A sked had been arranged between VK2DA and VE3UD at 6:30 AM EST, Saturday, March 30. Band conditions were tops and signals 5x9 plus on both paths with no QRM. John Gilbert VE3CXL, Pierce Healy VK2APQ (also an observer at the conference) and Ron Belleville VE3AUM were on frequency and enjoyed the QSO.

Representatives from 38 countries were at the Conference. Ed reported the two-week program was well under way and making good progress. He said, "the interests of the Amateurs seem to

be pretty well received and, in fact, at all three of the ITU SPM seminars (Sydney, Panama and Nairobi) no worse than we thought. I've noticed ... some fears we had are unfounded and won't be any problem. I think we should be able to do pretty well for this service (Amateur) in September (at WARC '79 in Geneva)." He went on to mention the capabilities of Dave Wardlaw VK3ADW, President of the Wireless Institute of Australia, and Michael Owen VK3KI, who are officially attending the conference representing the radio Amateurs of Australia. These are two first-class men who are giving the Amateur radio community every reason to be proud.

The purpose of this SPM is to prepare the participating countries for WARC '79 by discussing spectrum allocations, procedures, problem areas and general policies. No decisions or agreements concerning detailed spectrum allocations are made at these preparatory meetings.

The Canadians were generally impressed with the quality of transmission which Amateurs can achieve between Australia and Canada. Both said it compared favourably with some of the long distance telephone calls he had from overseas made via satellite.

This kind of QSO makes Amateur Radio more than just worthwhile, and one which will not soon be forgotten.

The PLers go DXing

Ethel Pick VE2HI and her 3787 kHz 'PL' (Professional Loafers) net were somewhat rocked on April 1 when Harry VK2DA in Sydney Australia called in to say hello!

He was on 14170 kHz and was relayed acoustically via Bud Punchard VE3UD's two-station set-up. Bud had never tried simultaneous operation of a 1 KW station on 20 metres and a 100 watt station on 75 metres, with a quad and an inverted 'V' antenna.

Speaking into the two mics held together, Bud talked to Harry on 20 metres and the 'PL' net on 75 metres at the same time. When Harry replied, the 75

metre mic was held near the 20 metre speaker, so he was heard on the PL net here in Canada. When they replied, the 20 metre mic picked up their voices from Bud's 75 metre speaker.

Signals were excellent with no interaction in either receiver. This is a very good illustration of the selectivity and filtering in modern transceivers when operated on different bands.

Harry later said that he had been relaying some of these particular transmissions via two metres to an Australian friend, Jim VK1CDR, located in a Sydney hotel room.

That's 'hamming'!

WARC '79

Update

Proposals which affect the HF, VHF and UHF bands up to 450 MHz that appeared in the Canadian government final draft of its proposals for the September 1979 World Administrative Radio Conference, were published in last month's TCA. In the haste to beat the inflated postal rates, the writing of that story missed noting that the final draft shows 3800 to 4000 kHz being chopped from the Amateur Service. Proposed changes for ITU Region 2 in the higher VHF and UHF bands are listed here for the benefit of Amateurs who are looking to the future development of these areas for experimentation and communication.

As noted previously, DOC in a domestic re-allocation of frequencies within Canada, will be allocating 902-928 MHz to the Amateur Experimental Service. This move, which is separate from the government's WARC involvement, will probably take place this summer.

In the bands 435-438, 1290-1300, 2300 - 2310, 3390 - 3400, 5650 - 5670, 10475-10500 MHz and 240-250 GHz, the proposal is that the Amateur Satellite Service may be authorized, if there is no harmful interference to other services.

Radio-Navigation-Satellite services have been added as a primary service to the 1215-1240 MHz band to be shared with Radiolocation. Amateurs already have this on a secondary basis, up to 1300 MHz. Maritime Radiolocation has been added as a primary service to 2300-2350 MHz. In the 3325-3360 MHz segment, Radio Astronomy is added as a primary service. In the band 5650-5670 MHz, which now has Radiolocation as a primary service and Amateur in the secondary role, it is proposed to permit Amateur satellite operation throughout this band.

The Fixed Satellite Service (commercial) uplinks are added as a primary service to the 5825-5925 MHz portion

of the 5725-5925 MHz Amateur allocation.

In a significant tribute to the trail-blazing done by Amateurs in the past as useful frequencies crept higher and higher over the decades, the government proposal to allocate 162-165 GHz to the Amateur and Amateur Satellite Services, exclusively, world-wide, opens a new vista to Amateur experimenters.

Concerning the Amateur Service as a whole, the paper had this to say:

"The Amateur community requested that all Amateur bands include Amateur satellite. Concern, however, has been expressed that sufficient support could only be given to those Amateur bands which were allocated to Amateurs on a worldwide basis. Amateur Satellite Service will be proposed only where the allocation has been accepted on a worldwide basis.

"The 3500-3900 kHz band has been proposed as exclusively Amateur to avoid the sharing with other services. * A new band, 10.1-10.3 MHz is proposed as exclusively Amateur which provides excellent relief to varying propagation conditions. Submissions from Amateur fraternities have been useful and generally appropriate to Canada's WARC 1979 preparations. A careful review has been made but the request for low frequency Amateur bands could not be accepted due to current congestion of safety-of-life radiobeacons now using this range of frequencies. The high powers employed by fixed services would not permit the useful sharing of low frequency bands. The majority of the Amateur proposals as contained in the Second Draft and Supplement are the same as in the Final proposals. The points made by the Amateur community in their submissions will be taken into account in developing positions for the WARC 1979."

