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Number 5073

TCA



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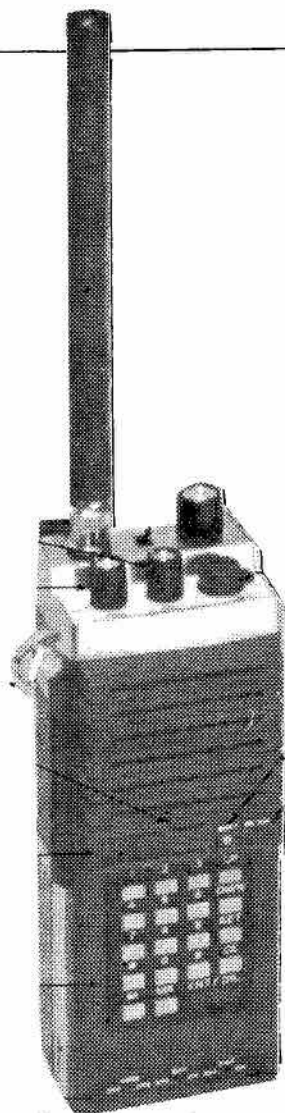
THE CAMP

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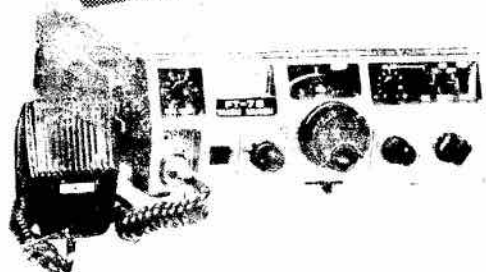


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Kenwood



FT-7B



TS-83CS

VFO-230

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

Unsolicited articles, reviews, features, criticisms and essays are welcomed. Manuscripts should be legible and include the contributor's name and address. A signed article expresses the view of the author and not necessarily that of C.A.R.F. Publications Limited.

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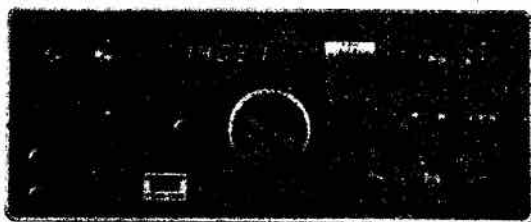
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Second Class Mail Registration Number 5073.

TEN-TEC

The All-American DX Machines

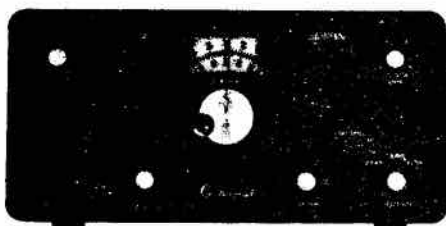


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Meanwhile ICOM has taken a step further with the introduction of the IC-720. It is capable of satisfying every whim of the HF operator with a General Coverage Receiver, all of the new bands, an improved Noise Blanker, and a host of refinements over the original IC-701. All of this at a lower price.

Come in and feel the power.

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Standard Features

- Tuning in 10 Hz, 100 Hz, or 1 KHz steps.
- Passband tuning system for optimum selectivity.
- Speech processor built in. Full metering, ALC, voltage, current.
- VOX, separate CW/SSB delay controls, RIT.
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- Data transfer from one VFO to the other.
- Full broad banded tuning on receive and transmit.
- Transmit on all 9 HF bands.
- Receive from .1 to 30 MHz.
- Automatic sideband selection (reversible).

**see your dealer
or contact us -**

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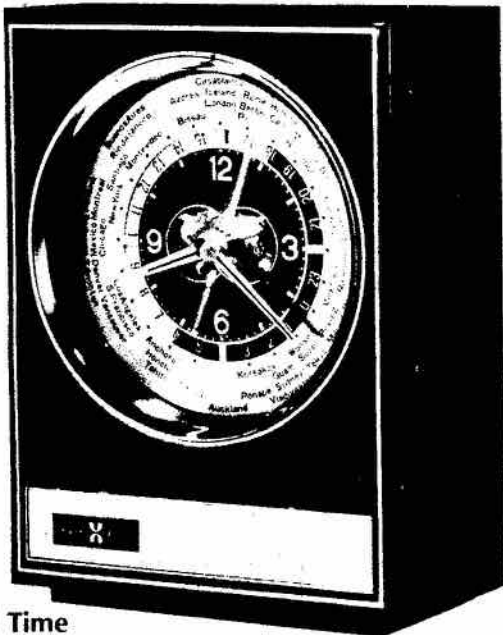


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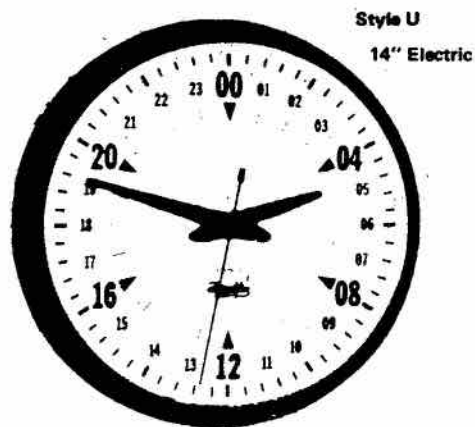
Designed by the famous Howard Miller this clock presents an image that can only be termed sophisticated elegance. And its appearance is surpassed only by its accurate information. It gives the time simultaneously and automatically in fifty-three key locations around the world. It has a sweep second hand and a rotating disc which indicates the correct time, daylight and nighttime hours, in twenty-four hour time for all indicated locations, and it shows the International Date Line. The movement is battery operated (standard flashlight battery, not supplied). The metal dial is covered by a shatterproof crystal and surrounded by a chrome metal bezel. The case is black with a rosewood grained finish. 8½" h x 6¾" w x 3¾" d.

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28 MHz LINEAR TRANSVERTER MMT 28/144



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- ★ 10 Watts continuous rating output
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- ★ Low noise receive converter with 2.0 dB noise figure
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	MMT28/144	\$239.00		MMD600P	\$60.00
	MMT144/28	\$239.00	Receive Amplifiers	MMA28	\$39.00
	MMT50/144	\$239.00		MMA144	\$39.00
	MMT1296/144	\$ T.B.A.		MMA1296	\$69.00
Linear Amplifiers	MML144/25	\$119.00	Filters	MMF144	\$24.00
	MML144/100	\$385.00		MMF432	\$24.00
	MML432/50	\$315.00	Various	MMV1296	\$105.00
	MML432/100	\$599.00		MMS384	\$70.00
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	MMC144/28 LO	\$75.00			
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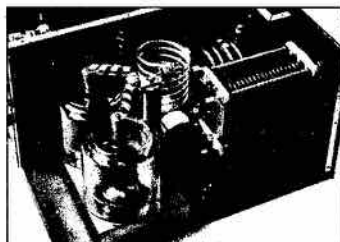
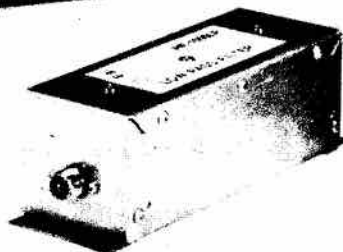
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HL-2000A LINEAR AMPLIFIER

Hammond POWER BAR

HF-1000LP LOW PASS FILTER



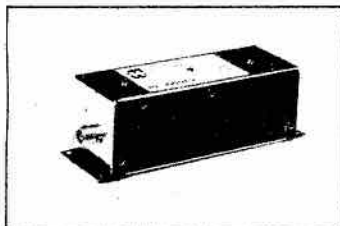
HL-2000A LINEAR AMPLIFIER

A truly rugged, uniquely Canadian, linear amplifier in the Hammond tradition. Top quality, heavy duty components designed for longest life performance.

General specifications;

- 2000 watt PEP input SSB, 1000 watt CW and RTTY covering the 10M, 15M, 20M, 40M, and 80M amateur bands.

- Special Hammond power transformer designed for continuous duty operation. Rated 1100VA - 60Hz.
- Two 3-500Z Zero based triodes, air chimney cooled.
- Computer grade capacitors for maximum reliability.
- Full Pi-L output circuit network for maximum harmonic suppression.

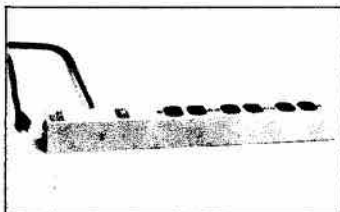


HF-1000LP LOW PASS FILTER

Designed to eliminate spurious conduction from transmitters operating below 30 MHz and eliminate 2nd and 3rd harmonics appearing in the TV bands when operating in 10, 15, and 20 meters.

General specifications

- 0 to 30 MHz band pass.
- Cutoff frequency 32MHz \pm .5MHz.
- Power capacity 2000W PEP SSB.
- Impedance 52 ohms input and output.



Hammond POWER BAR

Power Bar is a multi receptacle device for connecting several pieces of equipment to a single outlet:

- 4, 6 or 8 receptacle models
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- 15amp circuit breaker
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For further information and prices please clip the coupon and mail to;
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394 Edinburgh Rd. N. Guelph, Ontario N1H 1E5



Please send further information:

☐ HF-1000LP LOW PASS FILTER ☐ HL-2000A LINEAR AMPLIFIER

☐ Hammond POWER BAR

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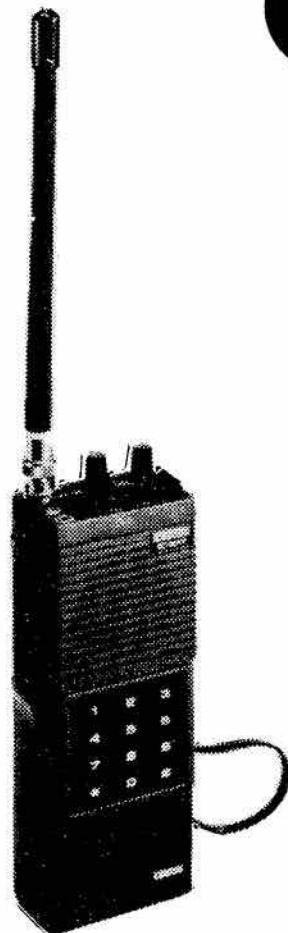
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2A Fever~ Catch it!



ICOM waited while the others scrambled to put out a synthesized Handie Talkie. ICOM looked at their bells & whistles, their digital displays, high power consumptions and lumbering sizes. Then ICOM quietly built a handheld that people, not gimmikers, would like and use.

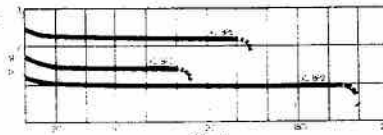
The result is an ultra compact unit (the rubber duck is longer than the set) with all of the channels, all of the power, and all of the convenience and performance that has made ICOM famous.

You can vary your power output or longevity by snapping on various Nicad Bottom Packs. You can take it anywhere since the IC-2A is at home in a shirt pocket or unobtrusively on a belt, and its clean handsome styling always makes it the centre of attention.

Standard Features

- 800 T/R Channels
- Variable NiCd Power Pack: 3 sizes to suit your needs
- Super Sensitive ICOM receiver (-120dB typical)
- Touch Tone pad on the IC-2AT model
- Separate built in speaker and microphone for excellent audio
- BNC "Rubber Duck" antenna

APPROXIMATE
BATTERY LIFE vs
POWER OUTPUT
3:1 Duty Cycle



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IC-BP3	39mm	BC-30	1.425 1.2 1.0	1.5	No	Standard Power/Standard Charge (100)
IC-BP4	49mm	BC-30	1.425 1.2 1.0	1.5	Yes	Standard Power/Standard Charge (100)
IC-BP5	60mm	BC-30	1.425 1.2 1.0	2.3	No	High Power/Long Life Range (100) Long Life with longer protection



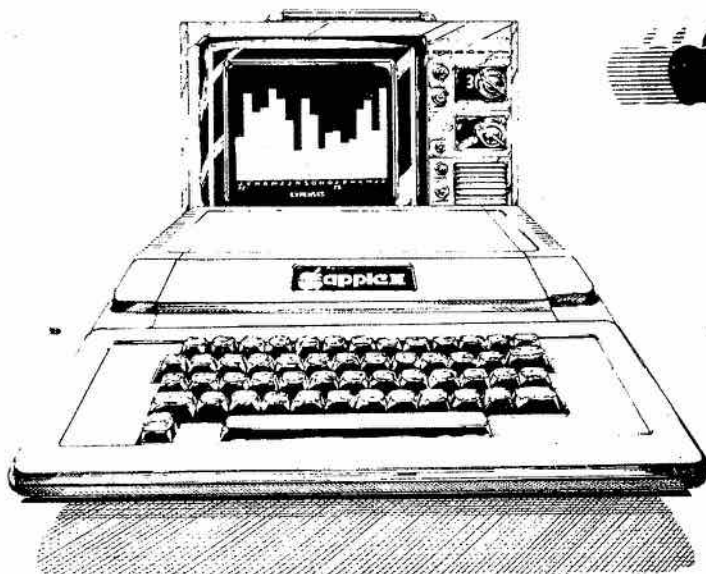
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2 METER FM TRANSCIVER

TR-7800

Kenwood's remarkable TR-7800 2-meter FM mobile transceiver provides all the features you could desire for maximum operating enjoyment. Frequency selection is easier than ever, and the rig incorporates new memory developments for repeater shift, priority, and scan, and includes a built-in autopatch DTMF encoder.

FEATURES

15 multifunction memory channels, easily selectable with a rotary control

- M1-M13... memorize frequency and offset (± 600 kHz or simplex).
- M14... memorize transmit and receive frequencies independently for nonstandard offset
- M0... priority channel, with simplex, ± 600 kHz, or nonstandard offset operation.

Internal battery backup for all memories

All memory channels (including transmit offset) are retained when four AA NiCd batteries (not Kenwood-supplied) are installed in battery holder inside TR-7800. Batteries are automatically charged while transceiver is connected to 12-VDC source.

Priority alert

M0 memory is priority channel. "Beep" alerts operator when signal appears on priority channel. Operation can be switched immediately to priority channel with the push of a switch.

Extended frequency coverage

143.900-148.995 MHz in switchable 5-kHz or 10-kHz steps.

Built-in autopatch DTMF (Touch-Tone) encoder

Front-panel keyboard
For frequency selection, transmit offset selection, memory programming, scan control, and selection of autopatch encoder tones.

Autoscan

Entire band (5-kHz or 10-kHz steps) and memories. Automatically locks on busy channel. scan resumes automatically after several seconds, unless CLEAR or mic PTT button is pressed to cancel scan

Up/down manual scan

Entire band (5-kHz or 10-kHz steps) and memories, with UP/DOWN microphone (standard)

Repeater reverse switch

Handy for checking signals on the input of a repeater or for determining if a repeater is "upside down"

Separate digital readouts

To display frequency (both receive and transmit) and memory channel.

Selectable power output

25 watts (HI)/5 watts (LOW).

LED bar meter

For monitoring received signal level and RF output.

LED indicators

To show: ± 600 kHz, simplex, or ± 600 kHz transmitter offset; BUSY channel; ON AIR.

TONE switch

To actuate subaudible tone module (not Kenwood-supplied).

Compact size

Depth is reduced substantially.

Mobile mounting bracket

With quick-release levers.

INTRODUCTORY PRICE

\$559⁰⁰

Note: On Front Cover of Cat # 19 our Phone No. should be (604) 984-0404.

