

Second Class Mail Registration  
Number 5073

# TCA

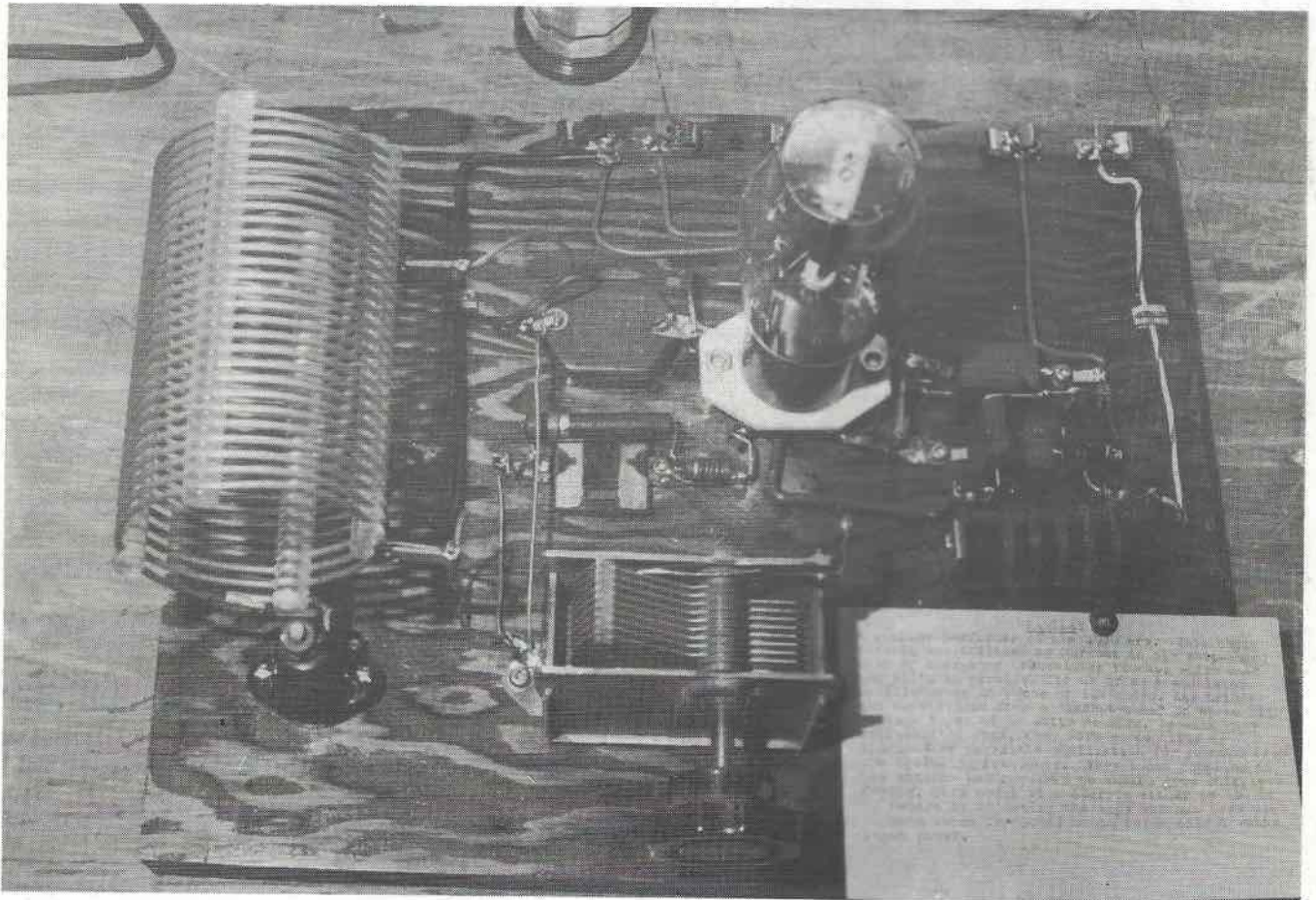


**NOVEMBER 1985**

The Canadian Amateur  
Radio Magazine

La Revue des Radio  
Amateurs Canadiens

## Discussion paper: Deregulation



*A 1930's vintage transmitter*

**Emergency Communications — Crosswaves  
— Your insurance policy —  
— A Northwest Territory Experience —  
— more —**

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# TCA



## THE CANADIAN AMATEUR

November 1985

Vol. 13 No. 10

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

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





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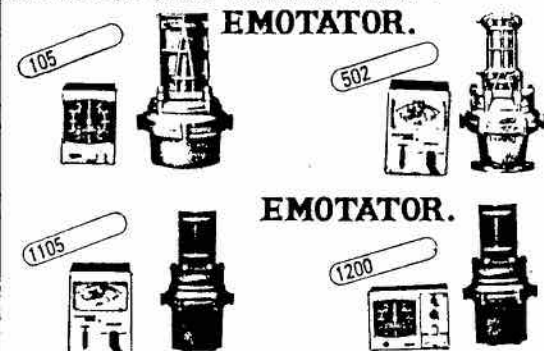
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GB46DX, 6el. beam 10-15-20-40	\$ 639	*\$ 32.00
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TD-2005/HD, 5-band trap dip.	\$ 137	\$ 7.90
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GD-8/2KW, 8 band antenna	\$ 219	\$ 7.90
GD-7/500W, 7 band antenna	\$ 129	\$ 8.90
GD-7/2KW, 7 band antenna	\$ 229	\$ 8.90
GD-9/500W, 9 band antenna	\$ 149	\$ 9.90
GD-9/2KW, 9 band antenna	\$ 249	\$ 9.90
GD+2, 15+30m add-on kit	\$ 29	\$ 6.90
GD+160, 160m add-on kit	\$ 59	\$ 7.90
GD-Special Balun, 500W PEP	\$ 89	\$ 6.90
GD-Special Balun, 2KW PEP	\$ 189	\$ 7.90

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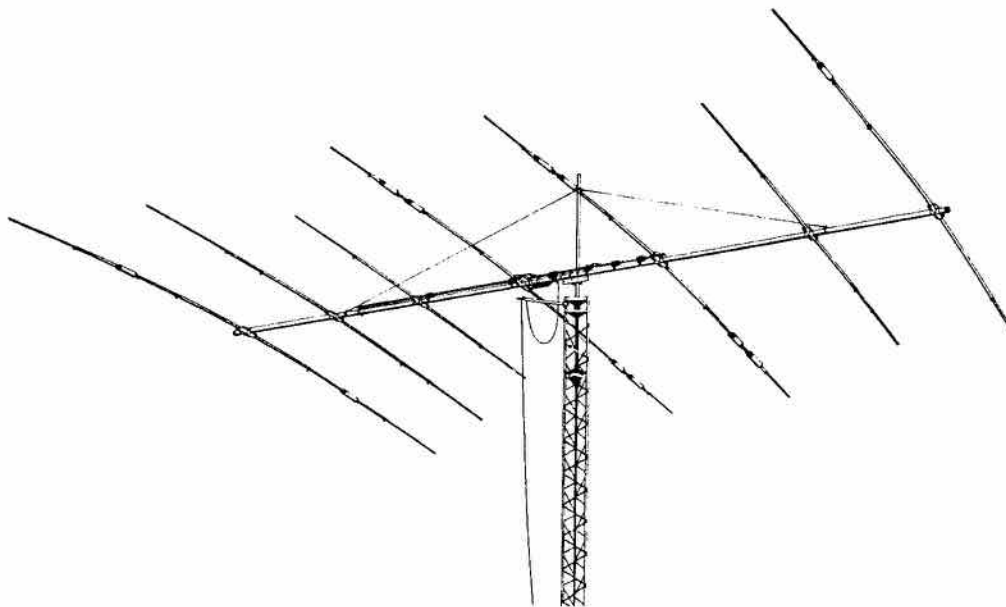
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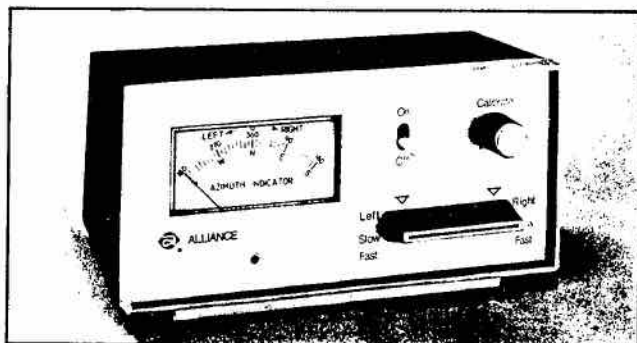
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## Alliance Heavy Duty Rotator Model HD-73



### C.M. PETERSON CO. LTD.

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Toronto Amateur Dept.:  
1862 Kipling Ave., Toronto M9W 4J1  
416-247-6667

#### Features and Specifications

The HD-73 rotator incorporates all the features that contribute to strength, durability and ease of installation without special tools or equipment as well as simple foolproof operation of the control box. The HD-73 rotator is constructed of heavy duty aluminum castings selected for their excellent strength capability and favorable weight characteristic, contributing to ease of erection and resistance to severe wind and adverse weather conditions for antennas up to 10.7 sq. ft. of wind load area. The HD-73 unit is factory lubricated with a lifetime high quality lubricant that will withstand temperature ranges of 120 degrees Fahrenheit to -20 degrees Fahrenheit.

The HD-73 mast support bracket design permits a centering procedure for in-tower application without shims or difficult trial and error adjustments and the base design permits easy four bolt in-tower mounting without spacers. The mast support bracket design also provides a positive drive no-slip option. The HD-73 has an improved automatic brake action for simplified operating procedure which also reduces risk of antenna damage by sudden stops imposing high inertia stresses on the antenna, tower and rotator. The HD-73 control unit features DUAL-SPEED rotation with one five-position switch. This presents a one revolution per minute speed for rotating over an extended arc and a slower speed for adjustment of, say, several degrees one way or the other for fine adjustments for the best signal on receiving and transmitting.

The rotator not only has a readily accessible externally located fuse for total unit protection, it also has an internally mounted automatic reset thermal protector for the motor and transformer against shorts or possible connection error or prolonged operation.