* The paper here omits mention of the proposal to delete the Amateur Service from 3900 to 4000 kHz.

Beacons

(From the Winter 1977 issue of the Journal of the Royal Signals Institution).

One aspect of the Silver Jubilee celebrations in which many thousands joined was the lighting of beacons across the country. Signallers will have been delighted by the speed and effectiveness with which a message, albeit prepunched, was communicated across the land: delighted, but perhaps not surprised because many is the hard-pressed planner who has studied a map in search of a relay site and joyfully found it, already marked 'Beacon Hill' as if with a mediaeval IEE* seal of approval.

Many readers will consider the concept of a mediaeval IEE a charming little whimsey but little more. It is to them and all others that I am delighted to reveal the results of certain studies. These suggest most strongly that much of our everyday professional jargon is not the product of the 20th Century, although Marconi et al gave it new life, but springs from much further back in our history ...

In the beginning there were beacons, simple, omni-directional, line of sight. When an operator sighted a burning beacon, he lit his own. B, on seeing A's fire, lit his, to relay the message to C, but of course A would also see B's fire. This feature of the system was known as Double Side Band working as the information was passed in both directions. Readers with a feeling for Old High German (doppel zeyt brand) will not be the only ones surprised at the close correlation with modern practice, but there is worse to come.

The system became very efficient and so it was only natural that the manpower cuts imposed by the Defence Review of AD 475 should lead to the abolition of horse-borne couriers. Thus the beacon system became Double Side Band (DSB) Suppressed Carrier.

Everyone realized the enormous re-

dundancy in DSB, the more so as training was so good that during the Sixth Century it was generally accepted that A did not need to watch for B's fire. It could be safely assumed that the message was through. This was the 'fire and forget' principle.

Sadly, the Dark Ages were dark for the beacon-men too and it was not until about 800 that Mercurius Bede got to grips with the redundancy problem, and devised the Single Suppressed Sideband System. This allowed answers to be relayed back along the line. On seeing A's fire, B would light his own as before, but would shield it from A with a large shield, later called the Sideband Filter. Thus, if A lit his fire to signify that enemy were approaching, B would relay the message to C, shielding the fire from A's view. When C had raised the alarm, he would light his fire. B would see the fire and know that help was on the way. This was called Independent Sideband working. B had the option of now shielding his fire from C (Sideband inversion) and could then remove it to relay a further message from A to C (Manual rebroadcast).

Beacons were of course primarily relay stations. Less well recorded are the activities of observers at various points, not necessarily on hill tops, who noted whether beacons were alight or not and took appropriate action such as rousing a village. Thus the beacon system served many subscribers at once. These observers were known as passive satellites. It was found that at any one point it was desirable to have more than one observer at a time. Several observers at one post could be spread across an area (Space Diversity). Often some would stand and some lie down (Polarization Diversity). The roster, even in those days, was based on eight hours on and eight hours off, and this was called the Shift Frequency.

The beacon system was very efficient over friendly ground, but suffered from

Continued on Page 40

* institute of electrical engineering
From the Canadian Armed Forces 'Intercom'.

The Exam

Then & Now

With the second round of the new Amateur exam format and procedures being at this time either an exhilarating experience or a sad memory, for those already in the Amateur world and for those who will have a crack at the next series, here is an interesting article culled from the South Waterloo ARC bulletin in which Fraser Cooper VE3IZB compares the past and present.

I wonder if I've set a new record for procrastination? At the tender age of 17, I became determined to get an Amateur Licence. With much coaching and endless code practice, most of it from Em, VE3AES, I set off for the D.O.T. office in Kitchener for a bash at the test on the 4th of June, 1957.

The Radio Inspector, Jack Gervais, invited me to sit at a table in one room while he sent morse at about 10 wpm from the other. When I'd copied that, I sent some very shaky code back to him. He must have had a great imagination and copied my 'fist'; at which time he announced that I'd passed the code test.

The theory examination was to draw complete schematics of a Superhet receiver, a two stage CW transmitter, a DC power supply, a wave-meter and series and parallel wave traps. I drew these from memory, having already drawn them hundreds of times for practice. He then asked oral questions on the schematics, such as "what is this capacitor's function and what frequency would be found at this point in the circuit?"

Jack Gervais did his best to put this nervous kid at ease, and eventually satisfied himself that I might not be a menace on the air after all. Within a few days I was on 80 and 40 metres CW as
may 1979 - 38

VE3EOM. That was the somewhat informal test procedure used 21 years ago.

A few weeks ago, I finally got around to trying the Advanced Amateur Exam. I won't bore you with my excuses for why it took me so long. The procedure is vastly different today!

About 15 people were collected in a room at the Waterloo Motor Inn. Three were to write the digital exam (is a digital Amateur one who sends code with his fingers?): about 5 including me were to write the Advanced, and the rest were going for the Amateur.

Two Radio Inspectors were present, Everett Young and Watson Reid. They checked identification, made sure that we sat at specific places and then proceeded with the code test. This was two groups of three minutes at 15 and 10 wpm played from a tape recorder. We were to copy whichever was appropriate to our test.

The theory and regulations tests were delivered in sealed envelopes. All three exams Amateur, Advanced and Digital were in one book. The Advanced consisted of 48 multiple choice questions on regulations and general operating, some easy, and some tricky. This was followed by 13 essay type questions. Again, some easy, and some requiring some thought, of which any 10 were to be answered. When finished (we had two hours to do all this if necessary) we sealed the exam book in a second envelope and handed the lot in. I went across the street to celebrate with a cheeseburger and coffee at Harvey's. And so folks, after 21 years and five months I can now do "Phone monologues".