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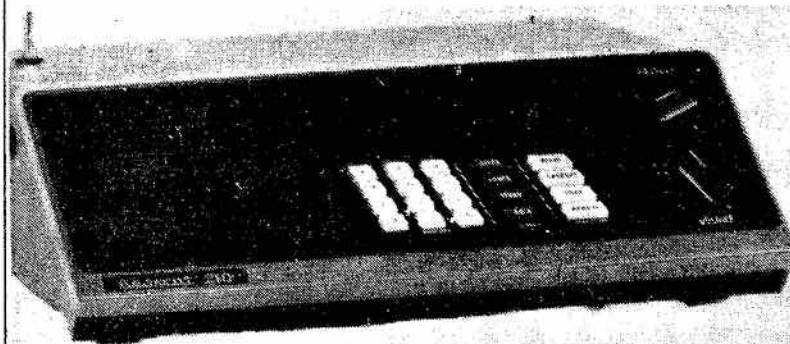
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MODEL 13-510

Full 2-Meter Band Coverage with 800 Discrete Channels, L.E.D. Frequency Readout

P.L.L. synthesized tuning for 400 frequencies in 10 KHz steps between 144.00 and 148.00 MHz, plus a pushbutton 5 KHz shift-up to deliver 400 more. Operate simplex or repeater with 4 available offsets (+600 Hz supplied). Dual conversion receiver has multiple FET front end, helical resonator, monolithic crystal and ceramic filters. Transmitter is rated for 25-watt output power, switchable to 1-watt. Fully modular construction includes SWR and polarity protection circuits, internal DC filtering, electronic switching. Connectors provided for tone burst, discriminator meter, external speaker. Metal cabinet is 2 5/8" x 6-13/16" x 9 5/8".

KENWOOD SPECIALS

TS-120S	\$885.
TS-130S	\$1039.
TS-830S	\$1289.
R - 1000 RX	\$639.
TR-2400	\$499.
R - 300 RX	\$499.
Demo price	\$329.

YAESU RADIOS

FT-101ZD	\$1275.
FT-107M	\$1699.
FT-707	\$1169.
FT-207R	\$449.
FT-227RB	\$589.

DROP A NOTE FOR A QUOTE

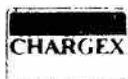
MFJ-40T and MFJ-40V 40 mtr QRP TX with VFO	Special \$75.00
MFJ-962 -- 1.5 KW tuner with SWR Bridge	
Reg. \$269.	Special \$229.
MFJ-484 memory keyer	\$198.
MFJ-482 memory keyer	\$139.
MFJ-481 memory keyer	\$119.
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Bencher BY2 Key	\$69.50
Brass Pounder Key	\$5.50
CDE 3 amp Pwr Supply	\$59.50
PL-259 connectors Dozen	\$10.50

H.C. MacFarlane Electronics Ltd.

R.R.#2 BATTERSEA, ONTARIO. PHONE: 613-353-2800 VE3BPM

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THE FT-207R HANDIE CHECKLIST

- | | | | |
|-----------------------------------|-------------------------|--------------------------------|-----------------------------------|
| <input type="checkbox"/> TA-2 | telescopic whip antenna | <input type="checkbox"/> NC-1A | 15-hr. desk charger |
| <input type="checkbox"/> YM-24 | speaker microphone | <input type="checkbox"/> NC-3 | 4-hr. quick charger |
| <input type="checkbox"/> LCC-7 | leather case | <input type="checkbox"/> NC-9B | wall charger |
| <input type="checkbox"/> FSP-1 | external speaker | <input type="checkbox"/> PA-2 | mobile battery eliminator/charger |
| <input type="checkbox"/> MMB-10 | mobile mounting bracket | <input type="checkbox"/> FBA-1 | battery sleeve |
| <input type="checkbox"/> FTS-32E | CTCSS/burst encoder | <input type="checkbox"/> NBP-9 | battery pack |
| <input type="checkbox"/> FTS-32ED | CTCSS encoder/decoder | <input type="checkbox"/> FEP-1 | earphone |

Letters:

RADIO SPECIALISTS FOR CUSO

As you may know, CUSO is a private, charitable organization working in the field of international development. Its major activity is the recruitment, selection and placement overseas of suitably qualified and skilled persons in response to specific requests from governments and agencies in developing countries.

CUSO has been asked by the Government of Mozambique to recruit two radio specialists. A brief job description appears below.

These positions may appeal to one or two members of your group. They offer the opportunity to make an important contribution to the development of the communications infrastructure in Mozambique. They also offer an unparalleled opportunity for personal development through cross-cultural experience.

In addition to the (usual) terms of service... CUSO will also cover the cost of a Portuguese language training programme.

May I ask your assistance in making known the job described on the attached sheet... Further information can be obtained from this office.

Job Description: Radio specialists are needed to work in the Telecommunications and Electronics Unit of a national government company, Electromoc. Work is in service and installation and technical assistance for two-way radio systems, HF, VHF Radios, marine electronics, telephones for PABX systems within other companies. The job will involve work in the shop on systems, and also in the field.

Suitable candidates would also

be expected to do on the job training, both practical and some theoretical teaching with the other workers. At present in the unit there are a total of 10 technical staff of whom only three are technicians. However, some of the remaining seven have potential to train as skilled workers.

Qualifications: Radio specialists with training and experience in the operation and repair of two-way radios.

Cam Bowes
Recruiter, CUSO
33 Saint George St.
Toronto, Ont. M5S 1A1

VE3FXT

I noticed the query (Jul / Aug TCA) by Bruce VE2QO re George VE3FXT. Have QSO'd him many times as HS4AMI but have neither requested nor received a QSL from his Thailand QTH.

Gib Walker VE3BGX
Greely, Ont.

That is fair. If you don't ask for one, you may never receive one. Most DX globetrotters ask for money to be supplied with any request for QSL cards. This is only fair when you consider all the costs involved. Even a thousand requests for information can add up to \$100 worth of expense. No-one should have to foot the bill for someone else to paper his walls.

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

JAMBOREE ON THE AIR

For the past 23 years the Boy Scouts of Canada in conjunction with Scouting around the world have been involved in Jamboree On The Air, an opportunity for boys to learn more about Amateur radio and the communication field in general.

The purpose of my letter is to begin what I feel could be an important dialogue between the Canadian Amateur Radio Federation and Boy Scouts of Canada. JOTA has proved to be a successful event in Canadian Scouting with a great deal of participation by both Amateur radio operators and the Scouting membership.

Closer co-operation between our two organizations could only be of mutual benefit ... we must identify areas in which we can work co-operatively together in promoting Amateur radio to more young people.

Phil Newsome
National Program Director
Boy Scouts of Canada
Ottawa, Ont.

Having participated in the Jamboree On The Air as both a Scout and an Amateur, I can see that our mutual co-operation could only benefit both of us.

RARE NICADS

In some areas handy-talkie owners are having a hard time finding rechargeable nicad penlight cells. The scarcity, according to one radio store owner, is the result of the popularity of battery powered Christmas toys and games. People are catching on that a small charger and nicad batteries are a better buy than the disposable alkaline and carbon types.

W6RO

ABOARD THE R.M.S. QUEEN MARY
Club Station of the
Associated Radio Amateurs of Long Beach, Inc.



WIRELESS ROOM

TO VE3GCO
Date 18 May 80
Time 1752 UTC
Your Signal 5x7
21.302 Mhz
73. Hank

ICOM IC-701 KENWOOD TS180S SWAN ASTRO 150 YAESU
CUSHCRAFT ATB-34 RINGO RANGER ARX-2 ALLIANCE ROTATOR HD

**Queen Mary
may end up
in scrap yard**

Last Call for the Queen?

By Garry Hammond VE3GCO

If you are like me and missed having a QSO with GB5QM in 1967 when the Queen Mary was making her last TransAtlantic voyage on her way to resting in Long Beach, California, you will want to get busy checking your radio for W6RO.

W6RO may soon be silent on the airways, according to an article in the Kitchener-Waterloo, Ont. Record: 'Queen Mary may end up in scrap yard'.

Actually operating from the Queen Mary as an active station, W6RO is frequently on 10 and 15 metres from 1700 to 2300 GMT. 21.275-21.325 and 28.500-28.600 seem to be your best chance to QSO the Queen. Yes, there is often a pile-up, but that helps for two reasons. You are attracted to the frequency, and you'll appreciate the contact all the more if there is a bit of a challenge. Signals are good ... W6RO has a completely outfitted wireless room plus rotatable beam antenna.

W6RO QSLs with a beautiful card. The Queen Mary Facts on

the reverse make for interesting reading.

That W6RO QSO and QSL could become a real collector's item — come to think of it, just like my VE0NE QSL from the Canadian Bonaventure!

SACRAMENTO, Calif. (Reuter) — The liner Queen Mary, once the pride of the British passenger fleet, will probably be scrapped if its latest lease owners cannot produce a profit, a state commission counsel said Tuesday.

The liner, which has a 400-room hotel, a museum and restaurants, has lost money since it was bought by the city of Long Beach, Calif., in 1967 as a tourist attraction.

The Californian Lands Commission, which has jurisdiction over the liner, agreed to allow Long Beach to lease the Queen Mary to the Wrather Corporation, a Los Angeles entertainment organization.

"The liner will more than likely be scrapped if Wrather can't make a go of it," the chief counsel for the lands commission, Robert Hight, said.

"Long Beach has been losing about \$2.6 million a year on the vessel."

QUEEN MARY

CONSTRUCTED BY John Brown & Co. Ltd.
Glasgow, Scotland
COMMISSIONED BY Cunard Steamship Co.
Ltd.
KEEL LAID December 1, 1930
DATE LAUNCHED September 26, 1930
MAIDEN VOYAGE May 27, 1936
WAR SERVICE March 1940—September 1946
WAR HISTORY Carried a total of 765,429
military personnel saved a total of
569,429 miles (916,407 km). Carried up to
15,000 troops at one time. Carried
wounded returning to United States.
Transported Winston Churchill three
times to conferences. Carried 12,886 G.I.
Brides and children.
RESUMED PEACETIME PASSENGER SERVICE
July 31, 1946
RETIRED FROM REGULAR PASSENGER SERVICE
September 19, 1967 (after completing
1,001 crossings of the Atlantic)
DEPARTED ON LAST GREAT CRUISE
9:30 A.M. Tuesday, October 31, 1967
ARRIVED AT LONG BEACH, CALIFORNIA
10:00 A.M. Saturday, December 9, 1967

LIBERBOATS: 24, powered by 18
K2 m. 247-hp 1 Diesel engines
LIBERBOAT CAPACITY 145 persons
FUNNELS: 3—Electricity usage 36
m. (114,000) and 23.5 ft. (72.3 m.)
HEIGHT Forward 70.5 ft. (21.49 m.)
Middle 67.5 ft. (20.57 m.)
Aft 62.25 ft. (18.97 m.)
HULL PLATES: 8 ft. (2.44 m.) to 30 ft. (9.14 m.)
in length up to 1.25 in. (3.2 cm.)
GROSS TONNAGE 81,737 gross ton
(230,039 cu. m.)
OVERALL LENGTH 1,019.5 ft. (310.73 m.)
MOULDED BREADTH 118 ft. (35.97 m.)
CHANGE OF OWNERSHIP Remitted 1
British registry, and officially transferred to
ownership of City of Long Beach at 10:00 A.M. Monday, December 31, 1967
WHISTLES: 3—Soprano type. Two on forward
funnel, one on middle funnel. Each 6 ft. (1.83 m.) long, weighing 2,205
lb. (1,002 kg.)
PORTHOLES Over 2,000
NUMBER OF DECKS 12

AMATEUR RADIO OPERATION ABOARD THE R.M.S. QUEEN MARY

Requested by the Associated Radio Amateurs of Long Beach and the City of Long Beach, GB5QM was the only amateur radio station ever licensed for operation aboard the Queen Mary; this was for the Last Voyage. It was the first time Americans were licensed to operate aboard a British ship. W6RO, the club station, was operated aboard the ship on February 21, 1971 as the ship was moved from dockside to her present location at Pier J.

Operation of the reconstructed Wireless Room by the Associated Radio Amateurs of Long Beach was officially started on April 22, 1979. Operating every day, this is the only continuing public demonstration of Amateur Radio in the United States.

Research Continues

The Canadian Amateur Radio Research Club, was formed in June 1979 in a great hurry when it was learned that we had the opportunity to fly a package on a high altitude balloon. We had only three weeks to decide on the package, design it, test it and have it flight-ready. With the help of about a half-dozen individuals it was decided that we would fly a simplex repeater and a 432 MHz beacon to facilitate 'balloon-bounce' communications.

The simplex repeater consisted of two DT-85 Marconi transceivers back to back. The input was on 147.33 MHz with a downlink on 144.33 MHz; the uplink was on 144.33 MHz and the output on 147.33 MHz. A control system was designed and built which ensured that each receiver section was switched OFF while the opposite transmitter section was operating. The antenna system consisted of a pair of modified dipoles.

The ground station was comprised of an ICOM-280 transceiver driving a KLM 70 watt linear amplifier. A Sinclair Q 202 G duplexer was included for isolation. The ground antenna system was a 4x6 element yagi array designed and built from scratch and mounted on a pedestal for orientation in azimuth and elevation. This station was set up in the control tower at the old Gimli Air Force Base.

The helium-filled balloon itself was of 0.5 mil mylar construction with an inflated volume of 1.5 million cubic feet and designed to carry a 1200 lb payload to a height of 120,000 feet. To put this into perspective, imagine flying a large condominium to a height of 22 miles!

At 00:12Z on July 27, 1979 the balloon lifted off -- about as majestically as a soggy sausage! Half an hour into the flight when the balloon was at about 30,000 feet, Amateur operations commenced, initially with the more local stations being worked but eventually at 102,000 feet to stations in excess of 400 miles radius.

Initially the balloon's track was to the east, but as it entered the lower stratosphere, the track became westerly, and after a total flight time of about 15½ hours the flight was terminated over Broadview, Saskatchewan. A search team quickly located and recovered the Amateur package which was safely returned, undamaged, to Gimli the next day.

The entire project was a success and gained for us recognition from the scientific and industrial communities. A post-flight report is available on request.

Since that first flight we have grown in size and expertise, and our membership extends from Alberta in the West to Newfoundland in the East. It is hoped that very soon we will have members and input from every province. Members have input on any project.

At present, members from the Greater Winnipeg area, together with an Ottawa chapter, are working on a flight experiment expected to be included as a passenger on a balloon flight during the summer of 1981. The design of the package calls for:

1. A microprocessor which will act as the control centre for other experiments on board. This will demonstrate that programming and execution can be controlled from the ground. Commands will be transmitted from the ground to

activate various functions of the experiment, e.g. to turn equipment on or off, etc. Command verification and analogue data from the experiment, e.g. temperatures, supply voltages, etc., will be transmitted back to the ground via Pulse Code Modulation (P.C.M.).

The data transmissions will be decommutated at the ground station and the data analysed in real time. Magnetic tape recordings will preserve the data for further analysis at a later time.

P.C.M. Format. 1.5 kilobits per second, bi-phase level. Main-frame length, 20 words. Word length, 9 bits (8 data bits + 1 bit). Sync. word length, 18 bits.

The P.C.M. will be transmitted on an F.M. subcarrier, frequency modulated on the main telemetry down-link.

2. The radio experiment will consist of:

- (a) a 2-metre duplex repeater with input on 144.33 MHz and output on 147.33 MHz.

- (b) a 10-metre to 2-metre transponder. This will consist of a 10-metre SSB input with a 2-metre FM output.

- (c) a UHF beacon, tone modulated.

- (d) a television camera to provide live pictures from the balloon in flight and to provide information on balloon behaviour during all flight phases. This experiment is optional as a wide-band transmitter is not available at the present time.

It is hoped that we will be able to publicise the next flight rather better than the last. However, as ground wind conditions are quite critical during the balloon launch, it is not possible to predict the date and time of launching.