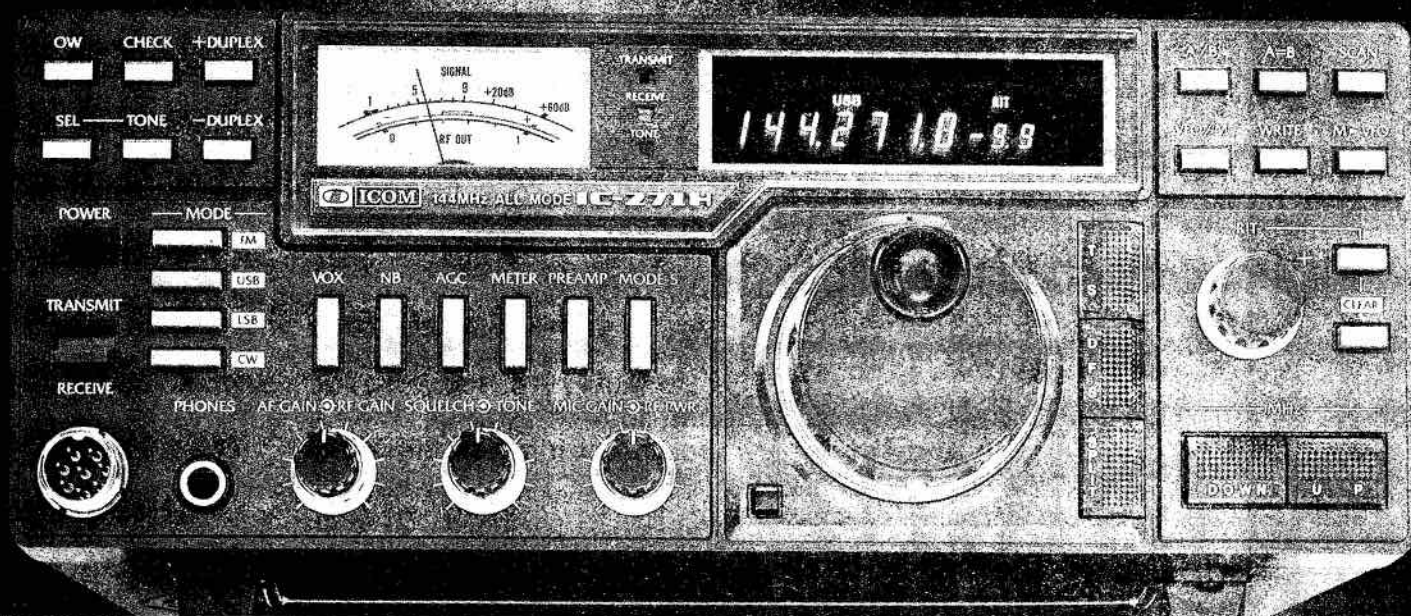
Max. vertical load - 1000# (vertical balanced)  
Max. wind load bending moment - 10,000 in.-lbs. (side-thrust overturning)  
Starting torque - 400 in. lbs.  
Brake torque (windmilling) - 1,600 in. lbs.  
Hardened steel drive gears  
Bearings - 100-3/8" diameter (hardened)  
Mast mounting size range - 1-3/8" O.D. to 2-1/2" O.D.  
Cable - 6 conductor  
Voltage input - 117 volts A.C. 60 hertz  
± 12 volts

Shipping weight - 17 lbs.



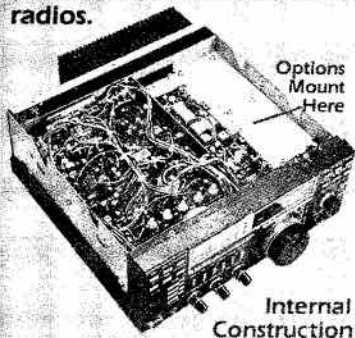
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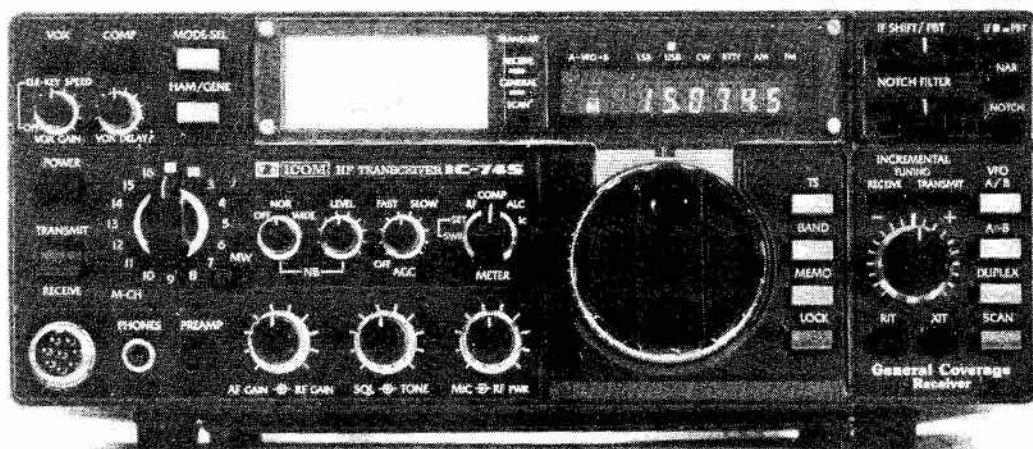
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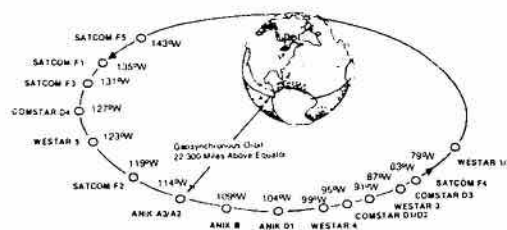


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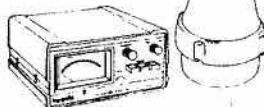
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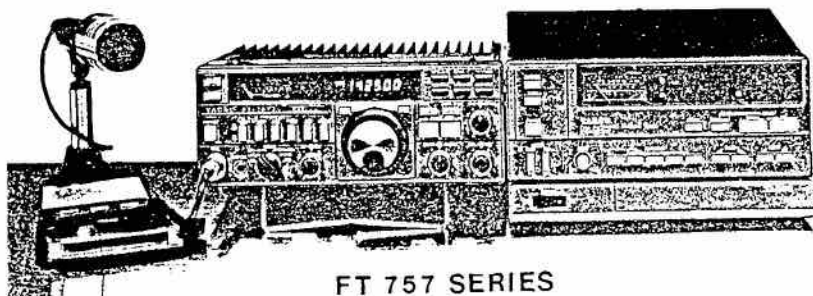
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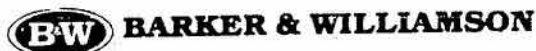


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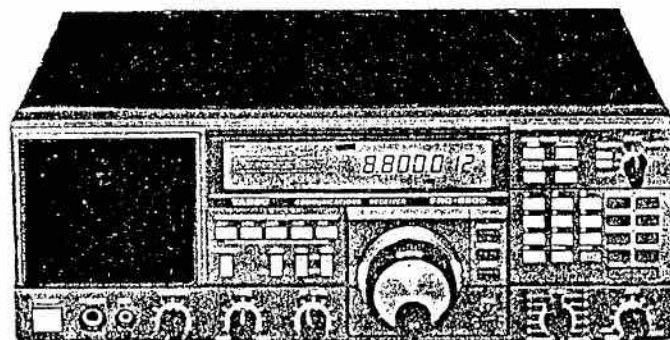
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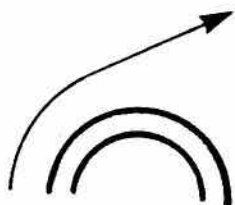
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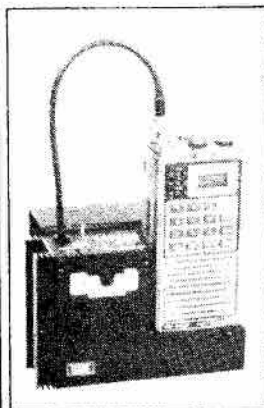


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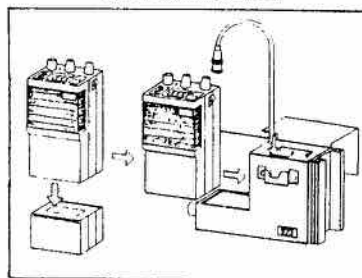
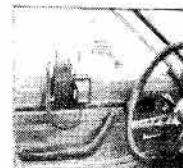
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	HC6/U	HC25/U
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QUA 

## A Beginner's Licence

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#### A HARTLEY TRANSMITTER

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This month's editorial in CQ, by K2EEK, states: "According to the FCC, most people enter the Amateur ranks via the Novice licence. The biggest percentage of Amateurs leaving Amateur radio also come from the Novice class licence. Many of these people never even put a station on the air, or make a single contact."

The article goes on to state that the novice may never buy a rig; may buy a rig and only stare at it; may not know how to connect the rig to the antenna, or how to tune a rig, or even know how to send Morse code (sending Morse is not an examination requirement). The Novice may never have heard an Amateur QSO, or know what the abbreviations used mean.

This is what the 'recognize Morse letters and 20 questions' examination leads to, the licensing of the unmotivated. As has been said: Anyone who wants a Novice licence does not want a licence very badly, if at all.

We must learn from other people's mistakes. A beginner's licence, as distinct from a Novice licence, must as far as possible ensure that the licensee is competent in the adjustment and operation of a station. Even the present Amateur examination does not do this, for new licensees have written to the editor of TCA asking how to make a dipole aerial, for instance.

Anyone aspiring to a licence of any calibre should first of all build a simple receiver—the FOXX receiver portion, with the crystal replaced by a VFO, would suffice—and become familiar with the Amateur's world. Every minute spent listening teaches something. The beginner absorbs Morse, and our jargon, and learns a little about the differing behaviour of the bands, with every session, just as the most advanced of us learns something new whenever we use our rigs as something other than a convenient telephone.

So prepared, the beginner, now licensed, has no fear of the rig when he first puts one, or ten, or a hundred watts on the air for the first time in his

life. He may be sweating, his hand may be trembling as he handles the key, he may be tense as he answers a CQ or sends one, but he will have the experience needed to make that first QSO.

One of the more fatuous statements occasionally heard is: 'Home construction is dead.' Anyone suffering from this delusion should go to their nearest Radio Shack store and enquire if the panels of components that grace the walls there are ornaments, or for sale. Since the answer will be that they are certainly for sale, it follows that somebody is constructing something.

Any radio Amateur worthy of the name can go into such a store with a few dollars, and construct a radio station with his purchases.

A heavy responsibility falls upon our clubs. It is up to them to set up displays in the malls and high schools. It is up to them to provide classes for the select ones who are capable and motivated.

The responsibility of individual Amateurs is equally heavy. They must support their clubs in their efforts. They must man the displays, and teach the classes, and endeavour to interest their neighbours in Amateur radio.

There can be no future in diluting the Amateur examination so that the throughput only stay a few months or years. The sale of a few more rice burners and lengths of dural will not be that creditable to us. Instead, we have to train new Amateurs so that they will be of use to the community over the long haul, as we were at Mississauga; at Barrie; and as we are doing at the time that this editorial is being written, when the East coast is being harassed by a virago named Gloria; as we will be into the foreseeable future.

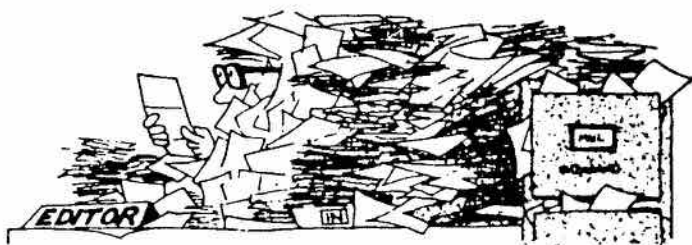
You and I have had an enormous reward over the years from our Amateur radio avocation. We have to repay this, and a good way to do it is to ensure that newcomers get off to a proper start.

—VE3DQB

△



# LETTERS



## A FEW BOUQUETS

Pleased to report that my September copy of *TCA* was received on 5th September and good delivery is being experienced.

*TCA* is highly regarded by me and your work in producing it is greatly appreciated.

73, David VE7YG

The September edition of *TCA* was delivered on Aug. 26 (is this a record?) and was immediately read as usual from cover to cover.

I must admit I became a little rough around the edges during last fall and winter having gone four months without a copy of my favourite journal, so I'm delighted that things are back to normal for CARF. Keep up your excellent work.

With kind wishes,  
Cyril T. Youll VE3OBK

My September issue of *TCA* arrived in the first week of September. Never has such a thing happened before.

I thought you should know that the P.O. may be improving. Let's hope it lasts. The magazine certainly improves.

Congratulations.

73, Harry VE6AC

## NEW CALLSIGNS?

I read with interest and disbelief Alan Leith's letter in the DX section of *TCA* Sept issue. To change the Canadian callsign system because Ontario may one day run out of suffixes is ludicrous. A much simpler idea is to assign a new prefix to the third call area (i.e. VA3) when there are no more VE3 suffixes. In this way the Maritimes would remain the first call area, Quebec the second call area, and so on across Canada.