What ever happened to AM?????

JUST A PART OF OUR HUGE STOCKS FOR IMMEDIATE DELIVERY



**CANADA'S ONLY REAL
AMATEUR RADIO STORE**

ALL NEW YAESU FT101Z

FEATURING: — VARIABLE IF BANDWIDTH — 180 WATTS
FULL COVERAGE — SUPERNOISE BLANKER
RF SPEECH PROCESSOR ETC AND FULL
LINE OF MATCHING ACCESSORIES.

SPECIAL INTRODUCTION PRICE

FT101Z ANALOG READOUT	\$1099.00	LIST \$1259.00
FT101ZD DIGITAL READOUT	\$1299.00	LIST \$1449.00



OTHER SPECIALS

SWAN 350B — 300 WATT TRANSCEIVER	\$929.00
DENTRON DTR 2000L — 2K LINEAR	\$1587.00
DRAKE TR7/DR7 TRANSCEIVER	\$1919.00
ATLAS RX110 — TX110H — PS110 LOW-LOW PRICES	
FT 901 DM TRANSCEIVER	\$1879.00

ENQUIRE ABOUT OTHER SPECIALS

ABOVE PRICES SUBJECT TO CHANGE WITHOUT NOTICE. 180 DAYS WARRANTY

WE SERVICE WHAT WE SELL

Dentron
Radio Co. Inc.

4 YAESU

Henry Radio

SWAN

DRAKE

ICOM

Hygain

**ATLAS
RADIO**

BW

ALL OTHER MAJOR
HAM LINES — RIGS —
AND ACCESSORIES AVAILABLE
TOWERS AND ROTORS ETC.

VE AMATEUR RADIO SALES
3768 BATHURST STREET
DOWNSVIEW, ONTARIO

OFFICE (416) 636-3636
NIGHT (416) 486-0101
JACK VE3GMT

JACK VE 3 GMT HAS BEEN AT THIS LOCATION FOR OVER 18 YEARS.

Beacons from Pg. 37

being omni-directional. The fluid fronts of the Scottish clan feuds and later those of the Wars of the Roses created a requirement for greater security. It was found that this could be achieved by lighting fires on forested hilltops and cutting down trees along the desired sightlines, so that only friendly forces saw the beacons. This was narrow-band signalling in its earliest form. It was highly inflexible, due to the time needed to grow trees, but a modification using movable trees was first used against Macbeth. One W. Shakespeare was the first officer to receive TE Pay, awarded for his account of the technique.

Swap * Shop

Single insertion is \$1.00 (minimum charge) for 10 words and \$1.00 for each additional 10 words. To renew, send copy and payment again. Deadline is first of month preceding publication.

Put your membership number and call (not counted), if any, at the end of your ad. Print or type your ad and include your address with postal code. If using a phone number, include the area code. CARF and The Canadian Amateur accept no responsibility or liability for content or matters arising from ads.

Send to CARF, Inc., Box 356, Kingston, Ont. K7L 4W2.

FOR SALE: Drake 1525EM Touchtone microphone like new with manual. \$50 postpaid. VE3CGU, Box 231, Goderich, Ont. N7A 3Z2.

WANTED: Burnt out 3-500Z discard tube for collection. Will pay shipping plus \$2.50. VE3CGU, Box 231, Goderich, Ont. N7A 3Z2.

FOR SALE: Ham-Key HK-1 dual lever keyer paddle. Good condition \$26 postpaid. VE3CGU, Box 231, Goderich, Ont. N7A 3Z2.

FOR SALE: Panasonic RF 2800 Digital all band SSB FM Portable, new condition. Best Offer. FRG-7 Communication receiver, never used. Best Offer. Gabe Gely, 329 Vanier Ave., Lucerne-Aylmer East, Quebec J9J 1E8. Ph: 819 684-2689.

FOR SALE: Yaesu Monitor Scope, model YO-100. 2 months old, factory converted for 8 mcs 1F, but comes with conversion parts for use with Yaesu equipment, all cables. Marty Hornstein VE2MH ex VE2ADQ, 2160 Cote Vertu Road, Montreal. Ph: 514 336-9640.

MICROWAVE MODULES

TRANSVERTERS

MMT432/144	\$350
MMT 432/28s or MMT432/50s	\$295
MMT144/28 or MMT144/50	\$220

CONVERTERS

MMC1296/28 or MMC1296/144	\$85
MMC432/28s or MMC432/144s	\$69
MMC144/28 or MMC144/50	\$59
MMC50/28	\$59
MMC220/28	\$59

LINEAR AMPLIFIER

MML432/100	\$495
MML144/100	\$325

VARACTOR

MMV1296	\$95
---------	------

FREQUENCY COUNTER

MMDO50/500	\$150
------------	-------

All prices include Shipping
Ontario residents add 7% tax



Box 6286, Station 'A'
Toronto, Ontario
M5W 1P3

(416)-423-9446 after 1700 EST

SURPLUS

Government

Electronic Equipment

Receivers, Transmitters, Tubes, Test Equipment, Xmfrs, Meters, APX-25, APX-46, Collins 17L7A, SP600JX21, H.P., TEK, L & N, GR, Varian, Racal, Gertsch, BC221, Fluke, Stark, Weston, and much, much MORE!

Send for latest free flyer

William J. Ford

VE3KHB

RR 6 Smiths Falls,
Ontario K7A 4S7

Advertiser's Directory

For the convenience of our readers, we list those advertisers who appear in this issue of TCA. Remember, when responding to advertisements, say you saw it in TCA - The Canadian Amateur.