Italian EARTH- QUAKE

The Italian Saga was approached with some caution, on 26th November 1980. 14170 kHz was selected as a pro-tem frequency to try and contact Italy if possible, realizing at the onset there was no third party traffic allowed.

C.Q. Italy was called and many Canadian stations were on to help. Among them, VE2DM, VE3SW, VE3BFW, VE7SG, VE2OG, VE3FKK, plus many others.

Over the period, contacts were made with I8CAY, I2VUC, I0JVB, and I3MNR but for various reasons they could not continue for any length of time.

During this time, mention should be made of the special effort put out by VE3DNM, Max, and VE3JUC Tom, both of these Amateurs spoke Italian, also the offer of help from VE3HGZ Rocco.

VE3IOR took on the job of liaison between Toronto, the National Italo-Canadian Congress who were co-ordinating the information. Also he had to collect the information from my contacts on 80 and 40 metres.

VE3AUM Ron came on later from Ottawa, and offered me relief once we got going.

Eventually I2OWT of Milano offered to try and get another station and start a schedule. Apparently it was going to be ok to take information from Italy. It was decided not to accept personal messages because of the downed telephone lines, and the impossibility of delivery.

I8UDB, Dominic of Naples came on the frequency and offered early details of the towns and villages in the devastated area.

Dominic was an excellent operator and 123 lines of information was taken. i.e.; Santo Stefano del Sele. Dead 5. Injured 5.

the letter D only was used and the letter W for injured to avoid confusion between I and one in copying. A short explanation was given before we commenced.

No problems were encountered, the propagation being perfect, and so it was to be throughout the whole operation.

All the information was then fed to Toronto and Ottawa by 80 and 40 metres, many of the Comsont Net members participating.

The local Italian Consul, who sat in on some of the sessions informed me later that there were only four families who had relatives in the area and that they had phoned from Italy.

Peore I2OWT proved to be our regular contact from there-on, his operating technique was excellent and concise.

Since propagation opened up usually after 1800z and died before 2300z. His schedules had to be precise. Some of my co-operators like VE3BFW, and VE2DM with myself would sit on the frequency and up would come I2OWT precisely on time.

One minor disaster was experienced by one of the Canadian Amateurs, VE3AUM Ron, went off the air in the middle of a sentence, the group was now so closely co-ordinated that another Ottawa station phoned Ron to find if he was o.k. Ron's exciter had failed, so we had to carry on with no relief.

As it was necessary to be away from the rig on the Monday week of the 1st December, I arranged for two other Amateurs to fill in until 2000z. On my return, a

Toronto station informed me he had been trying to phone me to let me know that I2OWT was on frequency, calling for me. It seemed everyone was ready to help.

The next days saw a further illness of information on the tragedy was handled. Telex, and phone numbers and information on persons credentials re aid to the stricken area.

We heard the story of the boy of 10 years being rescued after 137 hours.

The eight villages that would be no more!!

The sadness of the church of San Phillip, with the Priest, his father, mother, and aunt all killed in the collapse of the church, plus the little Luisa -- only six years old. And so the numbers of dead, missing and injured climbed.

The final big list handled was 103 lines long. Mention should be made of I2OWT uncle IIRZA, who spent three days assisting in the Irpinia, centre of the zone and the other Italian Amateurs who went in with the army and were relieved after many days by other Amateurs.

All in-going traffic on a personal basis was going through Red Cross via commercial channels. Rome was compiling computer lists for check purposes. Commercial communications in the stricken area was down. Amateurs were operating and handling official traffic. I2ARI a station of the Amateur Radio Italia was co-ordinating and I2OWT was able to contact him when necessary.

The last two days showed that official communication was being restored and on the 5th December, Peore informed me that the Italian Government had said to stop emergency operation as of 1100z. The telephones were now working between Naples-Milano-Salerno etc., and we said goodbye for the present to our now very good friend Peore I2OWT.

And so it ended. We hope it never happens again.

-Rowland VE3AML

The Camp

X Papers

In early September 1939, a few days before Canada was officially declared at war, Eric Adams, then VE3ALG, like other Amateurs received a document from Ottawa. He recalls this as a beginning to his career as a secret agent.

The document said "I hereby notify you that your Amateur experimental station licence is suspended forthwith, and direct you to completely dismantle and render inoperative all equipment installed in your station."

Such were the communication capabilities of private radio transmitting and receiving equipment of even the most modest sort that they could readily be used for clandestine purposes. Radio communication in wartime could lead to defeat or victory, triumph or disaster.

This fact brought about the recruiting and training at Camp X, or a number of Canadian Amateur radio operators to assist in the interception of the incredible volume of enemy secret radio activity that was to spring up in all parts of the world, and which would play a major role in shaping the war.

I was one of the radio monitors recruited by the British intelligence

agency headed by Sir William Stephenson. Its cover name was the "British Security Co-ordinator" office. In my case, I spent most of my war years in South America. Simply stated, an Amateur radio operator is an ideal candidate for handling clandestine radio activity of any description, be it interception or the actual transmitting of traffic. The radio Amateur likes and understands his hobby, he's good at solving technical problems and keeping equipment running without seeking outside assistance. He is already capable of sending and receiving Morse code efficiently and needs only to be trained in the specialities of handling clandestine radio messages.

In early 1942 I trained for two

or three months at a camp on Lake Ontario, the famous "Camp X", where I was a member of the first wireless class. Later the same year I was on my way to Caracas, Venezuela, where I was located at the British controlled oilfields, at a place called El Mene, a tiny community in the jungle near Maracaibo.

While in Venezuela I was one of a team of two BSC monitors. My colleague was another Toronto radio Amateur who later went to Trinidad while I went much farther south to Santiago, Chile, where I remained until the end of the war.

Other Canadian radio Amateurs from Camp X who took part in this South American venture were stationed at Bogota,

Colombia; Quito, Ecuador; Lima, Peru; Buenos Aires, Argentina and Montevideo, Uruguay.

The importance of clandestine radio communication to the enemy war effort can be simply explained. There is probably no more perishable commodity than information gathered by spies. As the war progressed, it was commonly taking a month or more for various secret couriers and methods to relay information from enemy or neutral territory to Germany. With radio, the actual transmission took only seconds or minutes.

The significance of South America was due in part to the fact that a difference in attitude toward the war, fewer heavily-populated areas and other factors made it easier to maintain illicit radio stations with less chance of detection or interference from authorities.

There was also the fact that radio signals tend to travel better north-to-south than east-to-west across the Atlantic. Thus smaller, low-output (more easily hidden and harder to locate) illicit transmitters in the U.S. were used to send information on ship movements and other vital information to South America for relaying by means of more powerful transmitters to Germany.

In the clandestine radio 'business,' you have an 'out station' which is secretly located in enemy or neutral territory, and you have the main station back home which is called the 'control', or sometimes 'home station'.

Hamburg, or more properly Wohldorf just outside the city limits, was the control point for a vast volume of German clandestine traffic. Working from underground bunkers, this went on unabated, even during the time that Hamburg was being turned into rubble by Allied air attacks.

I used to listen with amazement, night after night, to clandestine radio circuits working back to Hamburg, as a time when

the city was little more than a blazing ruin.

In fact, one of my main priorities was monitoring a circuit which in BSC parlance was identified as 13 / 43 and it meant a change of frequency to 10,400 kHz. I'd been supplied with a whole list of these frequency change signals (although there was a tendency to use only a couple of them) and I knew exactly what was meant by these cryptic two-letter signals, usually used when reception was poor at one end or the other.

Today, nearly 40 years later, I still think of 5:30 p.m. as the time 13 / 43 came on the air, sometimes seven days a week. It was one of the most professional operations I monitored. With the out-station in Argentina, contact with Hamburg would sometimes be made within a second or two and the traffic started instantly. You had to be on your toes.

Oddly enough, if reception was first-class for me I wasn't very happy, because this nearly always meant that the Hamburg operator would have trouble from weak signals, and since 13 / 43 didn't do much fooling around the transmission would be abruptly halted. They might first try a change of frequency but often they got trickier still by throwing in a time lapse as well. Thus, they might go off the air for two hours and come up on a different frequency.

Clandestine radio traffic was always in five-letter cipher groups. Only in rare instances was anything else used, although in

"Clandestine radio traffic was always in five-letter cipher groups."

one of the most dramatic moments of my entire wartime activity, and at something like 3 a.m., a station I was monitoring came up with the incredible message in plain English, "I have lost my code book"!

The use of plain English (en clair, as non-coded messages are called) deserves explanation. Operators of German clandestine stations were taught an assortment of English phrases and words for occasional or special use. Presumably the idea was to give a casual interceptor the idea that he was listening to an American or British service and thus move on. It was a futile, almost silly device, because the sending style and other operating techniques of a clandestine station were such that you had recognized what they were long before they transmitted a couple of words in English.

I had no idea of the significance of this circuit, beyond the fact that I'd been told that it was of the highest importance. It was operating on a low frequency and signal strength was good, suggesting that it was a communication from a relatively nearby point and intended to be received at close range. An example would be an agent in Chile or Argentina signalling to a submarine off shore.

Although monitoring activities spanned, theoretically, a 24-hour day and there was no other BSC operator in Santiago, I still had free time to acquaint myself with a totally foreign world. During the war, travel to South America from North America was limited largely to people related to the war effort. Flight down was on DC3s; slow-flying aircraft that left at daybreak and flew until dusk, stopping only to refuel.

A flight from the top of South America to Santiago involved three days' travel. There was no after-dark flying and there were times when planes were grounded by the weather for days. Once,

during my stay in Santiago, flights over the Andes to Argentina were held up for a couple of weeks. On my flight down, incidentally, I had the unique experience of having a German agent as my seat partner, a fact I didn't know until later. While I got off at Santiago, he continued to Buenos Aires where he was arrested. All this reached me later through my BSC station boss. I had a few anxious moments, of course, trying to recall if I'd said anything indiscreet, although my recollection was that this man had shown no more than the most casual interest in me and had asked no questions of significance.

Then there was the time I awoke in the bedroom of my Santiago boarding house in the middle of the night to realize that the door was creeping slowly open and with someone obviously on the other side. For a person in my line of work it was an alarming moment and taking into account my doubtful skills at unarmed combat during my brief training at Camp X I decided it would be best to get out of bed and at least die standing up.

I leapt out on the far side and switched on the light. There, in the half-open door, profusely apologizing, stood a young man in the gray uniform of a private in the Chilean army. He'd been upstairs 'visiting' the maid, and in attempting to find his way back to the street in the darkened household he'd become confused and was opening the wrong door.

A much more serious incident took place during my brief stay in Venezuela. My colleague and I, on our way from the British Legation to where we lived in the suburbs, became aware that a man seemed very interested in us. At the bus station, he stood watching a few yards away. Buses came and went and he got on none of them. Finally, our suburban bus pulled in and to test our suspicions we ignored it until it was pulling away. Then we raced to the open back door and

leapt aboard. Our follower did the same thing at the open front door.

We lived virtually at the end of the bus line, and near this point we and our suspicious companion were the only remaining passengers. It was a bit like something from a Hitchcock movie.

So we tried our ploy in reverse. The bus reached our stop and paused. No one moved. Then as it picked up speed we jumped off at the back, raced across the road and down our dark street. We heard running footsteps behind us but they hadn't yet reached the entrance to our street and in the remaining seconds we hid behind some large bushes.

The footsteps raced by and faded away. We crossed the street to where we lived and got safely inside.

"I decided it would be best to get out of bed and at least die standing up..."

Next morning our BSC station chief listened with interest and eventually showed us a series of police mug shots. We identified our travelling companion. He was well-known and dangerous.

The conclusion was that it was probably a case of mistaken identity on the part of our pursuer. There'd been recent activity in which jewellery, intended to be smuggled to Spain to help finance the Axis war effort, had been intercepted and confiscated because of a BSC tip-off to local authorities. It was felt that our follower may have believed that we'd been involved and was out to even things up.

Not all my activities took on such a James Bond touch. In Santiago, for example, as the only

electronics person on the premises, I was viewed as a repairman for the hearing aid used by the wife of the British ambassador. She was a charming and delightful woman, but obligated to carry around a hearing aid, which in those days was a cumbersome box several times bigger than today's portable radios, and which from time to time had things go wrong with it.

The people of Chile were intensely democratic and law-abiding, a fact which makes today's situation all the sadder. Day or night, I went without fear to almost any place in the city. I was never involved in, or even witnessed, any sort of real violence.

Once, on a Chilean street-car, I was amazed to hear (in startling contrast to the Toronto of the 40s from which I'd come) its poorly-dressed conductor telling off a drunken passenger. He told him he should be ashamed, that his conduct was dishonourable.

The attitude of Chileans toward the war varied. Some were distinctly pro-German, others pro-allied and many were somewhat neutral. On balance, in Chile, the population favoured the Allies. In movie theatres which specialized in running continuous showings of news reels (rotativos, they were called), as opposed to theatres which showed a feature picture only, and at specified times), the audiences commonly applauded when Roosevelt or Churchill appeared on the screen.

During my vacations I travelled to Argentina and Uruguay and coming home I went up the east coast for a quick look at Rio de Janeiro and a couple of lesser locations.

I very much liked South America. I am saddened at the vicious inflation and the military dictatorships that are so prevalent there today.

I don't think I'd want to go back now. It would be too depressing.

Request for Illegal Operations Reports

In June 1980 an article on illegal operations was printed in **TCA**. Since then several letters on the increase of illegal operations have been received.

A forum on this topic is to be organized for the 1981 National Symposium in Winnipeg. To do this and present a case to the proper officials, CARF needs information. All Canadian Amateurs are asked to send reports on the

following topics. To facilitate handling these reports, please use the format given. You may duplicate this form or use your own.

Reports are requested on the following:

1. Illegal operations in the Amateur bands involving Canadians.

2. Illegal Amateur-type operation outside the Amateur bands involving Canadians.

For those who do not consider this a problem, please tune below the ten-metre band and see the illegal Amateur-type activity. Reports on this spreading to the band edge of 20M have been received. With the proposal for hobby bands, the pressure on our frequencies and indeed our hobby will be obvious.

Ron Walsh VE3IDW

ILLEGAL OPERATING REPORT

Reporting Station:

Report No. _____

Name: _____ Call Sign: _____

Address: _____

Home Telephone: _____ Office Telephone: _____

Reporting Station

Station(s) Identification: _____

Frequency: _____ Name: (If known) _____

Location (Include address if known) _____

Bearing to observed station (If address unknown) _____

Date: _____

Time Started (UTC): _____ Time Finished (UTC): _____

Transcript of Illegal Transmission (If extensive, give summary) _____

Comments: _____

Illegal Operations Report
R.E. Walsh VE3IDW
763 Safari Drive
Kingston, Ont
K7M 6W1

Contest Scene

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

CONTEST CALENDAR

February

7-8 RSGB 7 MHz SSB
14-15 YUDX WW Contest
21-22 ARRL DX CW
21-22 REF SSB
28- 1 Mar. RSGB 7 MHz CW

March

7-8 ARRL DX SSB
14-15 RSGB Commonwealth CW
21-22 **CARF Commonwealth Phone**

21-23 BARTG RTTY
28-29 CQ WPX SSB

April

25-26 CQ WPX CW

I write this the day after the first running of the Canada Contest, and I must say I was impressed with the level of activity.

The overall winner (if we can get him to submit a log) will be VE5DX, who was handing out serial numbers in excess of 1100 at the end of the contest, more than 300 ahead of his nearest competition. Of course, his score will be determined by how many US stations he worked and his multipliers, but Jim will probably win.