I would also suggest that DOC change the Yukon VY1 prefix to VY8 so that it and the North West Territories become the 8th call area as it once was. This would also eliminate the confusion of people thinking the Yukon is in the Maritimes.

In closing I would like to borrow an old quote: "If it ain't broke, don't fix it."

73, Tim VE3HCM

*TCA* gets better and better with each issue and I commend those who make it possible. The delivery problems, at least on my end, seemed to have lessened although the

magazine sometimes arrives looking as if it has been resting on the bottom of a birdcage for a while, hi. A few months ago I complained about the non-delivery of some issues and was very pleased with the prompt arrival of those I had missed.

In September issue of *TCA* I noticed a portion of the DX column was devoted to a proposal for a new call-sign prefix structure in Canada. I must admit the idea sounds interesting at first but in no way would I like to see this put into place. I'm not saying that I have all the answers, and I admit something will have to be done soon to make more room for

## SILENT KEYS

I am sorry to tell you that two Amateurs, members of the Arrow-smith Amateur Radio Club, passed away recently. They were Les James VE7DIX (in March) and VE7DIP, in April, 1985. They will be sadly missed by their fellow members.

73, Bruce VE7DYX  
Secretary, Arrowsmith ARC

more VE3 calls, but a radical change of this nature would open a can of worms that would take years to re-seal. Much thought was put into the proposal by its author and I commend his efforts but I wonder if the last paragraph of the article tells us about his underlying motive... creating pileups on 20 with a new and exotic prefix!

73 Brent VE1APG

At the risk of becoming a little more unpopular here in the Maritimes I wish to express my support for Alan Leith's proposal for a new callsign system for Canadian Amateurs (page 38, September '85 issue of *TCA*).

Since Leith's proposal would allow any Amateur the option of keeping his or her present suffix then I'm sure if by chance there should be agreement in accepting a new prefix then it would also be acceptable for each Maritime province to have its own prefix. Let's go for it!

Mel VE1VX

Please send mail directly to: Frank Hughes VE3DQB, P.O. Box 855, Hawkesbury, Ont. K6A 3C9.

## CONTINUING EDUCATION

When the educational facilities of the Trail, B.C. district declared the week following New Years, 'Education Week,' the local Beaver Valley Amateur Radio Club (VE7BWI) decided to set up a booth at the Waneta Mall to familiarize the public with their service.

Dan Dunlop VE7CRY arranged and guided the two-day event to a successful conclusion with the help of many of the Club members answering the public's inquiries.

The metal construction of the Mall prevented any chance at HF operation, but 2 metre operation was possible. Computer operation combined with Amateur Radio was demonstrated by VE7CRY.

The end result was an increase of four new students attending the 'Ham' class which the B.V. ARC is conducting at the local secondary school. So, advertising does pay dividends.

Enclosed are some photographs which you may use in your publication of *TCA*. (If suitable)

73 Joe Fertich VE7BPN

## SPECIAL PREFIXES

DOC is always complaining about the extra work occasioned by the Amateur Service. Why don't we help them, by cutting out the paper work of issuing these stupid special calls?

If anyone can explain to me any worthwhile purpose of the special call, I will be willing to listen. As far as I am concerned, they do absolutely nothing constructive for the Amateur Service and, indeed, only serve, in many quarters, to confuse practically everybody!

73 Ron VE1SH-VE1ASC

## THE LITTLE FOXXs

We have seen the FOXX mini-transceiver in September *TCA*, this is an ideal club project, in our group it looks as if 12 will be built.

Are there any additional data and/or modifications known, before we get started?

73, Peter VE3JPP

President South Pickering ARC.  
(Should be good as printed. Watch out, though— neither side of the variable capacitor is grounded. Insulate it from the case, if metal. First time I've met hand capacity for decades! —Editor.)



## MORE ON QRM

It hurts to be accused of misunderstanding the decibel when my own letter shows that I am aware that +10 dB = ten times the power!

But I admit to carelessness. I should have said 'may' have the same effect. I was thinking of the effect on a desired signal of S9 or less—you have chosen for your example one of S9+20, the ONLY signal that exactly supports your case!! Your comment says that with an S9 desired signal, S9+10 QRM "will clobber your QSO completely." I consider that about the same effect. But one of the few advantages of being an editor is that you can have the last word. (Not this time—Editor)

I don't take at face value anything I read anywhere, even in TCA. I don't know that QRM 10 dB stronger than

the desired signal will clobber the QSO completely, except maybe when using FM. I played about on SSB signals last night and found I could read a weak QSO (many S points weaker) under a strong one quite well, especially with judicious use of the RF gain control and fast AGC. Rather like being at a small cocktail party. The only strong station that completely clobbered the signal was one with heavy compression.

Almost every sunrise this summer there has been propagation from here to VK on 160 metres. Today (19th July) I worked my 52nd different VK station since the 8th of May and have heard about 17 others and several ZL. They include every call area from 2 to 0 and some openings have lasted more than an hour. The conversations with the stronger stations have

usually been QSA5. I won't bother to quote the S reports because, like you, I don't place much importance on them. If the summer conditions are any guide, the coming winter should be wonderful on top band.

Regards, Bob VE7BS

## IMMORALITY?

As the winner of the Joe Norton Trust Award for Amateur Radio, I was very pleased indeed with your generous gift of a membership in the Canadian Amateur Radio Federation. I have had a marvellous first year in Amateur radio, and as I said at the presentation, "It seems almost immoral to receive an award for having so much fun!"

I hope that in the future I can repay some of the debt I owe to all those who helped me get started, through service to the hobby. I certainly plan to remain very active on and off the air, and to encourage new hams wherever I see the opportunity.

Once again, please accept my sincere thanks for your generosity.

Mark VE3OWL

## OLD-TIME RIGS

Thank-you for your letter and interest in pictures of my old-time rigs (replicas).

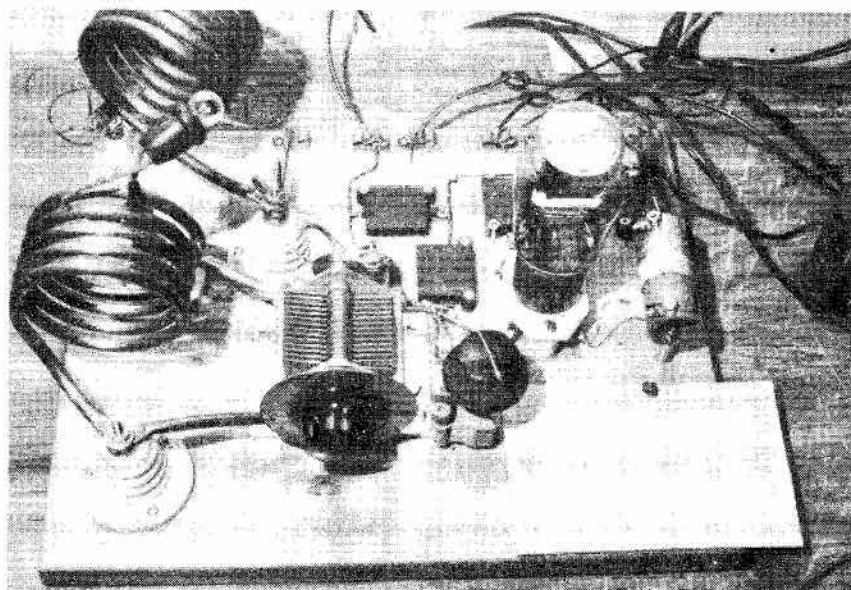
The TNT rig was used to contact K3JO in Narberth, Pa. on April 2. The QSO ran a full hour from 1150 a.m. to 1250 p.m. on 7101 kHz with my report from him being 359 to 579. The TNT rig was running an effective input of only 1.8 watts. Static plate current 10 ma. and was 16 ma. with the G5RV very loosely coupled. Plate voltage was regulated 300 so the

power was calculated at 6 ma at 300 to obtain the ear crushing 1.8 watts.

When K3JO found he was listening to a TNT oscillator on 160 and 80 and was trying to make yet another, a replica of the Split-Colpitts I used on 160 CW and as an exciter for my 160 phone rig in those days.

The TNT and Hartley oscillators will be on display at the CNE this year at the Amateur Radio booth, being requested by Larry Allan VE3FXQ.

73 Chuck VE3AZA



VE3AZA'S TNT TRANSMITTER

This popular oscillator ruled the roost for many years in the 1930's. It was a maverick if not carefully adjusted. The grand-dad of this model was used in 1936 to contact New Zealand and more recently a good solid contact with K3JO on 7 MHz was completed. This represented some 40-50 years since hearing and using a rig of this type. Any triode can be and was used in this circuit but with any breadboard construction extreme caution for safety reasons was required as well as care in adjustment in antenna coupling to obtain a clean chirpless signal. A windy day would very often produce a characteristic wavering sound to these self-excited rigs as the capacity varied between antenna and ground.

## Help

Can anyone help Debbie with correct addresses for the following Amateurs?

Name	Last known address
Francis Fletcher	c/o 63 Conroy Cres. Guelph, Ont. N1G 2Y5
C. Christiansen	36 Falling Dale Cres. Downsview, Ont. M3J 1C5
Dave Parks VE3GSA	160 Daly Ave. Ottawa, Ont. K1N 6E9
Janus Graham VE3JLL	528 2nd St. S. Kenora, Ont. P9N 1G8
Frederick Linton VY1AE	20 Cassino St. Whitehorse, Yukon Y1A 3B8
Debbie's address is CARF Office, Box 356, Kingston, Ontario, K7L 4W2. 613-544-6161.	

The more egotistical and self-centered a person grows, the more his insight is reduced. Insight is the common sense of the soul. It follows therefore, that when your gaze is concentrated on yourself, you are oblivious of the things around you. When we become less alert to others, we lose much of the ability of insight into others due to being encapsulated in ourselves. It is not due to self-abnegation or altruism that we should be alert and aware of people around us, but due to intelligent self-interest.

'Science existing' is the most logically consistent discipline known to man. Science-in-the-making, on the other hand, is as subjective and as psychologically conditioned as any branch of human endeavour.





# EMergency COMmunication



**P**lease look at the picture.

This is how Adelaide Street, Barrie, Ontario, looked on June 5, 1985, just six days after the tornado struck the town. Notice the twisted trees in the foreground, the wrecked homes, the cleanup crew on the road. It can happen here, and it does.

You have read the story of how Amateurs served during the storm in recent *TCA*'s. They risked their lives—who knew where the next tornado would strike?—in the foulest weather to pass emergency traffic on our frequencies, not 'when called,' for without the telephone, who could call them? but directly they realized they were needed. That is our tradition.

Naturally, from every such experience, we learn a lesson. The lesson learned in Barrie was well put by Marion VE3NLN, Emergency Net Controller: "I

went to the Simulated Emergency Test in Toronto a month or so ago. *Without this experience, I would have been completely lost.* We hadn't got around to a SET in Barrie before a real emergency hit us."

Has your area had a SET this year? If not, get hold of the president of your local club. (If you are the president, get hold of your executive.) Propose a SET soon. Do not wait for the

emergency to overtake you, for then you will have your lesson, with but little time to learn.

They held a SET in Sudbury on May 12. (Their report is printed on the opposite page.) Notice particularly that their repeater VE3SRG is equipped with emergency power. Is yours? Barrie's wasn't. The cost would be about \$100 for a truck battery left floating across the power supply. Isn't that a cheap insurance?  $\Delta$

## Mexican Earthquake

Will any Amateur who handled traffic or assisted in any way in this disaster please write a few lines about it and send them to the Editor at Box 855, Hawkesbury K6A 3C9. Please see that *TCA* carries a full report of our efforts. Next deadline is Oct. 20.