Heath Company.....	Back Cover
C.M. Peterson Co. Ltd....	Inside Front
Bytown Marine Ltd.....	Inside Back
A.C. Simmonds & Sons Ltd.....	1
Glenwood Trading Co. Ltd.	2, 44
Comm/Plus	3
D.C.B. Electronics	4
WSI Sales Company	5
Wackid Radio	6
Canadian Communications Co.	7
H.C. MacFarlane Electronics	8, 9
Dollard Electronics Ltd.	10
VE Amateur Radio Sales	39
H. Peters	40
William J. Ford	40
Franfost Consultants Ltd.	41
Microwave Filter Company.....	41
Canlon Electronics	42
Canadian QSL's	42
Compumart	42
Gem Quad Products Ltd.....	43
AED Electronics	43
Lenbrook Industries Ltd.....	43
Hamtraders	44
Metro Ham Shack	45

Advertisers' Corner

Support your Advertisers ... They help make TCA possible. And remember, when contacting advertisers, to say you saw it in TCA!

Microcomputer

Microcomputer designed for hobbyists who wish to learn how the microcomputer works, program testing and debugging. Write or telephone for Brochure.

The unit can be expanded for more complexes as you expand your knowledge.

Franfost Consultants

501-1435 Prince of Wales Dr.
Ottawa, Ontario
K2C 1N5
(613) 225-9070

THE **BIG** SIGNAL UNADILLA "W2AU" Baluns

DEMANDED BY
PROFESSIONALS
WORLD-WIDE
OVER 12 YEARS

- The Original Lightning Arrest
- 650⁺ Strength
- Stainless Hardware
- Sealed
- GUARANTEED

ASSISTANCE?
Call: HUGH GUNNISON, WA2ZOT
Toll-Free 800-448-1666
[NYS Collect 315-437-3953]



Still
Only
\$14.95

1:1 OR 4:1
2,000 W
PEP

FULL-POWER, QUALITY HAM ANTENNA PARTS

AT YOUR DEALER

- BALUNS · TRAPS · INSULATORS
- QUAD PARTS · ANTENNA KITS
- BOOM/MAST MOUNTS · WIRE
- CABLE · CONNECTORS

WRITE FOR FULL CATALOG
[Enclose 30c Stamps]

MICROWAVE FILTER COMPANY, INC. UNADILLA/REYCO DIVISION [Dept. **C**]
6743 KINNE STREET, EAST SYRACUSE, NEW YORK 13247

DEALERS WANTED - OVER 300 WORLD-WIDE

CANLON

MODEL

144/28RC
432/28RC
432/144RC
434/28RC
434/144RC
432 + 434/28
432 + 434/144
144PA10/40
144PA10/40P
144PRE AMP
144PA2/45
144PA2/45P
144/432VT
BUCCANEER
COBRA
28/144 2SS

FUNCTION

2m to 10m receive converter
70cm to 10m receive converter
70cm to 2m receive converter
70cm to 10m receive converter
70cm to 2m receive converter
Dual band 70cm to 10m receive converter
Dual band 70cm to 2m receive converter
10W input, 40W output linear amplifier
As above, but with internal receive pre-amplifier
2m receive pre-amplifier module
2W input, 45W output fm amplifier
As above, but with internal receive pre-amplifier
2m to 70cm varactor tripler
10m to 2m 15W linear transverter
2m to 70cm fm transverter
10m to 2m 2W linear transverter

- AVAILABLE -

DETAILED INFORMATION ON ANY OF THE ABOVE ITEMS



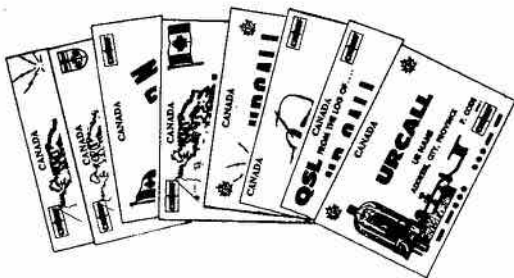
CANLON

ELECTRONICS (LONDON)

P.O. BOX 65
KOMOKA, ONT. NCL 1R0
(519)-471-8731

"QSL'S SINCE 1965"

CANADIAN QSL'S



QSL CARDS WITH A DISTINCTIVE CANADIAN MOTIF,
PRINTED IN 1, 2 OR 3 COLOURS ON 7 DIFFERENT STOCKS.
CARF, ARRI, RSO, RSGB, ETC. LOGOS AT NO EXTRA COST.
BE SURE TO SEE THE NEW ONE-SIDED QSL'S AND THE NEW
WILDLIFE SERIES FEATURING SOME OF CANADA'S MAGNIFI-
CENT BIRDS AND ANIMALS. CUSTOM QSL SERVICE ALSO
AVAILABLE. SEND 25¢ FOR SAMPLE PACK TO:

CANADIAN QSL'S, BRUCE MCCOY - VE3GDZ
1128 BRYDGES ST., LONDON, ONTARIO, N5W 2B7

GODBOUT



Quality Computer Products

Now available in Canada from

COMPUMART

The Personal Computer Store

MEMORIES for the S-100 Bus

Econoram II™ (8K) Unkit \$215 Assembled \$249

Econoram IV™ (16K) Unkit \$439 Assembled \$479

Econoram VII™ (24K) Unkit \$679 Assembled \$729

NEW! Econoram X™ (32K) Unkit \$939 Assembled \$989

FEATURES: Fully static memory. Dip switch address selection (no wire jumpers). 450 ns access time. High quality, double sided, plated through, solder masked and legended circuit board. Sockets for all IC's.