As well, VE4VV is alleged to have swept ten metres single band. Some of the major all-band contenders were VE7CNY, VE3GCO and not many others. As for multi-single, VE7WJ manned by Henry himself and VE7BBQ did quite well making about 600 QSOs and falling three QSOs short of a five-band Canadaward in the process. Peter VE7BBQ is quite convinced that if the activity was there, a six-band Canadaward is possible, as

VE7WJ worked coast to coast on 160M.

I was happy to see so many non-competitors helping some of us out with points, but there were also those who, not appreciating our method of enjoying Amateur Radio, tried to obstruct the contest.

One general comment was the lack of VE8s. I did not hear one, except VE8RCS who was too busy running patches to the south whenever I heard them.

The Yukon was well-represented by VY1AL, VY1CM and VY1AU. I do wish they were more active on the low bands. At time of writing, I know of only two claimed scores, VE3GCO with about 295k and VE2DZE with 203k.

If you have any comments on the rules, please let Peter VE7BBQ know, as he is the adjudicator of this contest. Please remember that one of the founding ideas of the contest was to get Canadians working Canadians, and any foreign activity is pretty much an afterthought to the main contest. The points differential should illustrate this.

A few final comments about the contest should include questions about where the big winners were from the Canada Day Contest. If you look down the winners of the July Contest, where were they in December? I was impressed with the level of CW activity, as for many people CW was a source of multipliers rather than QSOs.

We should also thank some of the USA participants like K6XO,

W5JW, WA5QBO and others who, despite the frustration of not being able to work Canadians on Phone. All in all, it was an excellent contest, and I hope everyone will be on for the Canada Day Contest on July 1.

A few contests for February include the YU DX WW contest, confined to 80M CW. They receive very few entries from this continent, and if you get active at all, you could win a very attractive plaque for your efforts. As well, now that we can use the DX part of the 40M Phone band, I hope some Canadians entered the RSGB 7 MHz phone test. The complimentary CW event falls at the end of the month.

The ARRL DX Contest is coming up as well, and under a return to basically the old rules, which is an improvement, but not yet an ideal contest for VEs. I think I made my position clear in December TCA, and again I encourage you all to write to ARRL's Contest Committee with your opinions.

Last month we published the rules for the first CARF Phone Commonwealth Contest, which I hope will be a success. You DXer types should be out for this one, and the RSGB's CW event, as some interesting countries do show up in this contest.

As well, the WPX is soon upon us and, unfortunately, I think there will be few funny prefixes from Canada this time due to a recent policy decision of DOC limiting special prefixes to special occasions. There are certainly two

sides to the question, but a weird prefix in that contest can certainly be an advantage.

Some time I made a feeble attempt to get some opinion injected into this column. I expected a feeble response, but was disappointed that I received nothing. Well, it's time for another feeble attempt. Please send me your comments relative to contesting. You are almost guaranteed to see your name in print, ensuring your right to bask in the glory of your peers' admiration.

YU DX WW CONTEST

Period: 2100Z 14 Feb to 2100Z 15 Feb.

Bands: CW only, 3520-3590 KHz and 7010-7040 KHz.

Classes: for Canadians — Class D single op. Entrants must stay on either band for at least 30 minutes. Class E multi op. Entrants must stay on one band for at least 10 minutes, unless it is to collect a new multiplier.

Exchange: RST and serial number.

Scoring: On 3.5 MHz, 10 points per QSO with YU, 2 pt per QSO with North America, 5 pt per QSO with another continent. On 7 MHz, 5 pt per YU, 1 pt per NA, 2 pt per DX.

Multiplier: DXCC countries and YU prefixes worked on each band.

Logs: Do not use separate logs for each band. Include a summary sheet listing multipliers, total QSOs, points claimed and final score claimed. Entries must contain the standard declaration of observance of contest rules and radio regulations. Logs must be postmarked before March 15 and sent to: SRJ, YU DX C, P.O. Box 48, 11001, Beograd, Yugoslavia.

RSGB COMMONWEALTH CONTEST CW

Period: 1200Z 14 Mar to 1200Z 15 Mar.

Rules are essentially the same as for CARF Commonwealth Contest, except the recommended frequencies are the bottom 30 kHz of each band. Logs must be submitted to Dennis Andrews G3MXJ, 18 Downsview Cres., Uckfield, East Sussex, U.K. by 12 May. Please do not submit logs for the Phone contest to RSGB, or CW logs to CARF.

News Briefs

NEW PRESIDENT FOR HEATH

Heath has a new president, William E. Johnson, who took over January 1. He's an old timer at Heath, having joined the company in 1959 and promoted to Executive Vice President a year ago. Retiring President Dave Nurse W8GCD had held the top office at Heath since 1966.

- HR Report

AMSAT 75-METRE NET

AMSAT's 75-metre net now badly needs a permanent net control, as WB2TNC announced his retirement as WA3NIN operator

during a Tuesday night net. Temporary alternates will be WA2L-QQ, W3GEY and possibly others, but Will's firm hand and WA3NIN's booming signal will be missed on 3850 each Tuesday at 7 p.m. EST.

Other AMSAT nets of interest that aren't as well known are the 10-metre group that meets at 2200Z Saturdays on 28887 with W6CG as NCS, and the U.K. net which meets on 3780 kHz at 1015Z and is audible in much of the eastern U.S.

- HR Report

PICTOU COUNTY CERTIFICATE

The Pictou County, N.S. Amateur Radio Club has rejuvenated the 'Worked All Pictou County Award'. The requirements are that you QSO ten different Pictou County Amateurs on any mode and band. QSL cards are required, but there is no award fee. QSLs should be submitted for contacts after Nov. 1, 1980 and sent to Pictou County ARC, P.O. Box 2, Trenton, N.S., B0K 1K0. Thanks to Doug Morrison VE1BMN for the information.

Pictou County Amateur Radio Club

WAPCA

This is to Certify that
Operator of Amateur Radio Station has presented
satisfactory proof that has been in two way communication
by Amateur Radio with all active Pictou County Amateur Radio
Club Members.
And has this day been awarded this certificate.

..... PRESIDENT ACTIVITIES MANAGER
Date 19
..... SECY-TREAS.

What happened

The daily news on Iran-Iraq, the escalation of war, with once-forgotten names back in the media, brings to mind the story of George H., whose surname I won't reveal, as you never know!

We were stationed near Fao, maybe 30 miles south of Abadan's oil refineries, where smoke clouds billow today, the middle of nowhere then. It would be just 38 years last November since we went there ... first radar in the Gulf area.

George was the oldest man in the unit by far. He was 32; the average age on the station was no more than 21. He parted his black hair just off centre and pulled it back like George Brent. He sported a Clark Gable moustache and his teeth were very white and even. He had a devastating grin which disarmed everyone.

George H. was not happy in the Air Force. He disliked the military rigmarole and he looked down with some disdain on the muddling conscripts and wartime volunteers that surrounded him. You see, George had been in the trade before the war. Too old for aircrew, he came from somewhere in the London (UK) area and had been an airborne radio operator for about 10 years with Imperial Airways (predecessor of BOAC, now British Airways).

George had been in on the early stages of the development of regular commercial air services from England to India, the Far East and Australia. The routes were opened up in the 30s with the Short Empire class flying boats. It was partly the placement and hur-

ried construction of military airfields all over the globe during WW II that helped bring about the demise of these sumptuously equipped, roomy, long-range flying boats, which only needed water for takeoff and landing... and there's lots of that available free!

There's a lake near Habbaniya, some 50 miles west of Bagdad, capital of Iraq, and George had at one time in the late 30s been based in Habbaniya, which was an important staging post for the Empire flying boats on their way to Karachi, Singapore and Sydney.

At Abadan, George was in charge of communications on the

"He liked his beer and cigarettes, and was always working the angles to acquire other guys' rations..."

radar station. There were only two other CW operators, and he hated them. The best tradesmen you came across were always the pre-war regulars, or those who had been 'at it' in civvy street, and George never let you forget it. Unluckily for him, it wasn't a busy station. He was the only one with pre-war experience in radio.

Bug keys were not permitted in the British military (not officially anyway), but George was good for

30-35 wpm for hours, even on a regulation straight key. He seemed to find electronic faults in equipment almost by instinct, needed no test equipment to do so, and appeared to know more about radar than the technicians, although it was top secret at the time and he had received no training in that field.

He had rather delicate but firm-looking hands, and kept the nails just so. The other operators used to watch him in action with their mouths open, unbelieving. It was all sending, not much receiving, coded jumbles of mixed figures and letters, frequency changes were made from time to time and sending styles were altered. George was just too good for wartime signals standards, and he let everyone know it!

He was a loner and went off on his monthly 48-hour pass on his own. No one every knew where he went. He spoke Arabic reasonably well, and when he went out he was immaculately dressed in off-white slacks and safari jacket. He never wore his hat or military badges, just like a character out of Somerset Maugham. No one had the nerve to reprimand him (he was a sergeant).

He liked his beer and cigarettes, and was always working the angles to acquire other guys' rations (2 bottles a day, quart size, 50 cigs a week). He liased with all those who didn't smoke or drink (not too many) and had the market cornered on all the spare booze and smokes. But he was always in complete control of himself, self-contained and imperturbable.

to George?

The weeks dragged on. There'd be spasms of activity from time to time when George, machine-like, would do more work than the other two ops combined. He was always bored stiff, supercilious, but worth his weight in gold when the chips were down.

War was moving out of Africa and the Near East into Europe, and we were just involved in a kind of rear-guard action, but Abadan was vital, even then, as was the pipeline from Kirkuk (Iraq) to Haifa on the Mediterranean. Other units covered Iraq and Northern Iran. George yearned for more activity, more stress, more challenge, but they wouldn't move him.

Christmas came and went and one day George, usually so reliable, so efficient, didn't show up for the night shift. It was ascertained that he never returned from his 48 hour pass the day before ... nobody knew where he had gone or even where to start looking. Abadan was just a dump, no towns of any interest anywhere close. Just had to wait and see what developed. A report went in to HQ.

I was the only other airman on the unit that knew CW (though my trade at that time was in radar), so they imposed on me to fill in for George until he showed up, and I found it not difficult to perform on a par with the other two wireless operators, but we all missed the Master.

But George never did come back. He was officially listed as Missing on Active Service and in due course, several weeks later, a

replacement came from Signals Reserve Pool in Amman, Jordan. I went back to radar operating and life went on as before. Still, the unit had become somehow poorer without George, despite his manners. He stood head and shoulders above all.

The probability of Axis attacks on the oilfields became so remote by mid-Spring that we received our close-down orders. We were to return to Cairo for disbanding and re-assignment to the Italian campaign. We wouldn't be sorry to leave the Gulf. It was a hot, smelly, mosquito-ridden area. We lived crudely and the food was atrocious. There were no accessi-

"One day George, usually so reliable, so efficient, didn't show up for the night shift..."

ble locations for temporary escape (watch your TV).

The long trip ahead involved crossing the Shatt el Arab and proceeding up the west bank of the Euphrates to Bagdad, follow the oil drums 500 miles to Damascus, Syria (no road at that time) down through Palestine, the Sinai, Suez Canal to Cairo. The fleshpots again, what did Lady Astor say? Most of us would travel sitting on a tin can or box on the back of a

truck or in one of the technical vehicles, inadequately ventilated and super-hot. But we looked forward to the journey, as it meant goodbye Abadan.

We had jogged away the first day, crossed a pontoon bridge into southern Iraq and stopped a while at the RAF camp at Shaiba. We had our first good meal in months and a swim in the station pool. Next day we got underway again early.

Traffic was getting heavier, the Arab smells and sounds thickened as we approached the outskirts of Basra. We rolled forward the canvas top on our 15-cwt light truck and stood up, leaning on the tubular metal framework so we could properly drink in the passing scene. The road became clogged with pedestrians, bicycles, donkeys, old beat-up trucks, camels, stray dogs, old men, scampering kids ... the kaleidoscope of Islam on display -- we'd been cut off a long time.

The little convoy got split up a bit in the congestion, and our truck eventually ground to a halt behind a dilapidated Arab stake truck loaded with dates and junk, sides bulging outward dangerously, springs down at the side.

Two guys were haranguing each other in the Arab manner, arms flailing, and a partisan crowd had gathered around the 'combatants' to help settle the dispute. They were also shouting at each other, at the sky, at anything that moved. The truck had nudged an old cart, breaking off one wheel at the axle. The donkey pulling it stood at the prescribed spot, chew-

ing rhythmically, holding up the remnants of the cart. It looked around at the surrounding crowd calmly and analytically. It appeared to be more intelligent than all the humans.

The performance went on for about five minutes before some kind of agreement, perhaps for compensation, was reached. The cart was lifted up, the donkey coaxed into motion, and the whole junkpile moved to one side to open up the road again. We loved it!

At about this point we heard an English voice call out something from the sidewalk. Were we hearing things? We looked over at a wall behind the sidewalk; a few old Arabs squatted there, spitting and gabbing, dirty, unwashed, disreputable types. They never seemed to work, living by picking pockets and petty thievery. Our

hands covered our pockets and wallets instinctively.

It came again: "Any beer or cigarettes on board?"

The voice was London area, and it was familiar.

This time our eyes followed our ears and we realized the question came from one of the Arabs by the wall. But we *knew* that voice.

A third time came the question, with a hint of mockery this time. We traced it to a guy in the middle -- we *knew* this voice, but we did *not* know this person! Basra would be full of long-haired, straggly-bearded, bleary eyed, barefooted, dirty wasters like him ... ragged old burnous trailing the ground, hadn't washed in a month.

He was smiling, even white teeth stood out against the dark

beard and burned complexion. The smile was still the same. It was George H. There was no mistake!

Our hearts missed a beat at that moment of recognition. Could it be possible? George gone native! A deserter?! Comprehension was beyond us.

We waved weakly, but none of us spoke (we were three). The truck jolted into movement again and crept forward slowly as traffic loosened up. We just stared at George, speechless and shaken. He said no more. The smile remained though, and as we gradually picked up speed, his right hand came up slowly into an informal salute. It was done carefully, and the casual observer would have found no significance in the movement. Only we three knew.

The camels moved on, the old men passed by, mangy dogs and kids scampered across our field of vision until a bend in the road obscured the squatting George from sight, his hand still raised in salute, his last goodbye. No others saw him.

We felt weak and insecure, but spoke only briefly to each other about the incident. We told no one.

We three were among the youngest on the unit, and it may have been that our rapport with George was closer than any of the older guys. Likely he felt we were just children, and maybe he was right! Despite his attitude, we admired and even liked him. We envied his arrogance and self assurance, we loved his anti-authority manner, his independence. He was indeed a rare type.

The convoy linked up again, cleared Basra, and radar pulled out of the Gulf, leaving behind one of its ablest helpers, an unusual casualty of unusual circumstances.

George H. -- superb craftsman of his day. The odd man out.

Where are you now George?