As this *TCA* is being put together, the station receiver is monitoring 14.125 MHz, the Canadian disaster frequency. It isn't likely that there

would be any calls for the Hawkesbury district, but one never knows.

These reports are vital. It is essential that the Amateur service gets credit for its efforts in disaster relief. It seems that more good publicity is being generated lately—the Ottawa TV news carried a three second spot of a local Amateur copying Mexican traffic.

# Amateurs assist with B.C. fires

**I**n early July, extremely dry forest conditions in the East Kootenay region of B.C. combined with hot dry weather to create a very hazardous situation in the Kimberley-Cranbrook-Invermere area. A number of large 'project' fires happening simultaneously made the Forest Service's task in combatting the fires more difficult.

On July 4, a fire initially believed caused by lightning (now suspected

## Exercise Fireball

On Wednesday May 1, 1985, the City of Sudbury held 'Exercise Fireball' at the Holiday Inn in Sudbury. This disaster planning exercise was one of a number of activities to be introduced by the Manitoulin-Sudbury District Health Council. There were seven groups of participants consisting of:

- Emergency Operations Control Group
- Emergency Operations Resource Group
- Police Support Group
- Fire
- Health (Ambulance-Hospital-Public Health-VON)
- Support Services—Red Cross
- Emergency Operations Support Group—Sudbury Amateur Radio Club

The ARES members from the Sudbury Regions were represented by VE3ATM and VE3DNS. The exercise being on paper, communication as far as the ARES was concerned was assumed to be on 146.52 simplex and via VE3SRG 147.06 Tx. VE3SRG is equipped with autopatch and emergency power. Mobiles were despatched to the various sites from the Ambulance Despatch centre. Later as the exercise progressed they were also despatched to the Red Cross evacuation centres.

The scenario for this exercise was a July weekend afternoon where at 3.15 p.m. the last four cars and caboose of a 70-car train from the East, derailed in the downtown yards. The second of the four cars, containing chlorine, struck and punctured a loaded propane tank car, which immediately caught on fire. The loaded propane car was part of a train on the adjacent track awaiting departure clearance. Immediate consideration had to be given to evacuation in the immediate area due to possible chlorine release.

73 Geoff VE3ATM

Sudbury FM Association

to be arson) began near Spencer Creek, 22 km back in the mountains east of Canal Flats. As erratic winds pushed the fire back and forth through the valleys, it approached within 1.5 km of Canal Flats and regional fire commissioner Bob Hickey ordered the 1300 residents evacuated. Another fire threatened Fairmont Hot Springs and the large Matthew Creek blaze endangered the City of Kimberley. In addition, numerous other fires and the extremely dangerous forest conditions created the possibility that any other area in the east Kootenay could require evacuation.

The east Kootenay region is isolated and sparsely settled. The whole valley from Cranbrook to Golden contains about 50,000 people, most of whom are located in Cranbrook, Kimberley, Invermere, Golden and a number of smaller communities scattered along Hwy. 93/95.

By July 10, the B.C. Forest Service, which had established their initial headquarters near Windermere, also announced road closures and restrictions on travel in the affected areas. Security guards, hired to patrol restricted and closed areas, were unable to communicate with Forestry officials due to the unavailability of commercial systems that covered the wide area involved.

### Hams provide assistance

On July 12 and 13, Cranbrook Amateurs provided temporary communications between the fire control center and security personnel patrolling restricted access areas. Providing their own equipment, and utilizing the excellent coverage of the Cranbrook 146.34/94 repeater, they accompanied the security patrols until commercial equipment became available.

In at least one instance, serious problems regarding erroneous orders to evacuate a remote campground were avoided because Amateur communications were available to countermand the order.

From the beginning of the fire situation, Amateur radio operators, although almost none were formally registered by the Provincial Emergency Program (PEP) prior to July, went out of their way to assist with communications. Kimberley area 'hams' provided a back-up communications link between the Cranbrook District Office of the forest service and the Kimberley Emergency Operations Center at the municipal hall. Other Amateurs went to work for the forest service as radio operators.

### Amateur Operators involved

Frank VanderZande VE7AV and Gerry Jorgenson VE7KD (both with DOC) were especially helpful in arranging for commercial equipment to replace the Amateurs as soon as possible.

In addition, other Amateurs assisted by lending equipment such as power supplies and splitters. The Amateurs in Kimberley, including George Hay and Mike Walsh were right on top of the situation, and had established good working relationships with Geoff Morris, the PEP coordinator and Kimberley mayor Jim Ogilvie.

The following Amateur radio operators provided temporary communications assistance:

- Harold Honeyman VE7ESW
- Edward Engel VE7ESE
- Fred Dettmers VE6CAP
- Nathan Hall VE7ETS
- Gerry Jorgenson VE7KD
- Russell Stelmack VE7CRS
- Paul E. LePage VE7ETY
- Greg Corbett VE7ESP
- Frank VanderZande VE7AV

The communications provided by the Cranbrook-Kimberley area hams was of real assistance during the emergency period. Amateur radio has once again upheld its gallant tradition of providing volunteer emergency communications assistance.

—VE7EMD

## Rescue at Oiseau Rock

On August 12, Steve N1DAY, in his motorboat, answered a call for help. He was passing Oiseau Rock, on the Quebec side of the Ottawa River, 20 miles upstream from Pembroke.

People on a nearby beach told him that help was needed. A nine year old boy had had a severe fall, was bleeding profusely, unconscious, and had a wrenched shoulder. Oiseau Rock, 300 feet high, is approached by a steep and difficult path, and the boy could not be brought down it.

The terrain prevented Steve using the Pembroke autopatch, so he put out a general call on his handheld and was answered by George VE3DKV.

George called CFB Petawawa for the Search and Rescue service, who immediately organized a helicopter rescue.

Fred VE3HEY, having read the mail, took his handheld to the Petawawa control tower and linked SAR directly with the Amateurs. The boy, Tom Mannenchick, a visitor from Windsor, was winched up to the rescue helicopter at about 1800 local.

—VE3DKV



# Mexico Quake '85

By Bill VE3KLK

**T**hursday, Sept. 19, 1985— 0733 hours local.

A massive earthquake, centred in the Pacific Ocean bed, about 200 miles west of Mexico City, produced a shock tremor measuring 7.8 on the Richter Scale in that city of some 15 million inhabitants. Mexico City, located on a dried-up lake bed is not unfamiliar with earthquakes, but this one produced a 'shake' the like of which had not been felt in recent memory.

Initial calculations indicated a possible 3000 dead, 5000 with major or minor injuries and at least 1200 to 1500 missing.

The public TV tower was down but the government TV was still operating on three channels. Major portions of the city's power grid were off or in some areas, cut down. Some water supply pumps were off and major efforts were being made by Hydro workers to restore the water supply.

With all that, although some internal telephone circuits survived the shock, commercial communications into the disaster area ceased to exist and the familiar call upon the services of Amateur radio operators was heard and answered.

Unfortunately, response from the Mexico end was slowed due to the absence of organized Amateur radio emergency nets or traffic systems such as exist in many other countries. This meant that those Mexican Amateurs who were able to survive the shock were hindered, by inexperience, from quickly establishing response teams to handle the inevitable flood of 'health and welfare' traffic that descended on them. Also it seemed as though every Spanish speaking Amateur in the world, with large Kilowatt stations were determined to over-ride stations, mainly in North America, who were desperately trying to organize some sort of traffic handling procedure. The few Mexican stations who got on the air quickly were inundated with floods of H & W requests, before they were able to develop a means of responding, or in fact of establishing the real extent of the disaster.

Just what was accomplished by those Mexican Amateurs using VHF equipment in the rubble-strewn areas will need to be reported by those involved. Certainly, they must have been there and their story waits to be told, for they are the ones who, in the final analysis, came face to face with the horror and the heroics.

The early development of solid communications by radio was also hindered to a degree by aggressive media members, who, finding a working Amateur, monopolized his station in order to get endless reports to avid editors. This at least delayed the handling of requests for information sought by frantic relatives of Mexico City residents.

During the first two days of the emergency (on the second day, a follow-up tremor reached 7.3 on the Richter scale) most of the impressions gained were of utter confusion and uncertainty. Through it all shone the efforts of three Mexico City based Amateurs. XE1F, a Vanier business man, who spends part of the year in Mexico, worked himself to exhaustion trying to keep channels open. XE1VIC contributed a steady flow of factual situation reports that must have been invaluable to officials receiving them and trying to organize air responses. XE1GGU coped with a mountain of anxious traffic from Israel. He flipped back and forth from Spanish to English to Yiddish with no hesitation and it seemed as though every fifth resident of Jerusalem must have relatives in Mexico City. No doubt there were many other Mexican stations that I did not hear.

Gradually, however, things started to fall into place and a system developed that allowed information about relatives to start filtering back, until it became possible by Wednesday, Sept. 25, to make an enquiry at 10:30 a.m. and have the answer back in Canada by 1 p.m. the same day.

Many Canadian and American Amateurs laboured long and hard to maintain a viable channel of communications into the stricken area. To collect all their call signs is a task beyond my scope. To acknowledge the value of their efforts is easy. Perhaps they would prefer to remain anonymous rather than bask in the light of publicity, but I can from personal knowledge attest to the efforts of at least four COMSONT operators who have devoted every operating minute to the Mexican emergency for at least (as this is being written) the first six days. Many others have done a similar job and it is hard to understand that there are people out there who will go to extreme lengths to try to drive Amateurs off the air.

To refute the bias of those people, it can be said "Amateur radio operators, the world over, share a

long tradition of public service. Amateurs have always found a way to communicate, even in the most difficult circumstances and it is that special ability to get through— to communicate— that makes the Amateur Radio Service such a useful and irreplaceable resource in times of emergency."

The author, now retired from the Canadian Diplomatic Service is the manager of Communications Ontario (COMSONT), an emergency preparedness Amateur radio net, which has been endorsed by Emergency Planning Canada and the Emergency Measures Branch of the Department of the Solicitor General of Ontario, and which provides, daily, a support communications facility reaching upwards of 148 Ontario municipalities, large and small, and can draw from a corps of over 200 identified Amateur radio operators, in an emergency. Δ

## 24 MHz

The DOC is trying to clear 24 MHz for us, though it is slow work— the change must go through the legislative process and the Privy Council. Be patient!

## WELCOME!

Congratulations and a warm welcome to Andrew Barss VE1BHO, and John Campbell VE1BIR, recent graduates of Dan and Spud's course in Nova Scotia.

The best part of knowledge is that which teaches us where knowledge leaves off and ignorance begins. Nothing more clearly separates a vulgar from a superior mind than the confusion in the first between the little that it truly knows and what it thinks it knows on the other.

For TCA Subscription problems, call the Kingston office 613-544-6161 anytime.  
For enquiries and membership information, please quote top line of TCA label.





# On QSLs

By Norm VE6VW

**A**s you must have gathered by now, running a QSL bureau is a big job, and one of the greatest problems is the accumulation of uncollected QSL cards. You should either send for your cards regularly, or, if you have no interest in QSLs, at least notify the bureau that you will not be collecting them and that they may be discarded.

Some of the other problems of running the bureau are the mis-numbering or the mis-lettering of the calls on your QSL cards. For instance, the letters V, W, U are 'U' or a 'V'; in V and W are these a 'T' or 'V'; in these two figures: 9 9 are these 9s or are they Gs? Some of the numbers I have seen come out like this 1 7 9 4 4 9. All I can do with some of these are try and guess what number they might be.