UNKITS: Sockets, bypass caps pre-soldered in place for easy assembly.

4 MHz operation guaranteed for Econoram X.

MEMORIES for other Buses

HEATH H-8: 12K Econoram VII™ Unkit \$325 Assembled \$395

NEW! DIGITAL GROUP: 32K Econoram IX™ Unkit \$995

NEW! SBC (Intel/National 80/10 and 80/20 computers):

32K Econoram XI™ CSC* \$1595

TRS-80 Conversion Kit: Upgrade your 4K TRS-80 to 16K for only \$215. Complete with DIP shunts. 1 Year warranty.

OTHER S-100 PRODUCTS from Godbout

ACTIVE TERMINATOR KIT: Promotes reliable accurate data transfer by minimizing ringing, crosstalk, other noise

only \$49.95

11 SLOT S-100 MOTHERBOARD UNKIT: All 11 edge connectors soldered in place. Includes active termination. \$149.00

18 SLOT S-100 MOTHERBOARD UNKIT: 18 slot version of above \$195.00

NORTH STAR PRODUCTS

COMPUMART sells only the best equipment available. North

Star's HORIZON Computer, now available with double density

diskette drives (180K bytes per diskette) satisfies our exacting

requirements. Write for further information. Kits from \$2359,

Assembled and tested from \$2759.

APPLE II™

COMPUMART is Ontario's largest dealer of this high quality

personal computer system. 16K systems start at \$1775. Write

for further information.

*CSC (Certified System Component program). 200 hour

burn-in, guaranteed 4 MHz operation over the full comm-

ercial temperature range, serial numbered, immediate replace-

ment in the event of failure within 1 year of invoice date.

Also available for Econoram IV(\$639), VII(\$919), X(\$1195).

TERMS: Visa/Master Charge (Please include expiry date), check or money order. Add 2% for shipping and handling. Ontario residents add 7% Provincial Sales Tax.

COMPUMART, P.O. Box 6132, Station J, Ottawa, Ontario, K2A 1T2 or phone (613) 725-3192.

<p>TR-7400A "KENWOOD" OWNERS: SCANNER KIT</p>	<p>FT-227 "MEMORIZER" OWNERS: SCANNER KIT</p>
<ul style="list-style-type: none"> • Installs completely inside rig. No obtrusive external connections. • Scans the complete band or only the portion you select on the MHz switch of your rig (e.g. 144-148 or 146-148 MHz). • Scan frequency is displayed on digital readout. • Two miniature toggle switch switches supplied with kit (scanner: on-off, scan-lock may be mounted externally or on the top or bottom cover of the rig). • In the scanner off mode the TR-7400A behaves normally. In the scanner ON mode the scanner locks up on an occupied frequency, pauses for a preset time (3-30 seconds) and then resumes scanning. This means you can eavesdrop all over the band without lifting a finger. When you hear something interesting you flip the switch to the lock mode and the rig is ready to transmit. • Scans at the rate of 50 kHz per second. • Complete with detailed instructions (even for the beginner). <p>Kit \$39.95 Preassembled \$59.95 add \$1.50 postage and handling</p>	<ul style="list-style-type: none"> • Selectable sweep width (up to full band). • Scans <u>only</u> the portion of band you select. • Scans at the rate of 200 kHz per second. • Switch modification on mike allows you to scan past, or lock on, any occupied frequency. • Complete kit with detailed instructions. • Installs <u>inside</u> rig; no obtrusive external connections. • Rig can easily be returned to original condition whenever desired. • Scans to preset limits and reverses. • Automatic bypass of locked frequency in 3 1/2 seconds unless you press lock-on switch. • You can eavesdrop all over the band without lifting a finger. <p>Kit \$34.95 Preassembled and tested \$54.00 add \$1.50 postage and handling</p> <p><u>IC-22S Scanner Kits</u> also available Kit \$34.95; \$54.00 assembled add \$1.50 postage & handling</p> <p>Dealer inquiries invited</p>
<p align="center">AED ELECTRONICS</p> <p align="center">750 LUCERNE RD., SUITE 120, MONTREAL, QUEBEC CANADA H3R 2H6 TEL. 514-737-7293</p>	

**GEM-QUAD FIBRE-GLASS
ANTENNA FOR 10, 15, and 20 METERS**



Two Elements \$139
Extra Elements \$99

Price is
F.O.B. Transcona

**INCLUDES U.S.
Customs Duty**

**KIT COMPLETE
WITH**

- SPIDER
- ARMS
- WIRE
- BALUN KIT
- BOOM WHERE
NEEDED

**WINNER OF MANITOBA DESIGN
INSTITUTE AWARD
OF EXCELLENCE**

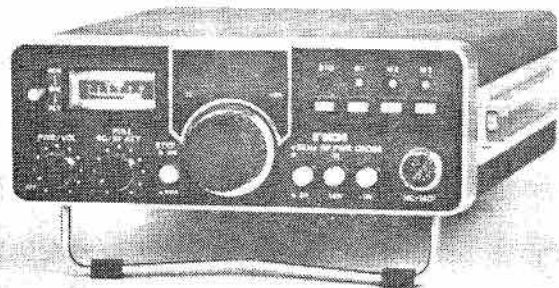
*Buy two elements now — a third
and fourth may be added later with
little effort.*

*Get a maximum structural strength
with low weight, using our "Tride-
tic" arms.*