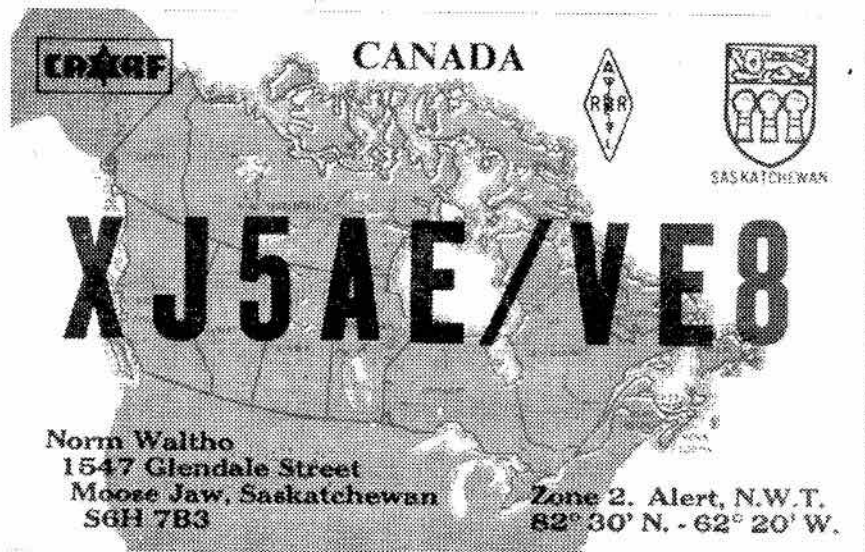
Bill VE3HJG

XJ5AE

XJ5AE ex VE5AE was in operation from 31 July 1980 to 18 September 1980 at the location of 82° 30' N - 62° 20' W zone 2 at a place called Alert NWT. We made 1689 QSOs in 50 days on 15 metres and 20 metres. We are back home now and have enjoyed the opportunity to work from the other end of a pile-up. If you think the

American pile-ups are bad, you should try to work the Japanese or European pile-ups. The USA pile-ups are really tame to the others. The XJ prefix was for the 75th anniversary of the province of Saskatchewan and used only in the months of July, August and Sept.

Norm Waltho
Moose Jaw, Sask.



Andre Ampere

Born: Jan. 22, 1775

Lyons France

Died: June 10, 1836

Marseilles, France

Andre Marie Ampere, French physicist and mathematician, as a child amazed his parents by his flair for figures. He no sooner learned to read than he was into Algebra, and at the age of 12 borrowed books on calculus from the College in Lyons. The fact that they were written in Latin did not stop Andre. There was no school in the village of Polymieux where he lived, so it is recorded that 'Ampere had no teacher but his own genius'. Later in life, he reckoned that he knew as much mathematics at 18 as he ever did. He had a retentive memory and read books on every subject.

When his father perished by the guillotine in 1793, when Lyons was taken by the army of the Convention. His farewell note to his wife recalled that the books and instruments of geometry for Andre had been their greatest expense, but advised her to regard it as wise economy, "since he has never had any other master than himself". "As to my son," he added, "there is nothing that I do not expect of him."

For a long time, his Father's death seemed to blight Andre's existence. In fact, he confessed he was "without eyes or thought". An interest in botany and poetry brought him out of the dust, as he described it, but falling in love with Julie Carron really revived his spirit. They moved to Bourg where he taught physics and chemistry in the Central School. In 1803, he was

appointed to the chair of mathematics and astronomy in the lyceum at Lyons. Broken by the news of his wife's failing health on June 7, 1804, in his diary he prophetically wrote, "This day has decided the rest of my life". On July 13, Julie was dead.

Ampere went to Paris as tutor at the Polytechnic School. He married again in 1806 and continued his work as a professor. He published numerous papers pertaining to mathematics, chemistry, natural history and physics.

Sept. 11, 1820 was another day that decided the rest of his life: he learned of Oersted's discovery of the relation of electricity and magnetism.

Soon Ampere proved by a series of new experiments that all magnetic effects mentioned by Oerstad could be produced by electric current alone. He formulated a rule for finding the direction in which a compass needle turns when a wire conveying a current is held near it. Also, he demonstrated the important fact that two parallel wires carrying electric current attract each other when the current flows in like directions, and repel each other when they flow in opposite directions. He proved that the force of attraction or repulsion is directly proportional to the strength of the currents, and inversely proportional to the square distance between them.

James Clerk Maxwell called him the 'Newton of electricity'. Ampere showed that a spiral conductor, when fed by a current, behaved like a magnet; that it had a north and south pole. He offered a

theory that every atom in a magnet was magnetized by virtue of a circular electric current surrounding it from west to east. It was in this discussion that he coined the term 'electrodynamics'. His discoveries led to many developments based upon magnets, especially the electromagnet, the heart of the telegraph.

The power of his intellect was so vast and his tongue was so eloquent that Ampere was said to qualify as the absent-minded professor and as a long-winded talker. Someone remarked that his absence of mind to the outer world came from his presence of mind to the inner.

His consciousness had the power of sharp forms and concentration that made him a great thinker. He had universality of mind, a fact which historians attribute to his lack of sustained effort in any particular direction, for he was generally wandering into fresh fields, working in fits and starts.

"Doubt," said Ampere, "is the greatest torment a man can endure on earth." Ampere died at Marseilles, while on a quest of improved health, and it is reported that news of "his death was transmitted to Paris by the semaphore". Yet to come was the telegraph, telephone and radio, for which he helped to lay the groundwork. In appreciation of his contribution, the International Congress of Electricians adopted his name for the practical unit of electric current - the ampere.

Bob VE7BQW
in Penticton BC 'The Log'

DX

Douglas W. Griffith VE3KKB
33 Foxfield Drive,
Nepean, Ont. K2J 1K6

The intensity of radiation reaching the earth's upper atmosphere is subject to diurnal, seasonal and geographic variations. It is this upper atmosphere, or ionosphere, which is capable of refracting radio waves, causing them to return to earth some distance from the point of origin. Without the ionosphere, long distance high frequency radio communication would not be possible.

The sunspot cycle is another important variation affecting the ionosphere and, while little is known of the mechanism which generates sunspots, observations dating back to the 17th Century indicate that the number of these areas of cooling on the solar surface varies from minimum to maximum and back to minimum again in a period of about 11 years.

Since 1849, the Federal Observatory in Zurich, Switzerland has been publishing sunspot numbers on a daily basis, a practice which ended in December 1980. Since the relative numbers vary from day to day, a more accurate trend can be established by smoothing or averaging the daily figures over a one month period.

We are currently in sunspot cycle 21, which began in June 1976 with a smoothed sunspot number of 12.2. By December 1979, a smoothed sunspot number of 165 had been reached, making cycle 21 the second highest recorded cycle in history.

Best data indicate that we began 1981 with a smoothed number of 140, and that this will

decline to 115 by the end of the year. However, despite slowly decreasing solar activity, 1981 should prove to be another good year for the HF bands.

Beyond 1982 we can expect a slow degradation of conditions on frequencies above 14 MHz, concomitant with increased propagation on the 40, 80 and 160 metre bands. Anyone contemplating 5 band DXCC or 5 band WAZ during the current cycle best get a move on, as there are only about 18 months left before 10 metres and 15 metres go up in smoke.

Since there is a 5-week delay from the time this column is written until you receive your issues of TCA, most of the DX information is dated. The exceptions of course are the large DXpeditions which are well publicized in advance. Hopefully, the QSL information will prove useful. For those

wishing more up to date DX information, some of the more timely sources follow:

1. The Canad-x Information Net, which meets weekly at 1700 GMT on 14173 KHz.

2. W1AW DX Bulletins. This information is provided by the Southern New England DX Association and the schedule is as follows:

SSB -- 0130 / 0430 GMT, Friday
Freq. 1835, 3990, 7290, 14290, 21390, 28590 KHz.

CW -- 0000/0300/1400/2100 GMT
Friday, Freq. 1835, 3580, 7080, 14080, 21080, 28080 KHz at 18 wpm.

RTTY / ASCII - 0100 / 0400 / 1500 / 2200 GMT Friday, Freq. 3625, 7095, 14095, 21095, 28095 KHz, RTTY at 60 wpm / 170 Hz, ASCII at 110 baud / 170 Hz.

3. DX Nets. The following is a list of DX nets which are now operating:

<u>DAY</u>	<u>FREQ.</u>	<u>NET NAME</u>	<u>TIME</u>	<u>NCS</u>
Daily	14220	P29JS	0630	VK2BKD/VK5MQ/P29JS
Daily	14250	Family Hour	1500	W7PHO
Daily	14225	Family Hour	2300	W7PHO
Daily	21345	Family Hour	2330	W7PHO
Daily	21355	AfriKKaner	1700	W2PPG/WA6ARF
Daily	28510	10M DX Net	---	----
Sunday	7080/7180	40M DX Net	0200	---
Sat./Sun.	3795	80 M DX Net	0630	---
M-W-F	28750	DX to DX Net	1200	DK20C
Tues./Sat.	14265	Pacific DX Net	0500	VK3PA/VK2CX
Friday	14250	Arabian Knights Net	0500	JY3ZH

This list was reproduced from
Long Skip.

4. There is no substitute for just plain being active on the HF bands and picking up juicy tidbits of DX information as you tune.

Bits & Pieces

HK0 - Heard Island. The on again, off again DXpedition to Heard Island is on again for the first week of February. Whether the originally intended call of HK0JS will be used isn't clear. QSL info will follow.

LU1AF / Z - S. Shetland Is. from Jan 25 LU1AF / Z and LU1DZ / Z should be active. QSL via LU1DZ.

TJ1BB - Cameroun. John will be in Cameroun for one year. He likes CW and is very active at the bottom of 20M from 2300 GMT. QSL via AF4B.

VU7 - Laccadives. During the first week of Feb., a group from the U.S. and India will be active from the Laccadives. The exact date and callsign are not known at this time, but keep your ears open. QSL info to follow.

ZL2AFH / A -- Auckland and Campbell Is. ZL2AFH/A appeared briefly on Dec. 25 at 14208 around 1330 GMT. He will be there for another 10 months. QSL via ZL2HE.

5B4 - Cyprus. Dave N2KK was frustrated in his attempts to operate from 4W, but hopes to get on from TT8 in January, and from 5B4 from Feb. 4-11. He likes to operate on 40 and 80 metres, so watch 7080 KHz from 2000 GMT, and 3795 KHz from 0200 GMT. Also watch 28510 KHz from 1300 GMT.

9U5JM - Burundi. Jean-Marie appears on the French Net at 21170 KHz. The net begins at 1700 GMT daily. On Tues. and Thurs. and occ. on Sat., a list is taken, between 1700 and 1730. Due to poor propagation between the 9U5 and the NCS, quite often the net QSYs to 14155 - 14162 KHz at 1800 GMT. Two QSL routes have

been given: F7DGW and F6DLW. If you choose to QSL via the latter, his CBA is correct. F6DLW's correct address is:

Jean Masson
3 Beausejour
Troyes
10,000
France

VK4NIC / 3X - Rep. of Guinea. Ian shows up most evenings around 2200 GMT on 21202 KHz. Cliff VE3MC takes a list at 2130 GMT on the same freq. QSL via W4FRU.

That's it for this month. Good luck and good DX.

Maintain the Amateur Image

The other week, as I agonized my way through the traffic, I was passed by another vehicle. This car had a 2-metre antenna and a decal of the ARPSC (Amateur Radio Public Service Corps). A nice service to have available during an emergency; but this Amateur was driving as if he were an accident looking for a place to occur as he cut in and out with zero clearance and no turn signals.

Does Amateur Radio need this kind of advertising? No way. So here's a brief word to all of us, especially those who display nice VE3 licence plates. We create images of ourselves, our associates, and our hobby. It's nice to pretend that in a pluralist society each person represents just himself or herself. But this is not a pretend world. And then there's: "When I'm right, no one remembers. When I'm wrong, no one forgets".

Maintaining the image built up through the years is a collective responsibility. Now, I am not suggesting that we all rush out to help little old ladies across the street (even when they don't want to go).

Instead, we can all use the good common sense we were born with, although common sense is frequently an uncommon commodity. Drive safely, as you were taught, according to the Golden Rule and the Highway Traffic Act. We are noticed, you know, and there's no guarantee that we will always be mistaken for CB'ers.

-VE3HVX

Having Problems with Tariff Regulations?

Are any of you having problems with the new tariff regulations? Have you had a lively discussion with a customs officer over the importation of a particular piece of equipment?

If so, we would like to hear from you. We are currently working with Customs and Excise and DOC to resolve potential and real problems over the new tariffs. Your experiences would help us in spotting these problems. Address your comments to: Editor, TCA -- The Canadian Amateur, P.O. Box 356, Kingston, Ont. K7L 4W2.

NEW BEACONS

Two new beacons are reported operating in Australia. VK5WI on 28.2585 MHz from Adelaide area in South Australia and VK2WI in New South Wales on 28.3335 MHz. Both are sponsored by the Wireless Institute of Australia.

New Deal for Cliff-Dwellers

Now that high-rise apartment buildings have been with us for several years, Amateurs have had the time and experience to learn how one can operate on the HF bands from these units. Hundreds of articles have appeared in the various Amateur publications within the last few years explaining various solutions, from unusual whips to how to load up your balcony railing; — all with some degree of success but none with the results of having a full-size antenna in the clear such as one would normally have at a house. This is especially true of 80 and 160 metres.

Having been very active on 80 CW for many years before moving into a highrise, I was quite disappointed with the results obtainable with these systems, especially when I found out that I was the cause of much BCI and TVI to my neighbours, simply because of the close proximity of my transmitter antenna to their equipment.

It was then that I decided the only workable solution would be a "remotely operated base" station. Within minutes of this realization, the specifications for VE3ROB were being laid on the drawing board.

What was needed was a system that would need no complicated operating procedures and could be accessed with equipment possessed by almost any Amateur. One fact that tended to make life easier was the fact that even a few feet of wire strung out a window would

suffice for a receiving antenna and the apartment dweller simply needed a remote transmitter and antenna.

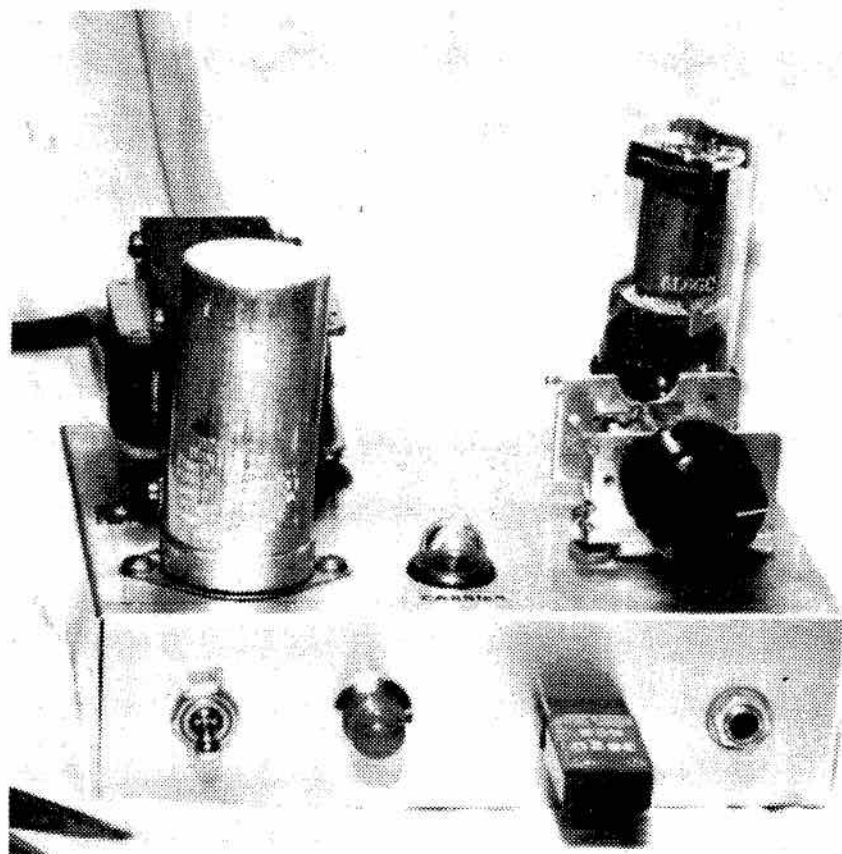
I will not go into the months of headaches and logistics problems which ensued but simply relate the results. The final assembly ended up as a two-to-80 metre repeater or perhaps more correctly, a relay. The output was on a fixed frequency (3470 kHz) and the input was on 147.58 MHz. Operation was quite simple. The Amateur would tune his home station receiver to 3470 kHz to ensure the frequency was clear. He would set his 2 metre rig on 147.58 and check to make sure that this channel was also not in use.