When operating on the Amateur bands, make sure your voice or fist is clear and concise, for instance on CW a V and a U and an A are very close if you are sloppy at sending. The same goes for the F/R, L/R, J/1, B/D/N and on SSB the letters T B V P D all sound the same unless you use proper phonetics once in a while. The M and Ns and the A and Js also fall into this group. This all means that if your call falls into one of these groups of letters or numbers then that means that your QSL card could and probably would end up in someone else's file. These problems in sorting QSLs will be always here but to reduce the

numbers of dead QSLs, try putting the Amateur's first name and/or their town/city on the QSL card also. This will greatly help the sorters that are helping at the bureau.

I've tried to explain how the QSL Bureaus operate. It's a big job. Try to understand the problems of the bureau and cooperate with it. Remember, the people who operate the bureaus are volunteers, and they must do work in their spare time.

Here are some very helpful hints to guide you in the bureau operations.

Good cooperation between the DXer and the bureau is important to ensure a smooth flow of cards. Remember that the people who work in the area bureaus are volunteers. They are providing you with a free but valuable service. With that in mind, please pay close attention to the following DOs and DON'Ts.

DO keep your account with the bureau in good standing either with funds or SASEs.

DO respond quickly to any bureau requests.

DO notify the bureau of your new call or new address.

DO include an SASE with any information request to the bureau.

DO notify the bureau in writing if you don't want your cards.

DO be appreciative of the fine efforts of your bureau's volunteers.

DON'T expect DX cards to arrive for several months after the QSO. Overseas delivery is very slow.

DON'T send your outgoing DX cards to the incoming bureau. Send the cards to either the CARF QSL Service or the CRRL outgoing QSL service.

DON'T send envelopes or funds to your portable bureau. For example, VE6VW/3 sends funds or envelopes to the VE6 bureau NOT the VE3 bureau.

The following are the QSL Bureaus of Canada.

QSL cards for Canada (VE, VO, and VY) may be sent to either: CRRL Central Incoming QSL Bureau, Box 51, St. John, N.B. E2L 3X1, or CARF QSL Service, P.O. Box 66, Islington, Ontario M9A 4X1. Δ

## Free CARF QSL Service

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

1. Sort cards alphabetically by prefix.

2. Sort Canadian cards numerically by call area.

3. Place small lots of cards in strong, heavy envelopes and seal securely. Include the label (or copy or facsimile) from your current copy of TCA. Wrap heavier packages in strong paper or put in a cardboard box. Tie securely. **Do not staple.**

4. Address your package as shown in the diagram.

5. **Do not register the cards!** This only delays them, costs more and is not really necessary.

6. If you want proof that CARF received your cards, enclose a self-addressed, stamped postcard or envelope with 'Receipt' marked on it.

7. If a package should be damaged on arrival (very rare), CARF will send you a list of cards received so you can check to see if any were lost.

## 85 years young, VE3LC

VE3LC got this birthday biography in the *Ottawa Citizen* on Sept. 4:

While most of us were celebrating Labor Day, Maurice Haycock of Broadview Avenue was celebrating his 85th birthday. He continues to stretch the limits of what one man can do.

The retired geologist is also an accomplished painter, radio ham, musician, and holder of The Massey Medal, Canada's highest award for geography. When he retired from government work 10 years ago there was some fear this incredibly active and talented man wouldn't find enough to keep himself busy.

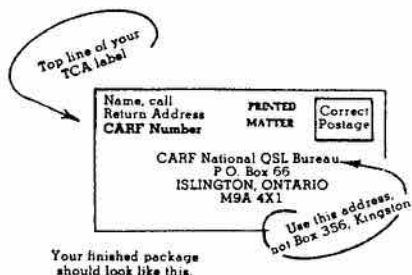
A close friend of A.Y. Jackson, he travelled and painted with that member of the Group of Seven, and designed Jackson's studio in Manotick.

As he passes his 85th, Haycock has added a few more skills. He is now an accomplished computer operator, mainly because he has taken up writing and finds the computer can

speed his output. That way he can still give time to his many other skills. Δ



Photo: Ottawa Citizen



## More from Ottawa ARC's EMI Committee

# Crosswaves

By Ralph Cameron VE3BBM

Chairman, Ottawa ARC EMI Committee

**T**he Amateur who was the subject of the interference case in Cross Waves No. 3 called with more encouraging news.

It was mentioned that I always monitor Cable channel E (145.25 MHz) in the vicinity of TVI complaints. I had noticed a very high leakage level which seemed to peak right in the Amateur's driveway. I say seemed to peak because these new digital 'S' meters have crude resolution. Noticeable pilot carrier hum indicates very strong leakage.

### CABLE Company Responds

After clearing the TVI complaint I called the Cable company (Ottawa Cablevision) and received a not atypical question, "How do you know it's leakage?". Bear in mind that many cable companies have in the past relied on a crude leakage monitor with sensitivities on the order of one millivolt. That's 1000 microvolts minimum detectable signal.

That's the reason a sensitive 2M rig makes an ideal monitor. The only thing we'd need to do is calibrate our receivers with known signals to give a more meaningful reading. Since there are all sorts of proximity and reradiation effects which occur in the presence of leakage, we can use our 2M gear to look for gross anomalies.

### Happy Amateur

It did not take the cable company long to determine that a newly installed drop to the Amateur's home had a damaged sheath. This was replaced and boosted TV reception and clarity by 100%. Now the Amateur is doubly happy, he can operate any band whenever he pleases and his TV reception is superb. Thanks to Ottawa Cablevision for their prompt remedial help.

### Microwave Oven Interference

A previous report made mention of interference to a microwave oven, and some time has been spent in an effort to determine the validity of this.

Although I do not have precise details of how Health and Welfare Canada make their radiation measurements, I do know that Canadian emission standards are ten times more stringent than American ones, i.e. 1 mV/cm<sup>2</sup> vs. 10 mV/cm<sup>2</sup>.

To return to our reported oven interference which was described as follows: "the oven came on while we were out for a drive and we did not have a glass of water in the chamber."

The complainant stated it was not possible to turn 'off' the oven by the panel controls and they resorted to removing the plug from the wall. Their concern was a form of 'thermal runaway' and I'm not absolutely sure a fire hazard would be present without a glass of water (thermal load) in the oven. Since CSA approved the device, I am sure a domestic fire hazard would be one of the least probable consequences.

### Oven Shielding/Susceptibility

It is most unlikely that 2.5 GHz radiation could escape from the enclosure and conversely, no external radiation could be expected to penetrate it.

The oven line cord acts as an antenna and as a direct connection to the outside mains. Very little protection is provided to exclude RF energy from entering the internal power supply via the line. The possibility exists that sufficient RF energy could affect DC voltage levels at the microprocessor and cause sporadic operation of the oven. It is even possible that under such circumstances the front panel controls could be 'locked out.' Anyone with a computer without a reset button has only one recourse—pull the line cord.

Tests were conducted over a one

hour period during which time the Amateur's antenna was pointed directly at the complainant's house. There was no sign of abnormal oven operation even at the 1 KW output level keyed CW mode.

### Keying Transients

Keying transients or relay generated switching transients would have to be sufficiently high to initiate the sequence necessary to turn on the high voltage supply. In this case, and this particular oven, the cooking interval is retained in memory so a stray transient could trigger operation. Whatever would lock out front panel controls under this condition is unknown. From a single observation by non-technical observers (the homeowners) the case is not closed. Operation by the Amateur and spontaneous operation of the oven may be mere coincidence.

Perhaps appropriate measurements can be made at a later date to satisfy the complainants and shed further light on the actual cause. It should not be overlooked that a single power line transient could produce the same effect.

To my knowledge, no other cases of sporadic microwave oven operation have ever been investigated and I hope this is an isolated instance. Δ

## Homeowner obtains injunction against transmitter

In a civil suit in District Court of Ontario (Ottawa-Carleton) July 25, a justice granted an interim injunction to stop an Amateur radio buff from transmitting. One observer is concerned a permanent injunction, if granted, could become a precedent against any transmit operator.

Plaintiffs charged that radio interference was a nuisance by disrupting household electronics and seek \$35,000 in damages and a permanent injunction. A trial is expected in September. The parties are 'Silicon Valley North' (Kanata) neighbours.

While over 100,000 instances of EMI are known to occur in North America yearly, manufacturers usually remedy products before any legal action, said Ralph Cameron, chairman of the Cdn Amateur Radio Federation's EMI committee. Four basic preventions are shielding,

grounding, filtering and bypass, although each problem usually needs a unique cure, he said. (DOC's recommended spec to manufacturers of consumer products, EMCAB-1 of 1982 and CSA std C108.8-M1983, for EMI from DP and electronic office machines aren't laws.)

DOC gave the above Amateur a clean bill of health but lack of rejection by household appliances of the neighbour generated problems, Mr. Cameron said. Before legal action, suppression at the plaintiff's home was at least partly successful.

Lorne Abugov, DOC legal counsel, said DOC is following the case "with interest" and has asked for more court documents to consider the scope of the action. Mr. Cameron said he knew of no other case where an injunction was granted to shut down an Amateur radio operator in Canada.

--from NETWORK LETTER



# On Deregulation

By James Gibb VE3FFD

September *TCA* carried an article by Art VE3ZS on the deregulation of our bands, that is, the removal of those schedules in the Radio Act that limit the frequencies within which each class of licence may emit signals. Here is another by VE3FFD.

All Amateurs should review these papers. Further articles on deregulation will be welcome, and published as space allows. Please send letters and articles to Box 855, Hawkesbury, Ontario K6A 3C9.

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

**T**he latest edition of *TCA* and the Article on Deregulation, is another good reason for Canadian Amateurs to belong to CARF.

Do we need deregulation? Can we afford DEGENERATION? Are we being led down the path by the 'communication buffs' again?

While special endorsements may be required for leading-edge technology operations, how many Amateurs would really be active in them? Normal endorsement requirements for 10 metre phone, SSTV in HF bands etc., are not a problem to acquire or issue for that matter. Given the large number of non-technical 'Amateurs?', why deregulation and the resulting chaos in our spectrum?

In 25 years association with Amateur radio, no one I know has ever had a problem getting to use new technology in Amateur radio, if they were qualified and requested special endorsement to participate in experimental activity.

What I would ask you to do, is to think for a minute with your brain and not your heart. Should we throw away anything so valuable as this service by allowing it to be raped and pillaged because man instinctively resents being controlled? Do you not protect the things you value?

In the September issue of *TCA*, we have an article on a great QRP transceiver. Apart from showing everyone that construction of Amateur equipment is still alive, the article gives a little insight to why regulations are still required and justified. This is still an Experimental service except for a group of 'communication buffs' who in many cases are more dangerous than experimenters. Listen to the splatter on the bands by some of these types, with their 'commercial gear.'

## Homebrew lives

However, I want to point out that experimental activity and homebrew

rigs are still around. Our licence gives us the privilege to put this gear on the air. Unlike the GRS group, our spectrum exists for this privilege of developing our technical abilities along with operating abilities. The individuals not wishing to participate are not forced to. But, why should we remove regulations? To put splatter across the whole length of our spectrum? Amateur Radio is not just verbal communications!!!

Possibly Amateur Radio generally requires improved regulations, some new structuring of sub-bands and strong enforcement by the authorities whose mandate it is to protect our privileges, with full active support from the Amateur fraternity.

Concern about civil rights and the intrusion of government into our private lives, applies equally well within the Amateur Radio community, as it does in the rest of society.