GEM QUAD PRODUCTS LTD.
Transcona, Manitoba, Canada R2C 2Z5
Box 53 Telephone (204) 866-3338

ndi

HC-1400 2 METER FM TRANSCEIVER



Features

- ★ 25 WATTS OUTPUT POWER
- ★ 3 CHANNELS OF MEMORY
- ★ SINGLE CONTROL TUNING
- ★ DIGITAL READOUT
- ★ 800 CHANNEL CAPABILITY
- ★ TUNES IN 10 KHZ STEPS, HAS
100 KHZ "SPEED UP" BUTTON
- ★ SIMPLEX + 600 KHZ — 600 KHZ
13.8 VDC

Write us for complete detailed information

Lenbrook Industries Limited

1145 Bellamy Road, Scarborough, Ontario M1H 1H5, (416) 438-4610

CANADIAN IMPORTERS OF NDI PRODUCTS

WE SELL SERVICE QUALITY SELLS ITSELF

SERVICE. FIRST AND FOREMOST. BEFORE AND AFTER THE SALE. COME INTO OUR SHOWROOM. THE FIRST THING WE DO IS PUT A CUP OF FRESH COFFEE IN YOUR HANDS. THEN YOU ARE FREE TO BROWSE THROUGH ONE OF THE LARGEST AMATEUR RADIO STORES IN CANADA. TRY OUT ANY PIECE OF EQUIPMENT YOU CARE TO . . . ON THE AIR IF YOU WISH (IF YOU HAVE A TICKET). AND YOU ARE ASSURED THAT WHATEVER YOU DECIDE TO PURCHASE AT HAMTRADERS IS NOT ONLY COVERED BY THE EQUIPMENT MANUFACTURER'S WARRANTY BUT IS BACKED BY OUR OWN WARRANTY. AND OUR WARRANTY IS BACKED BY ONE OF THE BEST EQUIPPED SERVICE DEPARTMENTS IN THE COUNTRY. SO WHY JUST BUY A RIG WHEN YOU CAN BUY SERVICE? ASK AROUND. OUR REPUTATION SPEAKS FOR ITSELF.

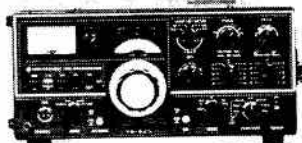


45 BRISBANE ROAD, UNIT 18, DOWNSVIEW, ONTARIO. (416-661-8800)

WE SERVICE WHAT WE SELL!

WRITE FOR YOUR FREE CATALOGUE TODAY

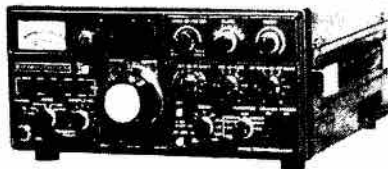
KENWOOD



KENWOOD Transceiver TS-520S
160 thru 10M



KENWOOD FM/SSB
TS-700SP



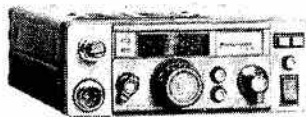
KENWOOD Transceiver
TS-820S 160 thru 10M



KENWOOD
TL-922



KENWOOD 2M FM
TR-7400A



KENWOOD 2M FM
TR-7600

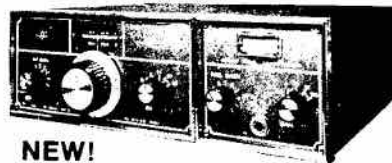
SWAN

SWAN 100MX
80 thru 10M
1 KC readout
built-in noise



blanker and VOX

ATLAS



NEW!

RX-110 Receiver
TX-110-L Low Power transmit module.
TX-100-H High Power transmit module



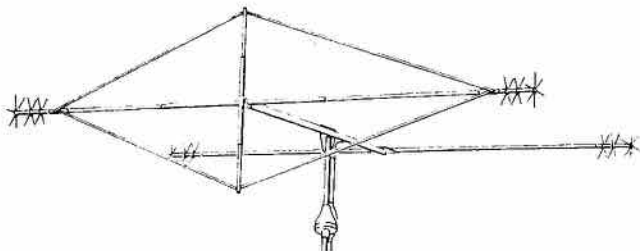
210X 80-10m solid state Xcvr

IN STOCK at GLENWOOD TRADING COMPANY LTD.

278 EAST 1st St., NORTH VANCOUVER, B.C. V7L 1B3

HQ-1 MINI QUAD

MINI PRODUCTS MODEL HQ-1



\$199.95 plus tax and postage

IN STOCK

- Spare parts available
- Shipping wt. 20 lbs, 5 ft. long box

- 4 1/2 feet long
- 6 ft turning radius
- 15 pounds light - for TV rotor
- 20/15/10/6 meters - 6db gain nominal

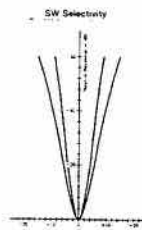
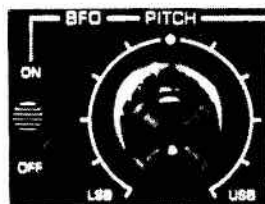
METRO HAM SHACK LTD.

770 GORDON BAKER ROAD, WILLOWDALE, ONT., M2H 3B4 (416) 496-1606



RF-2800

5-Band (FM/AM/SW₁/SW₂/SW₃) Portable Radio with Direct-Readout Digital Display



- AC/DC batteries
- LED readout
- Very stable
- Includes shortwave guide

Only **\$399** plus tax
in stock

CARF

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

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

OFFICERS

President	VE3NR	Bill Wilson
Imm. Past Pres.	VE2DNM	John M. Henry
Vice-President	VE2NM	Fred Towner
Secretary	VE3FVO	Joan Powell
Treasurer	VE3NB	Bernie Burdsall
General Manager	VE3AHU	Art Blick

BOARD OF DIRECTORS

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

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

VE6VF Stella Broughton, Ellersleid, RR3 South Edmonton, Alta

VE6HO Jim McKenna, Box 703, Ft. McLeod, Alta. T0L 0Z0.