He would then dial a touchtone access sequence on 147.58 and listen on 3740 for the relay to identify ("de VE3ROB").

He then simply used his code practice oscillator or any digit of his touchtone pad through the mike of his two-metre rig and the relay would convert these tones to actual on/off keying which was repeated on 3740 kHz.....it worked like a charm.

Special circuitry was used to ensure the relay was not left on when the user was finished and a time-out system was instituted as in an ordinary two-metre repeater.

Other interesting possibilities became apparent. Perhaps two-metres FM in, and 80 metres SSB out,



utilising special continuous sub-audible tones to ensure that a non-advanced Licencee could not unknowingly have his voice signals rebroadcast on 80 metres; also modifying the system to incorporate a receiver at the transmitter site and relaying the HF signals back on two-metres. Remote frequency and band changing would provide an Amateur sitting on a bus with his walkie talkie complete world wide coverage on 20 metre SSB!

So you say, "How come I haven't worked VE3ROB?" The reason is that VE3ROB was a one-man project. It was only on the air for five weeks when the licencee/builder was posted for three years to Kenya. The Kenyan communications authorities are not as liberal and do not encourage experimentation such as our DOC does, so further developments have ceased and VE3ROB will remain 'QRT' until 1982 when the licencee returns to Canada and reactivates the system. In the meantime, new circuitry is being developed and comments and suggestions are solicited from my fellow Canadian Amateurs. Perhaps this article will inspire others to experiment along the same route. If you do, you will find DOC quite willing to grant permission because such an operating system with the high power transmitter located far from interference prone entertainment devices would alleviate many of their problems also.

Perhaps we can add another feather to the hat of the Amateur Experimental Service.

Rob Bareham VE3ACY/5Z4
Embassy of Canada
Nairobi Kenya

Amateurs aid in rescue gear development

Technology developed by the DOC research centre and Canadian industry is playing a key role in the current program to evaluate a satellite-aided search and rescue system (SARSAT).

The DOC Communications Research Centre (CRC) at Shirley Bay, Ont., just west of Ottawa, carried out successful proof-of-concept tests demonstrating the feasibility of the system in 1975 and 1976, in which Amateur station VE3DRC and OSCAR played a part.

CRC, which performs research and development in communications, radar and related technologies for the defense department, used a polar-orbiting Amateur radio satellite and simulated emergency locator transmitter (ELT) signals to show that such a system could successfully pinpoint the location of crashes to an accuracy of 10 to 20 km in a matter of minutes after the satellite first 'heard' the crash alarm.

The concept depends on highly precise orbital location information for the satellite and sophisticated ground computer processing of information relayed from it.

Within minutes after initial alert is received, a fix, pinpointing the emergency site within 20 km, is produced by ground computers. This speed is the result of the level of computer processing involved.

The information is flashed to rescue co-ordination centres, notifying them that an emergency has occurred and pinpointing the site.

SARSAT works by measuring the varying 'doppler shift' in the frequency of the ELT or EPIRB signal as the satellite approaches, passes over and then moves away from a crash or emergency site. The high speed of the satellite pro-

duces an *apparent* increase in the frequency of the ground signal the spacecraft receives while it approaches, with a similar decrease as it moves away from the source of the emergency signal.

If successful, this trial SARSAT project should eventually lead to establishment of an operational international satellite-aided search and rescue system that would save lives as well as time, fuel and other costs associated with air-sea rescues.

Agencies of Canada, the U.S. and France have signed a three-party memorandum of understanding to co-operate in the program, which will see Canadian and French electronics packages put aboard U.S. NOAA weather satellites for a 15-month orbital demonstration and evaluation, due to begin in 1982.

Negotiations for possible co-operation with the Soviet Union have started. The USSR is planning a similar system for its own satellites (COSPAS) with a view to establishing interoperability with the SARSAT system.

COLD START

The cold spells that have kept the country in a deep freeze this winter has meant trouble in starting up reluctant car motors. A Winnipeg firm has come up with a better way of ensuring starts and a comfortable way to warm up the family buggy. A remote starting system will start up a parked car on receipt of a coded 350 MHz signal from a transmitter in the house or office. The signal is pulse modulated with about 10 milliwatts output. The device can also start up automatically when the temperature reaches a pre-set low level.

Spies & Radio

A review of some contemporary books of interest to Canadian Amateurs.

"The Looking Glass War"; John LeCarre. A hard-cover edition published by Coward-McCann, New York, 1965. The writing of the technical parts of this spy novel was helped out by members of the Radio Society of Great Britain. It relates a rather melancholy tale of British intelligence people who ineptly attempt to re-create their days of glory in World War Two when they were a brilliantly successful group pitted against the best brains of the German intelligence.

This time it's the Russians and a post-cold war infiltration attempt by an agent who was simply regarded as a pawn in a game by the British agencies as they sought to outshine each other. The agent is provided with a suitcase transceiver of WW II vintage and in a classic example of direction-finding he is quickly nailed by the other side. For once, the technical side seems right... except that the cynical British provide a set which will only work off the mains, which made eventual detection certain. As the hunters closed in they cut the power to various houses or apartments while monitoring the transmissions. A battery-operated set would have kept going thus complicating the task of the police. In the end the plot becomes so convoluted that it seems one team of British manipulators wanted the poor

sod caught for political reasons!

It's a gloomy book and not recommended for rainy weekends.

"The Red Orchestra" has nothing to do with music but a lot to do with the courageous clandestine radio operators in occupied Europe in WW II. These 'pianists', at least one of whom was a German Amateur, played their 'pianos' at risk of death and torture. This thrilling real-life story tells in exciting detail the story of the Soviet spy nets in occupied Europe.

The principal networks of agents and their operators were named "The Red Orchestra" by their German enemies, the Gestapo and the Abwehr. The term was based on the jargon of the German intelligence service which called the head of a spy network a 'kapellmeister' or an 'orchestra leader'. The paramount place of radio in these spy nets is well described and technically more or less correct. "The Red Orchestra", by Gilles Perrault, English translation by Peter Wiles; a Pocket Book published by Simon and Schuster of Canada Ltd., Richmond Hill, Ont. March 1970. About \$4.00 and worth every nickel of it.

"The Story of a Russian Spy" is a true story of an Englishman who fought in the Spanish Civil War and then became a master spy for the Russians in World

War II. Moscow-trained Alexander Foote describes the part radio played in relaying to Moscow the top secret plans and policies of Hitler's Germany. He worked in relative safety in Switzerland, sending the information for top German resistance workers or just plain traitors, which helped to turn the tide of the Nazi invasion of Russia. Like most 'pianists' his 'music box' was the cause of his eventual arrest by the Swiss police. Since he was not working against the Swiss, however, his imprisonment was not arduous nor for long. After a series of adventures, including more indoctrination in Russian after the war he defected to the west and lives in his native England. 'Story of a Russian Spy' (Handbook for Spies) Alexander Foote; Doubleday and Co. Inc., New York 1949. (Would you believe that this pocketbook was only 25 cents when it first came out?)

While on the subject of spies and radios, your reviewer came across two interesting items from WW II here in Ottawa. A local Amateur had participated in the production of clandestine radios, built in the usual suitcase. About ten were produced but here the designers goofed; they were put in identical suitcases. When, as was almost inevitable, one of the agents was caught by the

Gestapo, they simply kept an eye open for similar suitcases and succeeded in trapping others in the network, as they travelled about occupied Europe.

For a different purpose another type of set was also designed in Ottawa. Signalmen

with the infantry were the first to get picked off, their trade advertised by the pack sets and the long HF whip antennas in use then. To minimize the casualties among communications personnel, it was proposed to put the infantry sets in the hollowed-out butts of their rifles,

using the 'pencil' tubes of the time, and using the rifle barrel for the antenna. Somehow this development never reached the battlefield, although proximity fuses for shells, using the same technology, were introduced later in the war.

Remote Power Sources for Repeaters

Bill Wilson VE3NR commented briefly in a past issue of TCA on the use of natural sources (wind and solar) as an alternate source of power for operating remote repeaters. This is, however, only a part of the requirement.

Power conservative repeaters must operate without heat in the winter, or cooling in summer, and therefore a repeater that will operate without adjustment over the temperature range -40 to +40°C is required. Furthermore, batteries must deliver power at -40°C and be rechargeable at that temperature. The repeater when not in use (standby) should almost totally shut itself off (a standby drain of 6 ma is typical for commercial mountain top repeaters). The batteries should be rechargeable from a natural power source.

R.F. Electronics, 310 East Esplanade St., N. Vancouver V7L 1A4 (Rae Fritsche, 604-988-6158) specializes in mountain top repeaters. The repeater is a modified and repackaged Motorola PT300 transceiver which provides a transmitter power of 5 watts.

A pre-amplifier that boosts the receiver sensitivity to 0.3 uV (12 dB SINAD) has a 5-pole helical resonator front end. The power drain is 6 ma on standby and 900 ma on transmit. The unit is cycled at least 3 times over the temperature range -40 to +40°C, components that fail are replaced, and all controls including the squelch are preset for optimum operation

over that temperature range. The squelch is typically set at 0.5 uV for 'ON' and 0.3 to 0.4 uV for 'OFF'. The Ottawa-Hull repeater VE2KPG (147.96 / 147.36 MHz) uses an RF Electronics BR-150-5 repeater.

Most batteries are not very useful at -40°C, and at that temperature batteries do not like to accept charge. While the search for an ideal rechargeable battery continues, the Gates sealed rechargeable energy cell is one of the better.

It is a rolled lead acid battery. The capacity at -40°C (for a C / 10 discharge rate) is about 50% of what it was at 25°C. The battery has a long expected float life (8 years) and a long cycle life (200 to 2000 cycles). They come in three sizes: A size D cell (2.5 AH), a size X cell (5 AH) and a size AB cell (25 AH). Nominal voltage per cell is naturally 2 VDC.

A battery charger module is available for the 2.5 and 5 AH batteries that provides two-step constant current charging: C / 15 for high current rate and C / 500 for trickle charge. The charger automatically steps into the high rate if the battery becomes discharged. Batteries and battery charger modules are available from several Canadian sources:

Canadian Dynamics Nova Ltd., 8264 St. George St., Vancouver, B.C. 604-324-3116.

ABC Security Products, 10221 St. Laurent, Montreal, Quebec 514-398-7818 for example.

VE3NR mentioned that Bristol Aerospace builds wind generators,

but they are high power devices. There are several other Canadian companies that build wind generators, both the propeller and the NRC hoop type. Of greater interest for Amateur application is the low power wind generator designed and marketed by Brian Andrews, Box 333, Kenora, Ont. P9N 3X4, 807-548-4089. His model W-100 wind generator is a 21-inch down-wind fan designed to recharge 12 VDC 5 AH batteries. The unit provides 5 watts of power for wind speeds greater than 15 mph (350 ma charging current).

For repeater application, the limiting zener diode regulator could be removed and a more sophisticated current regulator could be designed, since the generator is capable of 15 watts output at 20 VDC at a wind speed of 30 mph. The electronic circuitry must limit the charging current to C / 500 when the batteries are fully charged for long life.

A 5 watt wind generator seems perhaps ridiculously small, however such a charger would operate a 5 watt repeater for two hours per day if the wind blows in excess of 15 mph for 20% of the time.

I hope this information is of interest and that it may stimulate the installation of wind generator powered repeaters on remote mountain tops. If anyone can add further information on the subject, I will be glad to hear from them.

John S. Belrose VE2CV
3 Tadoussac Dr.
Aylmer, Que.

TCA: Technical Section

Rig HR 1 Watt Homebrew.

Why Not?

By James Park VE7IW

CAN IT BE DONE?

Sometime, probably back in the turbulent Sixties, Amateur radio slowly suffered what seems now to be an almost irreversible change. From a group of Amateur electronic experimenters and radio operators, communicating primarily via 'homebrew' transmitters, we gradually became Amateur radio operators, communicating almost exclusively via commercially designed and produced equipment. In the process, we gave up a great deal.

The reasons for the change are probably not too difficult to ascertain. The majority of Amateurs had already switched to commercially-built receivers at an earlier time, due no doubt to the complexity of

the modern, double or triple-conversion superheterodyne, and the 'tracking troubles' and test equipment required to obtain optimum operation of the circuits. Oh, there were a few who still built their own -- there always will be.

However, most Amateurs still built and operated their own transmitters. To end this tradition, apparently forever, two events occurred. Unfortunately, they seemed to come too closely to each other. Single sideband suppressed carrier sounded the death knell of double sideband with carrier on the high frequency bands; and the transistor pushed aside the vacuum tube for almost all but high power, r.f. circuits.

A great deal could be written about this, but suffice it to say that the word 'homebrew' gradually disappeared from QSL cards, and

almost from the Amateur vocabulary. Rest In Peace? Not likely! There is still time to start reliving some of the fun -- and frustration -- of 'rolling your own'.

With the above in mind, I set out to see if, even in a small way, building a transmitter was still feasible. With tubes, no problem. But what about with transistors?

A whole generation of young hams have, by now, grown up with them. The author made the terrible transition from tubes to transistors some decades ago, first in the field and then in the lab... and terrible it was at times!

Along with a lot of other Amateurs and professionals, I built, repaired, designed and taught solid-state circuits. When it came to designing and building high-frequency circuits though,

they were always in the milliwatt range.

So now I wondered if there was any point in doing some r.f. design and construction, say up to the one-to-ten watt region, and doing it in the old ham cut and try, and common sense way. It might be worth an article and I might even have a little fun doing it. (If you live for hybrid parameters, computer-assisted design, unconditional stability, Linvill et al, don't bother reading further!)

First step? A hasty perusal of old magazines and handbooks to see what went on while I was away from ham radio.

Looks a little ominous! The warnings are many.

WATCH OUT!

'Watch out for v.h.f. parasitics'. Nothing new there!

'Watch out for low-frequency parasitics'. Guess that didn't used to be as much of a problem, except when you had similar r.f. chokes in the grid and plate circuits.

'By-pass with separate capacitors for low frequencies and high frequencies, and use smallest possible coupling capacitors'. I'll

try to remember that.

'Don't use parallel d.c. feed to bases or collectors if you can help it'. Darn, I used to like having one side of the tuning capacitors on the chassis!

'Don't use transistors with maximum frequencies that are a long way above your desired frequency'. I haven't got any that are all that hot at v.h.f. -- better order some.

'Watch out for high feed-back capacity!' Well, that always was a problem, but some method of neutralization usually worked.

'Watch out for bias shift and thermal runaway and if you try to fix one -- the other will get you'. With germanium devices it was pretty exciting alright, but silicon helped a lot.