It appears however, that some of our Amateur representatives proposing deregulation and reduction of licensing requirements, lack real exposure to the 'common unwashed,' a civil servant's name for 'the man on the street.'

Our whole social fabric is dependent on guidelines for behaviour and without these legislated regulations, religious laws and secular tenets, men cannot live together no matter how well meaning some group or individual may be. "Gentlemen's agreements" just don't work forever!

Further, any small group within a sector of society, such as the Amateur radio fraternity, cannot expect everyone in that sector to conform to the dictates of such a group. i.e. The repeater council problems in Southern Ontario, if not as severe as in California, are still present.

Protection is required so the majority are not abused by the few, nor punished for actions of the few.

Without legislated regulation the Amateur community will suffer like any other social group and we must

have the intestinal fortitude to support enforcement of regulations. We need to be more involved with policing our ranks, NOT ignoring the trouble makers.

Record and report trouble makers, tell them they are not welcome in our ranks. Why not publish their calls in *TCA* so that all ignore them? Maybe, even get ARRL to run a 'NOT WANTED AMATEUR' column as well. Documented violations would prevent libel or slander actions, for most operators have tape recorders.

There are very few nets that can claim no deliberate interference has occurred in recent years. Such is the same for specialty mode activities, be it SSTV, or Satellite HF/VHF/UHF frequencies and RTTY areas of operation. All "Gentleman's agreements" as to operating locations.

I suggest that actions we take in Canada will make some difference outside our country, that regulations can be enforced to provide some protection to all Amateur activities internationally.

Rather than deregulate, there should be improved legislated regulation to protect a very valuable resource in this country. Even if just to show others we value this resource, as much as we value our freedoms and privileged use of spectrum.

Everyone in the Electronics field today realizes Canada must do everything in its power to ensure that increased emphasis is put on electronic technology.

Traditionally, Amateur Radio was the ground school for developing interests in this discipline, we have some distinguished members of this discipline in our ranks. Have you ever wondered why Amateur radio?

Canadian Amateurs should be publicly demonstrating what this service can contribute to the technology and future for Canada. Not only in times of disaster,

*Continued on next page* ▶





Is your rig covered?

## Your insurance policy

By Ron Poppe VE3IVJ

Member of I.B.A.O.O. and licensed by R.I.B.O.

**M**ost people will have one of the following: Basic HOMEOWNERS Policy or Basic TENANT'S Policy.

Each policy covers for loss or damage caused by 'SPECIFIC' Perils which will be listed in the contract.

The perils (type of loss) of interest to Hams are:

FIRE

LIGHTNING

SMOKE

IMPACT BY AIRCRAFT OR LAND

VEHICLE

VANDALISM OR MALICIOUS ACTS

WINDSTORM OR HAIL

THEFT

The term 'FINE PRINT' is nothing more than a MYTH. But, there are 'Exclusions' and 'Limitations' in every policy to clarify the intent of the contract.

A) The peril of Fire excludes loss or damage resulting from the application of any heat process. (Be careful with that soldering iron.)

B) Loss caused by electrical current other than lightning is specifically excluded.

C) Windstorm or Hail excludes outdoor antennas and ice or snowload.

D) In this day and age, Insurance policies contain deductible clauses which apply to each of the above perils. The deductible can vary from \$100 to \$250 or even higher.

Coverage for wind damage to antennas and towers can be obtained from some Insurance Companies. There are several ways that a policy can include this protection so check with your Broker or Agent. The thing to consider is the premium and size of

the deductible i.e. is it worth a \$50 premium to insure the antenna for \$500 and have a policy with \$100 deductible?

Both of the policies provide coverage for property temporarily away from your premises. (This does not cover at secondary locations owned by the Insured. No coverage at your cottage.) The amount of Insurance is usually 10% of the sum Insured on personal property subject to a minimum of \$1500.

In Ontario the Automobile Insurance policy covers Two-Way Radios. This can be somewhat tricky. If you have a rig just sitting on the seat, it is not a part of the vehicle. (Nor is a hand held simply connected to a roof mounted antenna.) However if the unit is mounted by means of a bracket the Insurance Companies will cover it under the Auto policy.

To further complicate things, the Auto policy usually has different deductibles: i.e. \$250 for collision and \$25 or \$50 for comprehensive (fire & theft, etc.)

I elected to purchase a specific 'ALL RISKS' Floater for equipment which is used mobile or portable. (The same as one insures a camera or jewellery.) Do not confuse this All Risk coverage with the Named Perils plan offered by ARRL. The premium for 'ALL RISKS' coverage can be expensive, but is not necessarily so.

Hams who drive Company owned or leased vehicles should consider an ALL RISKS form of coverage because the policy insuring vehicle will not apply to their radios in the vehicle.

How about our responsibility for damage to a neighbour's property

caused by falling antenna or towers. The policies mentioned above include Personal Liability coverage BUT only where you are LEGALLY liable. Because your tower comes down on the neighbour's roof in a storm DO NOT assume that you are responsible. You have no control over windstorms and if the tower was properly installed and maintained you cannot be held liable. Never admit that you are to blame, let the Insurance Companies decide. (Your neighbours policy covers the damage to his property.) (From Burlington ARC's *Printed Circuit*.)

### ANOTHER VIEWPOINT

Regarding removing the Canadian sub-bands. The only band I think this move will have any great effect upon will be 80 metres. We already have a good exclusive (North American) chunk of the 20 metre band and we have a great advantage over our friends south of the border on 40. But we are really cramped on 80. In my opinion this band is the prime one used for regional evening nets, so important in a country where the population is spread over such a large geographical area. 80 metres is the most useful band for potential emergency situations on HF therefore we should have as much latitude as possible with regard to frequency selection. I agree with the idea of relaxing the phone sub-bands, especially on 80. We are a responsible bunch for the most part and I am confident that our increased capabilities as a public service will outweigh the negative aspects which expansion would bring.  $\Delta$

Brent Taylor VE1APG

► Continued from page 23

emergency situations or in our past history of world conflicts.

The cost of Amateur experimentation is cheaper today than ever before, school children have the required math and physics to understand current technology at a very early age, we should make use of these resources in our service.

Many of us 'old folks' fail to realize the depth of knowledge present in today's young people, because we generally have failed to keep up! How many of us can handle current high school math, say grade 11?

However, the only way we can secure young people's interest is to show them Amateur Radio is not simply 'the vocalizing of past dreams of old men,' but the opportunity to develop skills in modern technology. With a STRUCTURED environment to protect the MANY SPECIAL INTERESTS!

Regulated and structured Amateur radio operations and bands would help improve current activities and secure the future of our service as well as potentially helping secure our country's place in tomorrow's industrial world. Properly directed regulation with fair sub-band allotments, not for the protection of commercial interests, but to segregate our special interest groups in Amateur Radio.

This would far better represent Amateur Radio today with its multitude of operational modes, unlike the CW and ICW modes of the early 1920's. We are fighting to keep our spectrum and we should be creating order within our allotted areas. Directing change to improve, not opening the door to chaos. Are we going to convert all Amateur spectrum to GRS?

We need to return to quality in our ranks and ensure there is space for the

kinds of experimentation of years past. Not just more room for the 'communication buff' to babble without control or regard for the real Amateurs, involved with experimental or public service activities.

Sadly, without regulation men will let their ignorance show, so long as they have their individual fun. The activities witnessed by many on 75 metres this past year, are surely typical of the GRS problems. We really can't expect quality without control, nor order without discipline.

We need legislation to guide the structure of 'OUR SPECTRUM.' Specified allotments for use by each special interest group, in each band and selected by these groups. The "Gentleman's agreements" on open frequencies for nets, etc., has failed along with tuning into dummy loads. Further degradation will only play into the hands of business and their interests in our spectrum.  $\Delta$



# A Northwest Territory Experience

By Moe Lynn VE6BLY

**A**nyone familiar with the RCAF Canso aircraft that flew submarine patrols during WWII and searched for missing aircraft afterwards might not appreciate comparing them to a ship at sea. They could stay in the air almost all day, flying at low level about 110 mph, giving one the impression and feel of riding the ocean waves.

My first ride in a Canso was Aug. 25, 1945 on a flight from Fort Smith to Yellowknife, N.W.T. as a Sergeant with the Royal Canadian signals while on leave/duty to attend the holy rights of matrimony with my betrothed. As with all RCAF flights, you were obliged to travel in uniform.

About 1½ hours flying time out of Fort Smith the Captain stuck his head around the cockpit bulkhead and let out a holler, "SPARKS!, come on up here for a minute."

Making my way along the cabin as quickly as allowed by the bulkheads and the roughness of the air at our altitude of about 1000 feet above ground, I noted someone at a desk asleep, head lying on his arm and the radop(air) idly tuning his set.

On arrival at the Captain's elbow his greeting was, "You've been down in this country a while I understand." Yes, I said, "a little over two years." Whether he knew my 21st birthday had just passed is doubtful but my enthusiasm for flying must have shown.

Anyway his next question was, "I don't suppose you know where we are?" Well, I said, "how long ago did we cross the lake?" "What do you mean, we are flying over lakes right now," he said. This was hard to believe even in my inexperience! How could you be flying a Canso on visual flight rules between Fort Smith and Yellowknife and not know when you had crossed over Great Slave Lake?

Not wanting to admit my own observations during the flight were a bit slack, I asked for their map. The crew had only been equipped with a 16 mile per inch scale which is next to useless at such a low altitude.

Fortunately we came upon an abandoned mining camp with head-frame and other buildings. These I recognized from earlier flights out of Yellowknife with CPA pilots in Norsman aircraft on floats.

After announcing it as the 'Ruth'



*Sgt. Lynn VE8NZ with the motivation for the flight, at Fort Smith, N.W.T. in May 1946. The chaperone is Tiny.*

mine, about 55 miles east of Yellowknife, the Captain wanted a more certain identification. The map scale was such that the lakes we used at this altitude for navigation on 8 mile to the inch maps did not show on his map.

When flying prospectors or staking crews we always used their staking map, which was 4 miles to the inch, as we got nearer their destination. He accepted my explanation and then altered course for Yellowknife. The map symbol for a mine on his map had apparently not been sufficient proof when it loomed ahead about 30 minutes after his summons.

Being one of many experiences with the RCAF it was probably the first time a 'brown job' had assisted in navigating a 'lost' Canso to destination. The Captain certainly was serious in his request and subsequent interrogation up front. It became my personal experience in later years while bush flying to actually cross the east arm of Great Slave Lake and not know it.

Ironically too, this same brown job flew crew as the first and last radop

(ground) on RCAF Hercules, before integration was completed. It seems they could not find any others as enthusiastic toward flying to continue the experiment of replacing the Radio Officer. Consequently today you find the pilots of these flights will hang up the HF earphones and rely on Selcal watch or VHF, waiting for the day when Satellite navigation replaces both.

To quote a retired Hercules pilot, "I could never understand how you guys just sit there for hours listening to that noise." The obvious reply, one you hear from any true HF devotee was, it is not noise but music especially when copying CW weather broadcasts, position reports, message traffic etc. However, that is part of another story which, among others, may find their way out of the ROM of this computer sometime in the near future. △

## TCA DEADLINE

Next TCA deadline. Material for the January Canadian Amateur should be in the editor's hands before Nov. 15.



# Long Delayed Echoes

**F**orty years ago this month the Canadian Amateur magazine, 'XTAL,' published by the first all-Canadian Amateur organization, the Canadian Amateur Radio Operator's Association, was concerned with rebuilding and re-organizing the Association after six years of war had scattered the membership. Many of them were, like me, still in the Forces, scattered over the globe, as the column, 'News From Members' testified.