VE5YY Martha Pankratz, 1212 Temperance St., Saskatoon, Sask. S7N 0N9.

VE3GCP Fred Robinson, 126 West 19th St., Hamilton, Ont. L9C 4H6.

VE2RA Gene Lajoie, RR 2 Perkins, Que. J0X 2R0.

VO1NP Nate Penney, Box 10, Shoal Harbor, Nfld. A0C 2L0.

VE2PY Bob Rocleau, 1050 Churchill, Mount Royal, P.Q. H3R 3B6.

WANTED:

For TCA: News Items, Pictures, Original Stories Technical Articles!

Make pocket money by writing for The Canadian Amateur!

Technical articles are especially welcome. We can use simple construction projects, antennas, hints and kinks, explanations of the theory and practice of modern Amateur operations and equipment.

Photos should be glossy black & white prints, although we can use colour prints. Written material should be typed, double spaced. Legible handwriting is acceptable. Finished artwork and drawings will add to the value, but sketches and rough drawings are acceptable.

Technical material only: Technical Editor, CARF Inc., Box 356, Kingston, Ont. K7L 4W2.

All other material: Editor TCA, 151 Fanshaw Ave., Ottawa, Ont. K1H 6C8.

Free QSL Service for members

1. Sort QSLs by prefix and stack face up in a single stack.
2. Keep weight of one parcel under one pound. Parcel carefully and seal securely.
3. Put your name, call, etc. in upper left corner
4. Put your CARF membership no. in lower left corner.
5. Send to CARF QSL Services, P.O. Box 66, Islington, Ont. M9A 4X1.
6. Do NOT register parcel. This causes delay.
7. Check with Post Office for requirements if sending by Third Class Mail
8. If receipt required, enclose SASE with cards.

VE3VCA

Thursdays

0030-0130 Z 14.060 MHz CW

0130-0230 Z 14.160 MHz SSB

Saturdays

1900-2000 Z 14.060 MHz CW

2000-2100 Z 14.160 MHz SSB

Sundays*

1500-1600 Z 14.060 MHz CW

1600-1700 Z 14.160 MHz SSB

*Third Sunday of each month only.

Note that the Thursday Zulu times are Wednesday evening or afternoon in Canadian time zones. During the months when most of Canada is on Daylight time, operating hours will be one hour earlier 'Z' time, thus the same local time for those regions of Canada on DST.

All frequencies are plus or minus a few kHz of the listed frequency if interference is encountered. VE3VCA is operated by volunteers from the Kingston, Ont. ARC.

Infosection

CARF Bulletin Station sked

CARF Newsletters and News Bulletins will be heard over VE3TCA the first official CARF News Service Station, utilizing the facilities of VE3OCU, Carleton University Ottawa, on the following sked:

14.140 MHz SSB Sundays 1745 GMT
14.080 MHz TTY Sundays 1830 GMT
14.070 MHz CW Sundays 1930 GMT
3.755 MHz SSB Sundays 2300 GMT
3.590 MHz CW Tuesdays 0100 GMT
3.610 MHz TTY Tuesdays 0130 GMT

Carleton's three repeaters will also transmit the bulletins simultaneously on

MCW using their own call sign VE3OCU on 146.85 MHz, 224.94 MHz and 53.15 MHz on Wednesdays at 0100 GMT. (Note that GMT times for Tuesdays and Wednesdays are Monday and Tuesday in Canadian time zones.)

With the advent of Daylight Time in the summer, the GMT times will be one hour earlier, thus local times in areas which use DST will be same as now.

Name Badges

Hot stamped foil CARF Logo in vivid Royal Blue on a White background with your Name and Call in contrasting Black. Size: 3" x 1 1/2".

Due to increased costs of production, the price for CARF Name Badges has been increased to \$3.00 (Ontario add 7% Sales Tax).

QSL Cards



This handsome QSL card is offered to CARF members at a special price of \$12.75 postpaid per 200 card lot. (Ontario residents add 7% Sales Tax.)

The standard design will be printed with your name, call and address, (in place of the CARF address), as shown. The 3 1/2 x 5 1/2" cards are printed on one side only. A plain reverse side gives lots of space for comments and the address.

Available in either blue ink with outline map in silver or in blue ink with outline map and flag in red. Both types use buff card stock.

Similar cards are available to non-CARF members, without CARF logo, at a cost of \$15.00 for 200. All prices include postage.

Send orders to CARF, Box 356, Kingston, Ont. K7L 4W2.

BANNED COUNTRIES LIST

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

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

THIRD PARTY TRAFFIC AGREEMENTS

Bolivia, Chile, Columbia, Costa Rica, Dominican Republic, Guyana, Honduras, El Salvador, Israel, Mexico, Nicaragua, Peru, Trinidad/Tobago, USA (Territories and Possessions), Guatemala, Uruguay, Venezuela.