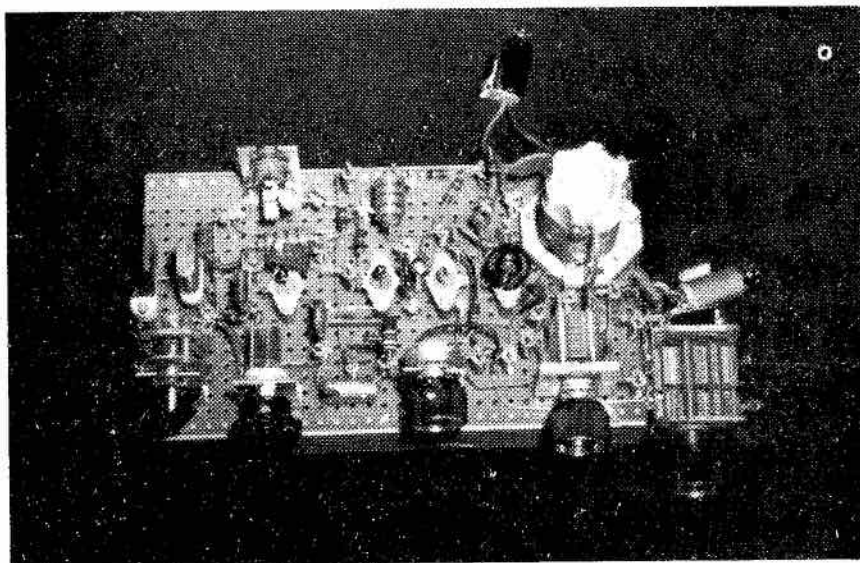
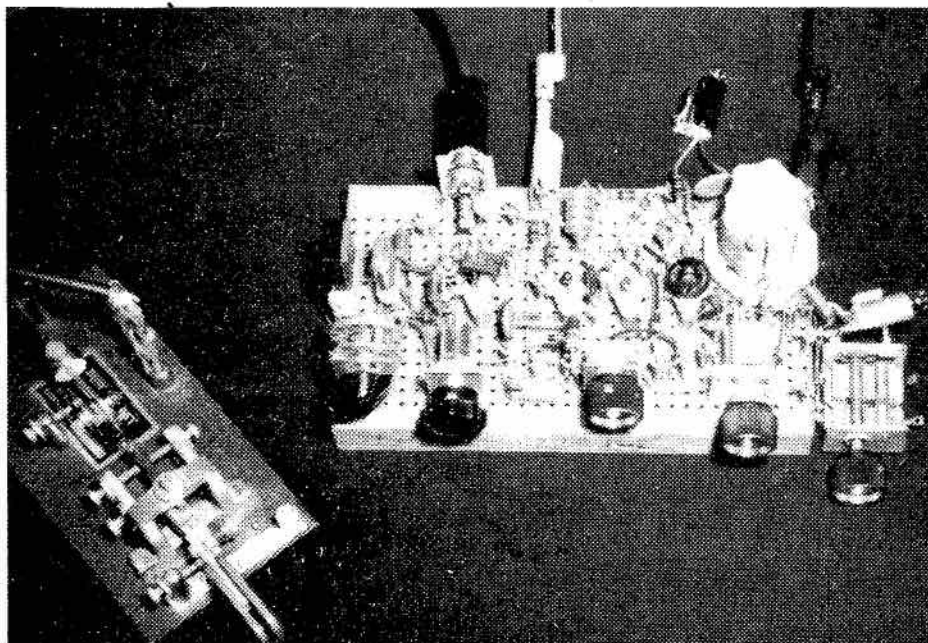
'Watch out for high harmonic output.' I always did.

'Watch out for high inter-modulation distortion on s.s.b.' Well, I'll do some CW first.

'Watch out how you tune it or you'll burn everything up'. Okay, I'll be careful.

'Watch out for designing tank circuits with Q's higher than five'. Hmmmm.

'Watch the low gains, collector dissipations and highest useable frequencies of good power transistors - and the high prices.' No wonder most of us quit!



BUILDING IT

Well, I still think hams with the old-time attitude can do just about anything but walk on water -- so here goes.

The circuit diagram shows a crystal oscillator and a buffer, utilizing type 2N5163, N channel, JFETs. I chose them because they were on hand, and have performed well for me over the years from 500 kHz to over 10 MHz in crystal oscillators, v.f.o.s and buffer amplifiers. Doubtless any fairly high gain, high frequency N JFET

would work, as long as its input capacity is low.

Why crystal? For a beginner at 'homebrewing', or any beginner at solid-state construction, it guarantees excellent frequency stability and relatively high r.f. output, with electrical and physical construction simplicity. (There must be mountains of ham-band crystals mouldering away in basements or junk-boxes, just waiting to be used.)

The circuit is simple, cheap, reliable. The oscillator is a Colpitts configuration with untuned output. I used a small ceramic switch to select different sizes of crystal sockets for older and newer crystals. The oscillator keys quite nicely in the source lead without any special filtering at all. 'Make' is a tiny bit heavy; 'break' is very clean.

The 100 ohm source resistors allow you to remove the crystal or otherwise disable the oscillator without harming the JFETs. (All the circuitry is meant to be experimented with if the spirit moves you!)

CRITICAL COMPONENTS

The only critical components are the feedback capacitors, shown as 25 pf. They should be low-loss silver mica or what have you. Small air variables make setting up the oscillator for grossly different frequencies very simple. The variable capacitor shown in parallel with the crystal in the schematic must be small and low loss. It allows QSY of several hundred cycles at least, if the input capacity of the oscillator JFET is small. Too much capacity here will simply overload the crystal and stop the oscillator. I was able to use a 24 pf VHF air variable by selecting different 2N5163s. The values of the feedback capacitors were chosen to allow oscillation with either 80 or 40 metre crystals.

The JFET buffer was chosen as I have had better results with this, compared to bipolar transistors. A 250 pf capacitor or 100 ohm resistor temporarily connected in parallel with the buffer, source-lead. rf choke should cause less than 100 Hz frequency shift.

The oscillator / buffer can obviously be built by itself for any project requiring a heterodyning oscillator or what have you. Frequencies far removed from 80 and 40 metres will require changing the oscillator feed-back capacitor values. Total current drain is under 20 ma at 12 volts. RF output voltage from the buffer should be around 5 volts peak or more. It will depend on the crystals, JFETs, frequencies and how heavily you load down the buffer. The only concern here is not to exceed the 2N2222 driver maximum V_{eb} of 5 volts. Overdriving is not too likely, as the AC drop across the driver emitter resistor subtracts from the input voltage.

NOT-SO-CRITICAL

The cheap driver transistor was used in a common collector or emitter follower configuration for power gain and step down to the low input impedance of the p.a. It takes the place of the usual tuned matching network or toroid transformer. Nothing is critical about this circuit, although the emitter resistor value should be determined experimentally for maximum output from the p.a. (A few hundred ohm rheostat temporarily hooked into the circuit will give you the optimum value in a hurry.)

The power amplifier is clean, stable, tunes smoothly and loads fairly flat impedances from 25 to 75 ohms without difficulty.

Again nothing is critical, although the final position of the collector tap on the tank coil should be found experimentally

for optimum loading and output with your load and transistor. Almost any type of coil will work. The total inductance should be around 20 uh on 80 and 10 uh on 40. The collector tap should be at 1/4 of the total inductance in each case. On 80 the tuning capacity should be 110 pf, the loading capacity around 750 pf. On 40 the tuning capacity should be 55 pf, the loading capacity around 500 pf. The loaded Q of the tank is about 8, with a 20 volt supply and a transistor putting out 1 watt.

TANK CIRCUIT

The p.a. was a great deal of fun and quite a bit of experimentation went into it. The tank circuit was chosen (despite its unpopularity in some handbooks) for the following reasons.

1. It allows series DC feed to the transistor, eliminating a parallel RF choke and possible resulting l.f. parasitics.

2. It has relatively simple band-switching.

3. It tunes like any other parallel resonant tank circuit. That is, at resonance there is a pronounced dip in collector current if the loading is properly adjusted, so it 'feels' right if you are used to tuning higher power tube amplifiers.

4. Changing transistor characteristics should have little effect on the tank due to tapping down on the coil.

5. Best of all -- the loading capacitor across the output is fairly large and should be an effective short-circuit for any VHF output. It's all very similar to the old familiar pi-network circuit, but with the ground connection shifted from one side of the tuning capacitor, and the active device tapped down on the inductor.

The p.a. tuning capacitor can be the oscillator section of an old broadcast receiver variable, and

the loading capacitor can be a similar unit but with both sections of the capacitor connected in parallel. A switch to select more or less fixed capacity across the loading capacitor would be handy. The p.a. transistor needs a reasonably good clip-on or snap-on heat sink in all cases. Those little spring-loaded paper clamps work fine in an emergency.

The RF chokes used in the driver and p.a. circuits are non-critical as to exact value. Mine were salvaged from the high IF amplifier of an old tube-type TV set. Anywhere from 50 uh to 70 uh worked fine in each circuit. The decoupling filter to the p.a. tank, consisting of the 50 uh series choke and the .01 ufd input by-pass, could probably be dispensed with, without harm.

The unit should work with voltages from 9 to over 20, but the higher voltages provide significantly greater RF output power. If the supply voltage is greater than 12 volts a series dropping resistor should be installed in the DC line to the oscillator / buffer section. A 12 volt zener could be used to ensure oscillator Vc is

well regulated. The power supply can be almost anything. Best results will be obtained with a supply capable of providing up to 20 volts at 200 ma. Although the regulation isn't critical, there should, of course, be no high-voltage transients superimposed on the DC!

The key to the 'taming' of the p.a. is the No. 44 ballast lamp in the emitter lead. If you want to be more careful during initial experiments or tune up, substitute a No. 47 bulb. These ballast lamps will even limit off-resonance maximum collector current automatically.

You can have considerably more RF output power by tuning up with a No. 44 pilot lamp for ballast, and then switching in another No. 44 lamp in parallel with the first for normal operation.

Tune-up should be carried out with a No. 47 pilot lamp for a load, before replacing it with the normal antenna. The dummy load should light to full brilliance, while the ballast lamp filament glow can barely be seen. The ballast lamp should never be

bright unless, of course, the p.a. transistor has shorted!

One problem with QRP is tuning into an antenna when your normal wattmeter is meant to work at tens or hundreds of watts RF level. If you can lay your hands on a 2 volt 60 ma pilot lamp, connect it in series with a one-turn loop of wire coupled to the p.a. tank coil. It's an old trick, but it works fine. When the tank is tuned for maximum circulating current and maximum RF output power, the lamp will also light to a maximum. It makes a surprisingly sensitive tuning indicator, and works about as well as a small SWR and power meter I tried.

Table 1 shows a few figures dealing with some of the approximate results you might expect with different transistors, ballasts and supply voltages.

Almost any n-type RF transistor capable of putting out a watt or two on 40 metres with 20 volts, and with a collector dissipation (properly heat sunk) of a couple of watts or more, seems capable of performing in this circuit.

I built the entire exciter as an experimental project on a piece of Vector board 5x8". All the ground connections run to a piece of No. 18 wire that circles the outside of the board. The unit could doubtless be built in half the space. (I used all spring loaded connectors so I could experiment to my heart's content, and also used a relatively huge coil out of the VFO section of an old command transmitter, all taking up a lot of room.)

The design seems to be good enough to warrant proper construction in a metal box of some kind.

Well, there it is. I know it shouldn't work -- but it does, just fine, despite all the 'Watch out fors'!

All I can say is 'Watch out for having some informative and inexpensive fun!'

James Park VE7IW
RR4 Salmon Arm, B.C.

Table 1

P.A. Transistor	Ballast Supply	P.A. I-D.C. Input	Approx. R.F. Output
2N2222	44	12V 100 ma	1.1W ¾W
2N2222	44	15V 100 ma	1.5W 1W
2N2222	44	20V 110 ma	2.2W 1.5W
2N3506	44	12V 90 ma	1.08W ¾W
2N3506	44	15V 90 ma	1.35W 1W
2N3506	44	20V 100 ma	2W 1.5W
(Will run continuous duty under these conditions, with a decent heat-sink P.A. current drops off 10 ma as ballast heats.)			
2N3506	55	20V 130 ma	2.6W 1 ¾W
2N3506	2-#44	20V 150 ma	3W 2W
2N1420	44	12V 80 ma	0.96W ¾W
2N1420	44	15V 90 ma	1.35W 1W
2N1420	44	20V 100 ma	2W 1 ½W
(Will run continuous duty under these conditions with well over one watt RF output, with a decent heat sink.)			
2N1420	44	25.5V 100 ma	2.55W 1 ¾W

TCA: Technical Section

The VUCOM 1 and Amateur Radio

By Peter Robertson VE3QT
1611 Gallant Dr.
Mississauga, Ont.

Through the kind auspices of Bell Telephone and at least one prominent Radio Amateur, a number of Control Data VUCOM 1's have been made available to Canadian Amateurs; much in the manner of old teletype equipment. I was one of the lucky purchasers of one of these computer terminals. Upon receipt of the terminal, I have to admit that myself and the terminal were complete strangers to one another. Whilst only the barest of information was supplied with the terminal, even this provided me with all kinds of terms and references that were very strange to an 'analogger' from Amateur Radio!

Now I had already struggled with a KIM-1 microcomputer before the VUCOM purchase so the digital references weren't too bad, but now I was faced with another list of buzz words from the communications world (what's RS232?) and I would have thought a baud might have been a relative of a bard. To the rescue came people from the very varied ranks of Radio Amateurs and it was not too long before many helpful people had me 'in tune' to most of the new language of communications. I decided the time had come to see

if a marriage could be arranged between my faithful KIM and the new member of the household – VUCOM 1.

It seemed, on the face of it, that connections between outputs of KIM could be connected to inputs of VUCOM; and vice-versa. **Don't do this** my friends – at least not in such simple terms. KIM and VUCOM may like one another but they **hate** direct interconnections. I was left with a faulty KI and an unworkable VUCOM and retired to lick my wounds and find out why two 5 volt devices should do this to each other. VUCOM, it turns out, uses a good deal of 12 volts!

Further consultations with expert Amateurs left them tut-tutting and me with the information that direct interconnections were **verboden** and that one had to use "opto-isolators" (another new term!). So back to the books and data sheets. Eventually I devised the circuit shown in figure 1. Note from this circuit that even the grounds don't connect to each other. The two units do not know of each other's existence and relate to one another only via 4N32 optical isolators; these are 6-pin chips and the 2 needed units fit into a single 14-pin DIP

socket. Pins 1 and 2 operate a LED which flashes light pulses onto a photo-sensitive transistor – making the latter cut-off or saturate and thus conveying the data from one unit to the other without direct electrical connections. The transistor section exists at pins 4 and 5. Figure 1 may not be the most efficient interface – but it works. Incidentally it also reverses the logic polarity from positive for the micro to negative for the VUCOM. I added a series LED to indicate when data is flowing from the micro. My interface unit sits on an aluminum chassis but it could just as easily be mounted inside the VUCOM – provided all parts and leads do not touch the VUCOM ground – KIM wouldn't like that!

By using this interface, the only control that needs touching on KIM is the "RS" reset button; all other operations on KIM can be implemented via the VUCOM keyboard with feedback appearing on the VUCOM screen. To initialize these two units (actually to ensure that they operate at the same data flow rates) is a simple matter. Simply push RS on KIM and the RUB OUT button on the VUCOM – KIM then prints out its name on VUCOM and follows with a

one-line address and date. This operation is necessary after any change in the VUCOM baud-rate switch.

You will note two phono plug connections on the diagram of figure 1. These enable other devices to be easily interconnected to VUCOM (but remove the KIM plug first!) Any device giving ASCII serial data at between 75 and 300 baud can be connected in and out of VUCOM this way. I built the RTTY demodulator from the October 1978 issue of HAM RADIO and use one of these phone plugs to display 8-level TTY signals from my receiver. Thus making an electronic RTTY display. Of course, by using the other phone plug, it is possible to use the VUCOM keyboard to trigger a modulator and thus transmit AFSK.

One further use for the interface unit is to take the output from the RTTY demodulator and feed it into KIM (Pin A-8). When KIM has been loaded with a morse code - to - plain language de-coding program, a print out on the VUCOM screen will appear whenever the morse code audio frequency falls within the capture frequency of the demodulator (about 2125 Hz).

I also like to dabble in ATV. The VUCOM provides an excellent picture monitor for this purpose. By interrupting the co-ax video line from the VUCOM circuit boards to the video monitor and bringing these two ends out to BNC connectors on the rear - it is easy to use either the internal video character generator or ATV video to feed the monitor.