The content was rather different than our modern TCA. The advertising was largely of the 'institutional' type, with names familiar even today... Marconi, Aerovox, Westinghouse, CGE, Cannon, Hallicrafters and, of course, that mainstay of home-brewers now even as then, Hammond Manufacturing. The large companies' advertisements carried little more than their name and a word or two and an illustration of their products; Cannon then, as now, 'plugged' plugs, Marconi, Westinghouse and CGE listed their components, especially tubes. There were only four ads for dealers and they were only for parts.

It was the era of home-brewing indeed. The articles were on construction of power supply filters, a Q-meter and a 'Vacuum Tube Voltmeter.'

Letters to the Editor were brightened by one from an Amateur still prominent in national affairs...

Gwen Burnett VE3AYL who suggested a YL column.

Social event of the year was touted as being the VE Operators' Association Hamfest in Toronto on Nov. 15th with all the usual trimmings including a roast chicken dinner ALL for \$2.00.

Disposal of wartime gear had already started and one ad put in by the 'Manufacturers' Radio Tube Committee', which had been formed by the government during the war and included Canadian Westinghouse, Northern Electric, Canadian Marconi, Canadian General Electric and Rogers Electronic Tubes, was offering a then-mouthwatering list of tubes... like 807s at 65¢.

This is the second in a series of 'flashbacks' and it is hoped that it will bring back memories to the old geezers like myself and give the newer generations of Amateurs some idea of their heritage.

## Help!

We would like to run a series of stories of events over the years as reported in TCA's predecessors such as XTAL Magazine, the original THE CANADIAN AMATEUR of 1959, VE News and Skywire. A few years ago we managed to acquire a fairly complete library of these publications thanks to some members, but there are still a few gaps in the collection. If any of our readers could unearth any of the

following it would help in writing the history of Amateur radio in Canada. Still missing are:

**XTAL MAGAZINE.** Copies previous to January 1939 which would probably be Vols. 1 and 2 for 1937 and 1938; Vol. 3, issue No. 6, probably for June-July 1939 and Vol. 7 issue No. 8, September 1946.

**THE CANADIAN AMATEUR** of 1959, published in B.C. and a predecessor of our present TCA. It apparently expired early in 1960 but if there are any copies subsequent to its Vol. 1, No. 10 for April 1960, they would be appreciated.

**VE NEWS** for August, 1971.

**SKYWIRE.** Apparently a monthly published in Toronto in the early '50s. I have only February 1952 and November 1950 issues.

If any of the above turn up in your attic or elsewhere it would be appreciated if they could be sent to the undersigned for the CARF and TCA files: Doug Burrill VE3CDC, Contributing Editor, TCA, 151 Fanshawe Ave. Ottawa, Ont. K1H6C8.

△

## Trivia Quiz

Most people think the age of telegraphy began with Marconi. Well, a doctor who lived in Renfrew, Scotland suggested the transmission of messages by electrical wires from one place to another in 1753.

With his system, he joined stations with 26 wires— one for each letter. When a wire was electrified at one end, a light ball rose at the other end, indicating a specific letter was being transmitted. It was cumbersome, but it worked.

This Scottish surgeon and inventor eventually emigrated to Virginia. Name, please?

ANSWER— Dr. Charles Morrison.  
Medical Post 20/Aug/85

—||—

A certain CARF official has been pressing the editor for some time to print articles by an American friend of his. The editor's policy is that Canadian authors get first crack at the very limited space in TCA. The official responds: "By all means promote Canadian authors but this man is quality."

Oh, you Colonials!

△

## The Code, 150 B.C.

Also by Torches letters may be signified, as we find in the manuscript of Polybius. Tops of buildings or Towers, are very fit to set up Torches on. Let the letters be divided into two or three parts, if there may be eleven, or seven parts of each. If they be seven, the first letters are shew'd by single Torches, the second by double ones, the third by three Torches. The number may be also divided into four parts: but in representing them, we must observe the variety of motion. For one Torch lifted up once, shall signifie A, the same lifted up twice B, thrice C; to seven times: the last of the first order G, after that two once H, so many twice I, thrice signifies L,

and so the rest of the same order. Then Q by the third order once, R by the same, twice, and thrice as many of the same, signifies S, and so it holds for four. Thus a woman from a watch-Tower, with three lights shewed five times, then with double ones twice, then with treble lights twice, then again with one at once, and with the same four times, then five times with three lights, then thrice, and with as many four times, shall signifie, *vir adest* the man is come. —Giambattista Della Porta, *Natural Magick*, 1588. (Polybius lived about 150 B.C. Wonder what was best DX in those days?)





# From the Clubs

By George Morgan VE3JQW  
687 Fielding Dr.,  
Ottawa K1V 7G6



**L**ooks like the Winnipeg Amateur Radio Club has been keeping pretty busy. On Sunday, May 12, two members of WARC provided communications for the Athletes' Wear 'Run for Fun' Race, held at Assiniboine Park. This race, divided into two parts, one a 3 km run and the other a 10 km run, drew about 500 runners, including three wheelchair athletes.

Kelly VE4ALO and Dick VE4HK, took up positions so that they could phone-patch police or ambulance services if required and also provide assistance to timing personnel. Unfortunately, the day was miserable; however, after a hot bath, and a change of clothing, all celebrated a job well done by enjoying a barbecue at the Race Director's home.

Then, on Saturday, May 25, WARC assisted with a parade held by the Girl Guides of Canada to celebrate their 75th anniversary. There were about 3000 Guides and Brownies present, along with their leaders, several bands, floats, and, of course, clowns. This time the weather was excellent, with light winds, no rain, and temperatures about 15C.

Kelly VE4ALO was at the head of the parade accompanying the Parade Marshal; Ed VE4ALZ patrolled the middle portion of the parade on bicycle; and Dick VE3HK acted as 'tail-end Charley.' Their job was to provide instant information from the front to the rear of the parade and to ensure that all proceeded smoothly.

Apparently everything went off without a hitch, although the Winnipeg Police Pipeband, complete with their bagpipes, became lost (I can't imagine how that could happen!) and had to be tracked down by Ed just in time to get into position.

Thanks for the info, Dick, and keep up the good work.

The 1985 Lobster Car Rally, held on July 20, 1985, has come and gone, and, according to Stan VE1UM, Amateur radio participation by members of the Moncton-Area Amateur Radio Club was the 'best ever.' A total of 25 Amateurs showed up for this yearly event. Most of the volunteers (23 out of 25) were seasoned pros and knew exactly what to do. Stan says they even gave pointers to the 'stage' workers (isn't it

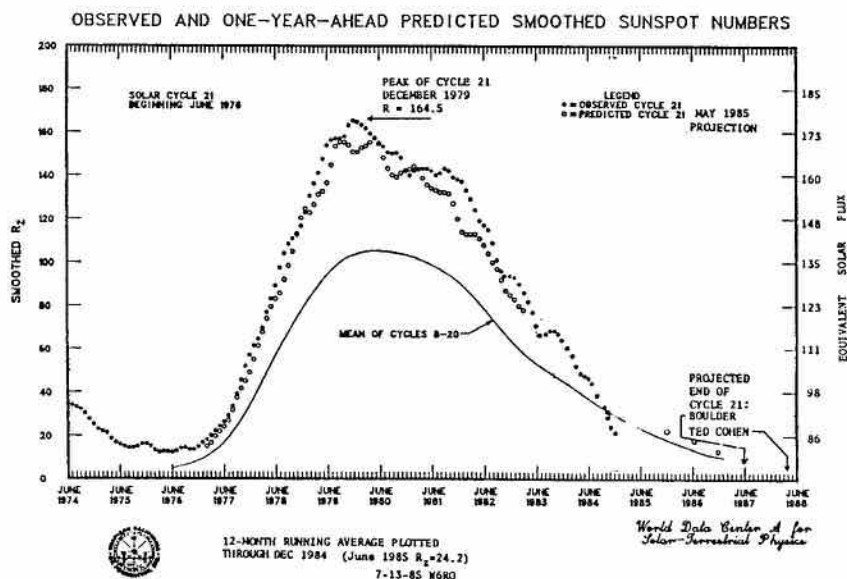
surprising how often this happens?). The two new participants soon caught on and the whole event went smoothly.

This was either the 8th or 9th year the club has provided communications for this event. George VE1JJ thanks Stan VE1UM and Wayne VE1BKH for organizing Amateur participation in the event, and the following who volunteered for this most successful public service: VE1's

CGQ, AWJ, CGY, CGG, AIR, AJF, BUI, OZ, BUL, IH, AG, BOT, BVW, CKM, CKN, AMR, BOV, KX, NJ, BVR, BED and BDM.

Thanks, George.

Here's food for thought. According to Al VE1BOV, ham meeting times and repeater frequencies for PEI are now included in a Tourist Bureau hand-out at the Ferry Docks.



## AMATEUR RADIO COURSES

Here are the details of Amateur radio courses for Nova Scotia and Newfoundland:

Instructors:	Phone	Locale
Dan VE1JV	479-1557	Herring Cove, N.S.
Spud VE1BC	868-2343	
Fraser VE1MG	834-2254	Sandy Cove, N.S.
Art VO1AX	368-2611	St. John's Nfld.
(Tx VE1BC)		

Please let the editor know the details of your club's courses.

## U.S. Hams on 902-928 MHz

U.S. Amateurs have joined Canadians on the UHF 902-928 MHz band. Canadians, who have had this allocation for some time, are restricted to F3 and A3 emissions but the U.S. operators are being allowed a wider variety of modes. The FCC is allowing a 1500 watt PEP except in the vicinity of the White Sands testing range. U.S.

Amateurs are also secondary users and must not cause QRM to radio-location or industrial, scientific and medical installations (ISM)... which brings up the question of whether microwave ovens, which operate between 902 and 940, according to our news source, *W5YI Report*, are ISM devices!



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- 16 button speaker/mic with UP/DN lock-out switch

This radio does every single thing we asked the design staff to make it do, and it does it in an easy to use, simple manner. It is truly spectacular to operate such a radio in the 2 meter band. For example, the FM-240 has two VFO modes—one called VFO, the other QSY. So if you are on your favorite channel and want to QSY, simply push QSY and tune the main knob to the new frequency. To return, simply push QSY again. The entire radio follows this simple but spectacularly effective engineering formula. ONE BUTTON + ONE KNOB, SIMPLY SPECTACULAR SIMPLICITY.

OTHER POPULAR BUT

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BP-4 Alkaline Battery Case	1
BP-5 425mA 10.8V Battery	1
BP-7 425mA 13.2V NICAD Battery	1
BP-8 800mA 8.4V NICAD Battery	1
HM-9 Speaker Mic	1
CP-1 Cigarette Lighter Cord	1
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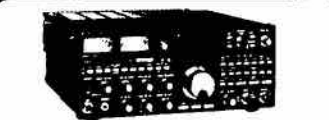
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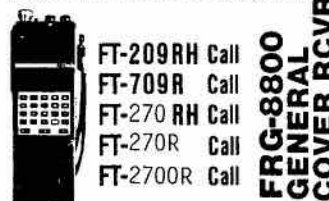
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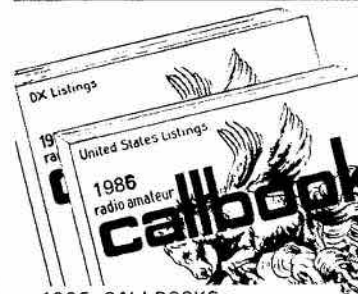
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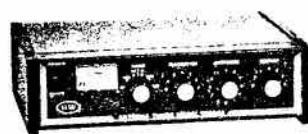
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# Social Events



Darrel VE6ZK, Ervin VE6ABI and VE6KCS pose for the TCA camera at the Watertown-Glacier hamfest. (The editor couldn't find VE6KCS's name in the book. Has he changed it to VE6MHZ, perhaps?)