RECIPROCAL OPERATING AGREEMENTS

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

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



Order Form

Please send Certificate, The Canadian Amateur, with free QSL service, as a CARF:

Full Voting Member * \$7.yr. \$30./5 yrs. <input type="checkbox"/>	Family Membership \$1-yr. extra per person <input type="checkbox"/> \$15- for LIFE <input type="checkbox"/>
Associate Member \$7.yr. \$30./5 yrs. (Foreign Call Sign Holders and non-licensed supporters) <input type="checkbox"/>	Life Member (FULL or ASSOCIATE) \$100. <input type="checkbox"/>

CHECK QUANTITY REQUIRED:

CANADIAN AMATEUR CERTIFICATE STUDY GUIDE \$5. _____

CANADIAN AMATEUR RADIO REGULATIONS HANDBOOK \$4. _____

ADVANCED AMATEUR CERTIFICATE STUDY GUIDE \$4. _____

INSTRUCTOR'S PACKAGE \$2-50 _____

INSTRUCTORS 35mm Slides \$5. _____

CARF LOGOS (6"x2 1/2") adhesive sticker window decal 4/\$1. _____

CARF NAME BADGE \$3 _____
(Ontario adds 7% sales tax) _____
 Print name and call desired _____

MONEY ORDER or CHEQUE TOTAL

*

IF RENEWING MEMBERSHIP NO IS:

MY CALL _____ FAMILY CALL(S) _____

NAME _____

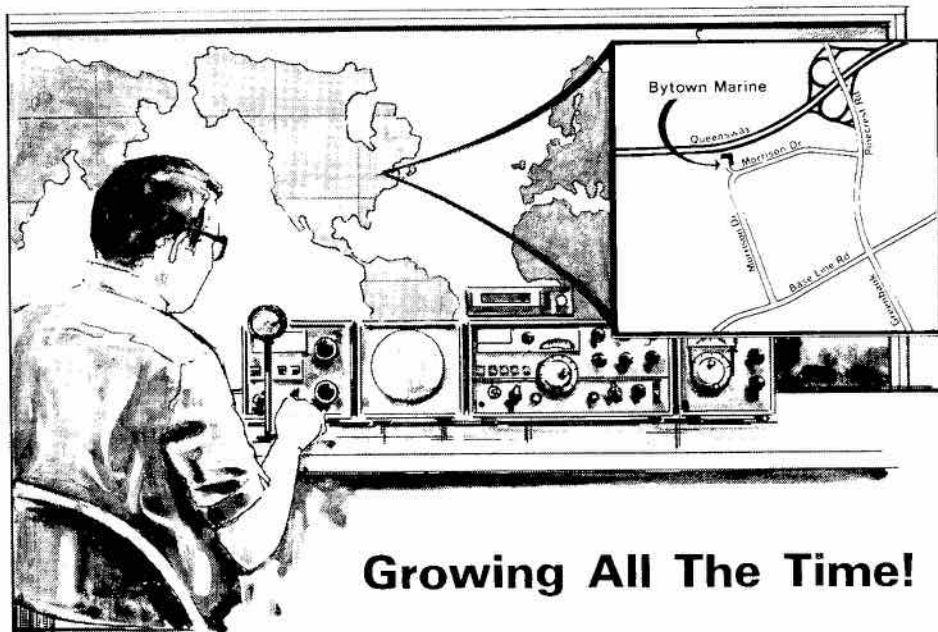
ADDRESS _____

POSTAL CODE _____ DATE _____

Canadian Amateur Radio Federation Inc.

P.O. BOX 356, KINGSTON, ONTARIO, CANADA K7L 4W2

Ottawa's Newest Ham Store . . .



Growing All The Time!

MANUFACTURERS

ATLAS RADIO
KENWOOD
M.F.J.
HY-GAIN
MOSELEY
A.R.R.L.
CALLBOOK
NYE VIKING
V.H.F. ENGINEERING
SHURE
CORNELL-DUBILIER
AMPHENOL
ANTENNA INC.
INTERNATIONAL WIRE & CABLE
TIMES WIRE
BARKER & WILLIAMSON

PRODUCTS

HF/SSB TRANSCEIVERS
2M-VHF TRANSCEIVERS
AMPLIFIERS
REPEATERS
ANTENNAS
INSULATORS
ROTORS
ANTENNA TUNERS
KEYS
FILTERS
PHONE PATCHES
MICROPHONES
CALLBOOKS
PUBLICATIONS
CODE TAPES
CO-AX SWITCHES

Bytown Marine
LIMITED

LEISURE TIME COMMUNICATIONS
SPECIALISTS AMATEUR • CB • MARINE

1140 MORRISON DRIVE, OTTAWA, ONT.

TELEPHONE 613-820-6910



The HEATHKIT SB-104A

good enough to measure up...to you!

In choosing the SB-104A you join a pretty select fraternity of fellow Amateurs. They're individuals whose imaginations were fired by the looks, feel, and reputation for outstanding performance that, since its inception, has become the trademark of Heath's entire line of famous SB series Amateur equipment.

You've joined a group of people who want state-of-the-art perfection, still insist on building their own to insure handcrafted quality, prefer to do their own maintenance and service, and above all want a rig that's good enough to measure up to their abilities, standards, and the reputations they've built for themselves.

Heath's SB-104A, it's the only choice when you're ready for a transceiver that's good enough to measure up....to you!

**Heath Amateur Radio Gear....
....the quality that measures up!**

FREE Heathkit Catalog

Catalogues also available at our 6 Heathkit Electronic Centres located in Montreal, Ottawa, Mississauga, Winnipeg, Edmonton and Vancouver, where Heathkit products are displayed, sold and serviced.



HEATH
Schlumberger

HEATH COMPANY
Dept. 1178
1480 Dundas St. E.
Mississauga, Ont. L4X 2R7

Gentlemen, please send me my free Heathkit Catalog
I am not on your mailing list.

AM-372A

Name _____

Address _____

City _____ Prov. _____

Prices and specifications subject to change without notice. Code _____