Further, I found the various slide switches and data rate (baud) selector to be awkward to reach on the rear connector panel. They are easy to relocate to the front panel. Add a few letraset characters and the relocated controls sit easily in the top central position of the keyboard sub-assembly. Figure 2 shows how the rotary connector is wired; original connections can stay by re-dressing the original harness. Miniature toggle switches can be used in place of the more awkward slide switches, and wired as shown in figure 2. Be very careful when drilling the panel to ensure that no filings drop into the electronic areas of the keyboard assembly. I used newspaper and masking tape to screen off all areas other than the area being drilled.

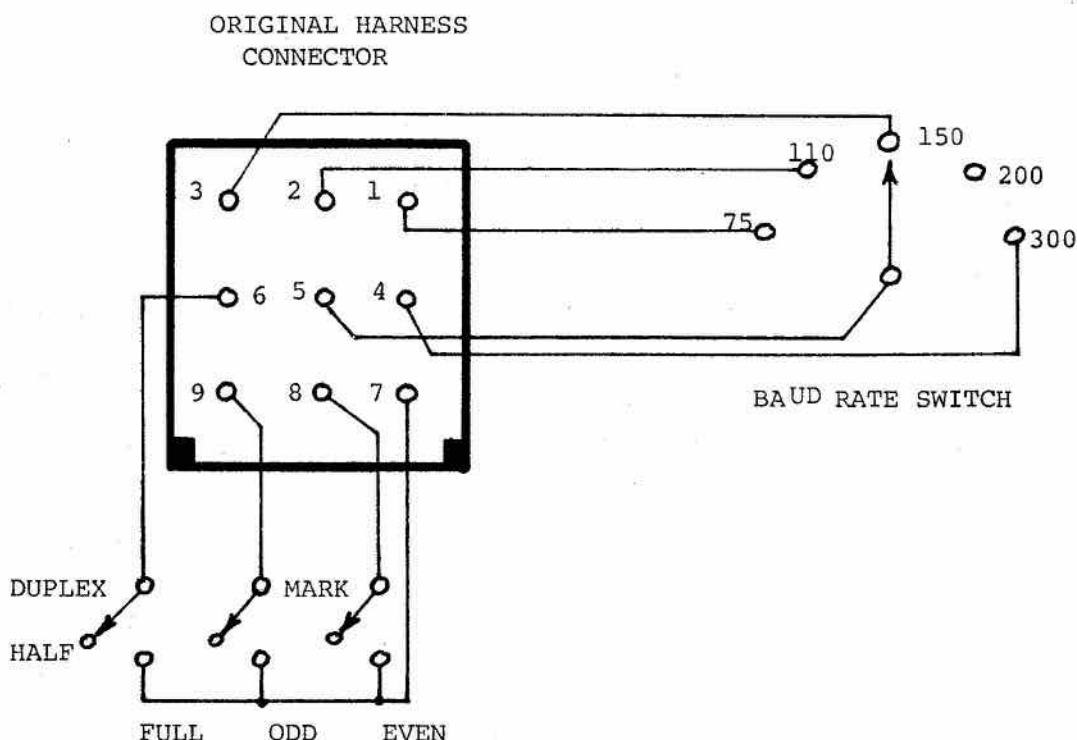


Figure 2. VUCOM function switches harness connector, showing connections for separate toggle switches to be mounted on keyboard assembly for better access.

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In the past several years, the production staff of TCA — The Canadian Amateur has worked towards publishing a better-looking, more informative, more interesting magazine for Canadian Amateurs.

These continuing changes bring subsequent problems in writing, editing, typesetting, layout design, paste-up, proofing, correcting, pre-press production, press run, bindery and distribution.

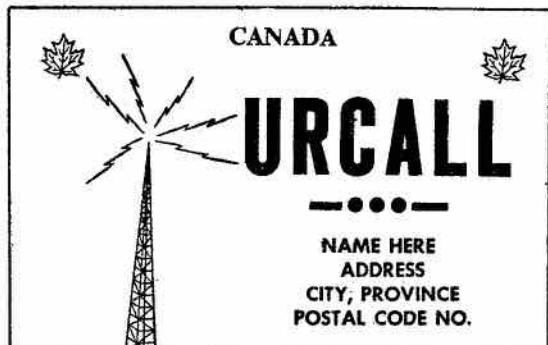
During this time, we have examined the need for another important change ... earlier distribution of **TCA**. The solution to this problem is the establishment of a new deadline system.

Advertisers and readers are asked to note this new deadline schedule for advertising and editorial copy: Six Weeks prior to the month of issue (**February 15** for the **April** issue.)

With this change, we hope to once again improve the service that **TCA** offers you as Canada's national Amateur Radio Magazine.

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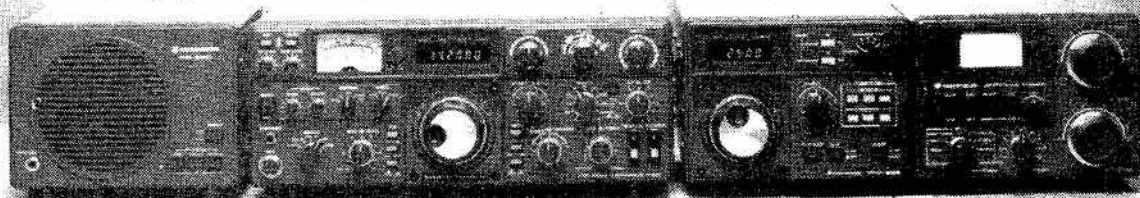
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2. To act as a liaison agency between its members and other Amateur organizations in Canada and other countries;
3. To act as a liaison and advisory agency between its members and the Department of Communications;
4. To promote the interests of Amateur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

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CARF is currently checking some details in the latest DOC lists. This section will be altered as details are received. See Jan. TCA, Page 32 for details.

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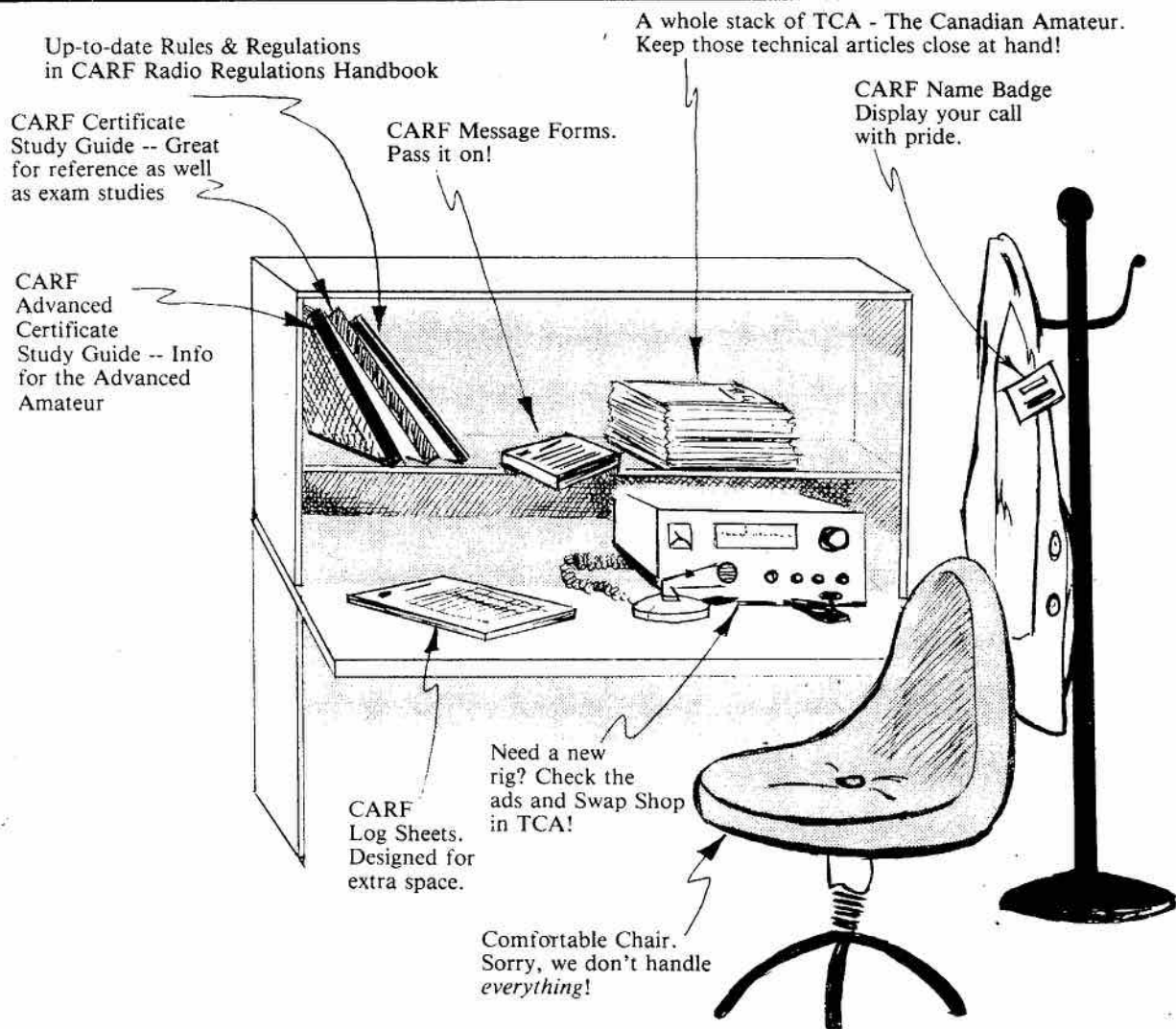
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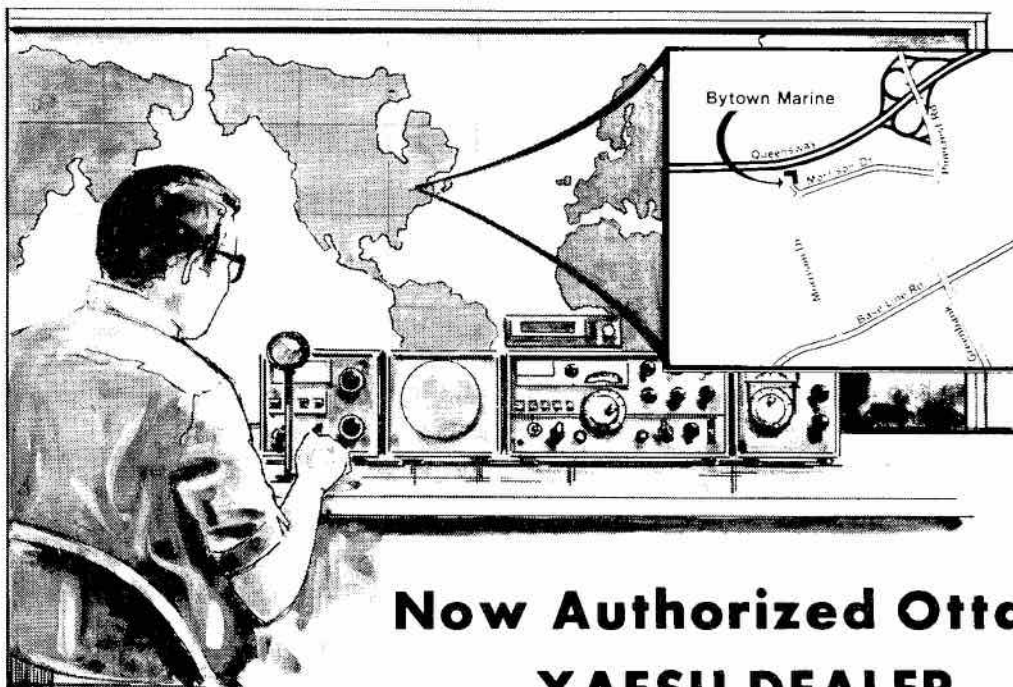
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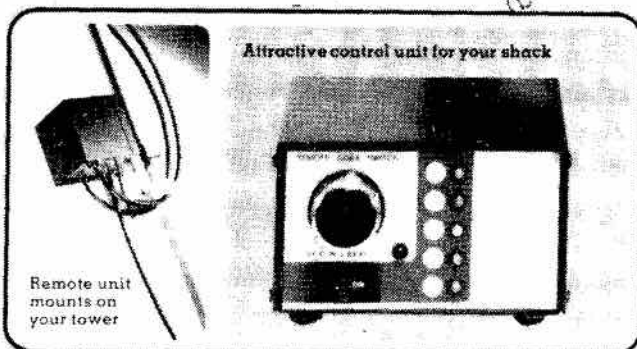
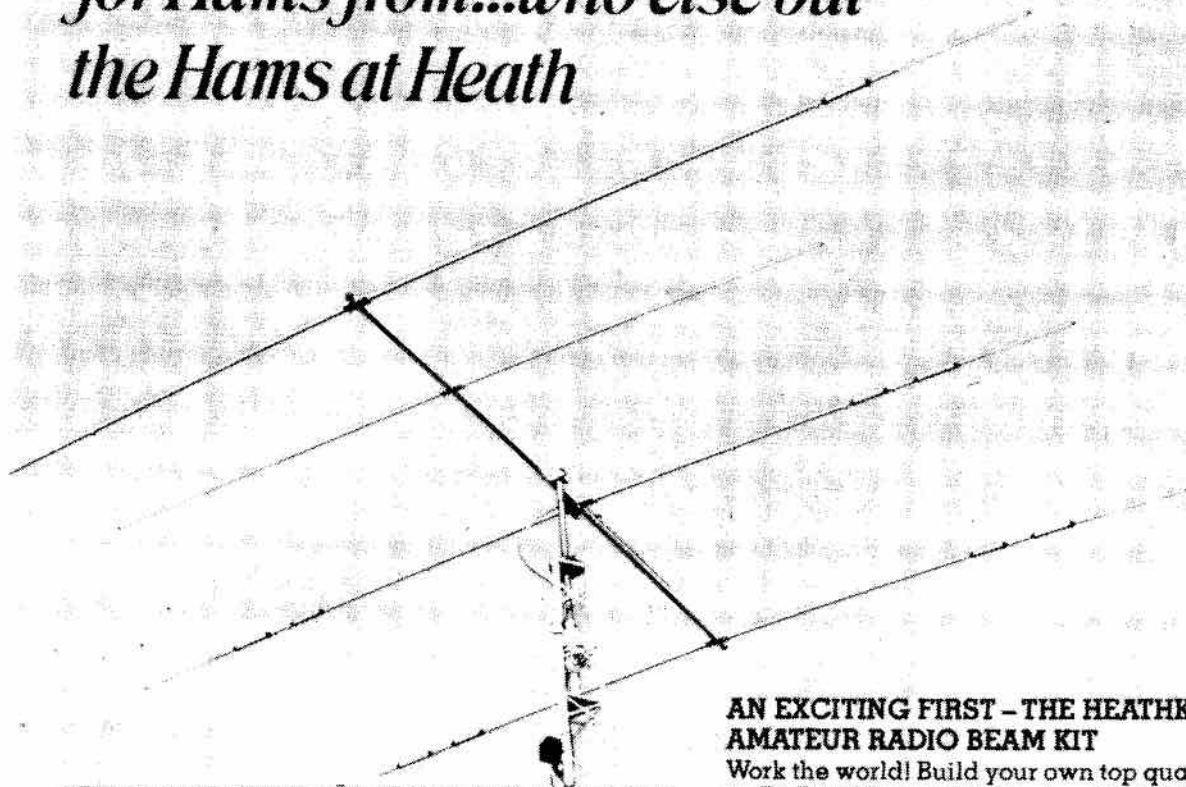


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