## CALENDAR

Sept. 1-Oct. 31: 'Citta di Firenze' award. Details Sept. TCA.  
 Oct. 16-Nov. 16: Special prefix CH authorized for Amateurs in Manitoba. Details Sept. TCA.  
 Oct. 26-Nov. 11: ON4CLM award. Details Sept. TCA.  
 Oct. 27: London ARC flea market. Details Sept. TCA.  
 Nov. 9: York Region ARC New-market Fleamarket. Details, Oct. TCA.  
**1986**  
 Jan. 16: Applications for DOC licence examination.  
 Feb. 12: DOC licence examination.  
 March 19: Applications for DOC licence examination.  
 April 16: DOC licence examination.  
 May 21: Applications for DOC licence examination.  
 June 18: DOC licence examination.  
 Sept. 17: Applications for DOC licence examination.  
 Oct. 15: DOC licence examination.  
 Publicize your get-together here. Write the Editor, TCA, P.O. Box 855, Hawkesbury, Ontario K6A 3C9.

## "The sun always shines..."



"There's a truckload of QSLs for you outside," says Dave VE3IAE to Jean VE3 Darned Good Girl, CARF's QSL Service manager, at the Trilliums table at the eleventh Ontario Hamfest.

Once again the summer sun looked down up on the eleventh successful Ontario Hamfest.

Excellent attendance by exhibitors, campers, traders, fleamarketters and visiting firemen celebrated the event's motto, "It's getting bigger every year!"

Your correspondent noted the same stalwarts at the gate, planting signs, setting up tables, and crewing the various tasks so necessary to the success of these get-togethers. Amongst the recipients of over \$3,000 worth of prizes, were Colin Bailey VE3OCP of St. Catharines, who won the Superprize HF station, ICOM745 transceivers, power supply, tuner and mic., and John Hill VE3NNS of Hornell Heights near North Bay, winner of an ICOM 02AT handheld transceiver. Happy QSO's to you both!

Notable among the various attendees was Robin VE3IUI at the helm of both the ONTARS and the TRANS-PROVINCIAL nets, CRRL, CARF, RSO all hard at it, and Fred VE3HC exchanging pleasantries with friends.

We're told that as always, the committee began deliberations for this year's shindig immediately after the Tenth, but for this (and last) year's Chairperson, Lyn Winch G8ZCM, not

every detail can be forecast. Thus it was that by last autumn, having recruited her committee, begun the basework and set the tone, Lyn announced that in the new year she would not take part in preparing for Hamfest 85! Let the records show that steady Bob VE3OIP stepped in handily, took the reins in smooth fashion and produced another winner.

...and Lyn? She joined the gang on the day— happily cradling Paul, the cause and result of a different happy event! Proud father Barry VE3NAV beamed broadly from behind the 807 Garden workbench.

One marvellous facet of such gatherings is the pleasure of seeing eyeball-QSO's amongst the more senior members— and their continued support and interest in the newer licencees and aspirants speaks well of their dedication to the service. Gathered around the Bottomless Coffeecup, the Trillium booth or the Prize stall, trading insults or agonizing over some organizational problem— these are the thirty-, forty-, and fifty-year veterans who proclaim what a worthwhile and productive pursuit our Amateur radio really is. No overnight fad, this.

See you at the TWELFTH ONTARIO HAMFEST! VE3LVO

## News for Naval Types

Add to the net directory listings:  
 Royal Naval Amateur Radio Service Net.

RNARS Net Sun 1900 Z 14.135 MHz  
 Sat 1430 Z 21.360 MHz  
 (if condx.)  
 Wed 2330 Z 7.07 MHz  
 Tnx VE2DOH



# The Waterton-Glacier Hamfest

This year the Hamfest was held on the U.S. side of the border at Three Forks Campground, 12 miles west of East Glacier, Montana. Hams started to gather Thursday afternoon and this continued through Friday. By Friday evening, the campground seemed to be filled to overflowing.

Saturday arrived with clear blue skies and the feel of warm temperatures to come. Activities started in earnest with tables of surplus and used gear on display either for sale or for trade or barter. Also two dealers in new ham gear appeared with tremendous displays of everything from coax-connectors to the latest in high-frequency transceivers.

A meeting was held for members of the Quarter Century Wireless Operators. Seminars were held on FM Repeaters and on Antennas. For the ladies there was a crafts display and sale and also a bingo to give them a chance to win some extra prizes.

Saturday evening brought out the barbecues and everyone had a chance at cooking their favorite cut of steak, hamburgers or hotdogs. The evening continued with musical entertainment.

The weather continued to be the best one could hope for. Sunday morning bright and early the Missoula, Montana Club had the stoves nice and hot once again and began cooking and serving hotcakes, bacon and eggs to everyone present. When it was all over they had made breakfast for 450 people.

A closing general meeting was held and the Southern Alberta clubs announced that they would host the Hamfest in 1986. The early registration prize, an Icom O2AT handheld and the grand prize, a Kenwood 430-S were drawn for registered Hams in attendance along with a great number of minor prizes. Hams in attendance came from as far away as Texas, North Dakota, Missouri, British Columbia and Saskatchewan. A fine time was had by all. 73 to all and we will see you next year in Canada. Δ

Ken VE6COH

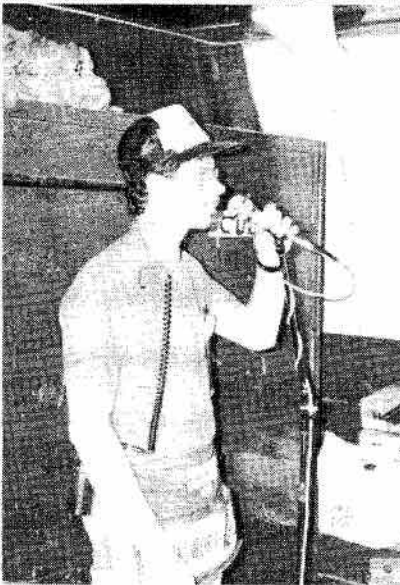
## RAVENSCROFT CASE DEVELOPMENTS

DOC has agreed to do some additional tests in the plaintiff's home, and the injunction has been temporarily lifted to run them.

No trial date has yet been set. The IRSD Fund now exceeds \$12,500.



*Above:  
Robin, net controller, ONTARS and  
TRANSPROVINCIAL nets, endures the  
kibitzing of the group.*



*Left:  
"And the winner of the Ford coil and  
loose coupler is..." Ted VE3HPL  
distributes the goodies at the prize  
booth microphone.*



*Below:  
John VE3AIP discusses matters of  
moment with Fred VE3HC.*

# MICROWAVES

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



## New Canadian Record

The Canadian distance record on 10 GHz was inched slightly higher during the ARRL September VHF Contest. VE3ASO/2 (FN45) operating from Mount Megantic's second peak, about one km further East than the original 100 mile contact with VE2AF a year earlier, contacted VE2DUB/2 again on Mount St. Hilaire. The signal was substantially weaker than the original contact due to partial blockage at the Mount Megantic end. VE3ASO/2 was also equipped for 50, 144, 220, 432, 1296 and 2304. He reports working 15 stations on 1296 and one on 2304.

Other contacts on 10 GHz that weekend included VE2KW on the Mount Saint Hilaire to Montreal path and VE2FUT/2 (FN26) to VE2DUB/2 also portable in FN26.

### Band Plan

Although it may not seem possible that a band plan is necessary for 10 GHz, my experience in operating several motion detector units at the same time in the basement while tuning them to the Amateur band has prompted me to give some thought to the use of standard frequencies for the operation of motion detectors on 10 GHz. Rather than a plan to keep stations using different modes apart, I have tried to maximize the chance of being able to hear the other stations. This approach will be useful until we fill all 500 MHz to the same extent as the 2 metre FM band. Until then I'm sure we would all like to maximize the number of stations we can hear.

To understand the plan you will remember that a 10 GHz system works on full duplex. The transmit signal from station 1 is offset in frequency from the transmit signal of station 2 by the frequency of the receiver they are both using. With a common 30 MHz receiver, for example, one station may be at 10.250 and the other at 10.280. The difference of the two transmit frequencies is 30 MHz and each provides the other with a local oscillator signal. Remember that you can put a signal above or below the station you want to contact and the difference frequency will be the IF in both cases.

Using the electrical tuning range of a typical Gunnplexer transceiver to

define the slice of spectrum of interest, we find it lies between 10.220 and 10.280 for a 10.250 center frequency unit and from 10.250 to 10.310 for a 10.280 center frequency unit, setting the bounds at 10.220 and 10.310 overall. While they are mechanically tunable over a much wider range, who wants to risk getting lost in a band that's 500 MHz wide! Let's look at the limits of frequency pairs that could be used assuming that a 10.250 and 10.280 unit are in communication using 30 MHz receivers. This is illustrated in Fig. 1.

For television transmission and reception on a standard TV receiver using channel 2, the frequency offset required would be around 55 MHz to receive the video signal. Channel 2 is suggested because it falls within the 60 MHz electrical tuning range separation of two Gunnplexers with the same center frequency. TV transmitters placed near 10.220 and 10.280 could be received by any Gunnplexers with the same center frequency. TV transmitters placed near 10.220 and 10.280 could be received by any Gunnplexer station using a 30 MHz receiver or standard TV set. See Fig. 2.

The introduction of motion detectors adds a new dimension as they are easily mechanically tuned into most any part of the band but their electrical tuning range is more limited than that of a Gunnplexer.

In beacon operation where they have a fixed frequency, they should be placed so that both a 10.250 and 10.280 unit can receive the signal. This places them within the upper and lower limits of Fig. 1. Care must be

taken that the motion detector is really tuned within that range at the low or high end, as a signal could be received on a 10.250 unit for example, at the lowest possible tuning voltage if the motion detector was operating at 10.190 or at the highest tuning voltage if the motion detector was at 10.310. By placing beacons at 10.220 and 10.310, exactly 90 MHz apart, they could be used as frequency standards for setting up a contact as follows.

Frequency determination is one of the biggest problems in establishing contact. Usually one station goes low in frequency and the other goes high, hoping to meet in the process. Usually the antenna direction and frequency are both wrong and much searching is required to make contact. With stations tuned to the high and low beacons and transmitting on 10.280 and 10.250 respectively they would then be 30 MHz apart and could then turn their antennas towards each other and make contact. This would decrease the time spent searching up and down the band for the other station. With all beacons on these two frequencies, contacts between distant groups could be facilitated without individual equipment calibration, as long as the beacons were calibrated. If you have followed this so far then you should be thinking something like, "Hey wait a minute, won't we then be receiving two signals, one from the beacon and another from the station we are trying to work?" Yes, if the beacon is in the direction of the other station and falls within the 5 degree beamwidth of the dish you will hear both or the stronger of the two. If this happens you can move a little to either side as there is certainly enough room.

So far we have just considered simplex operation between two stations at a time. Next month we will look at the possibilities for repeater operation and contacts between more than two stations.  $\Delta$

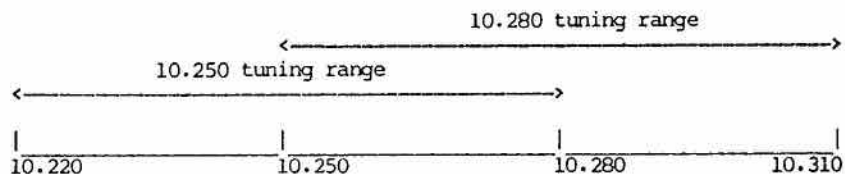


Figure 1

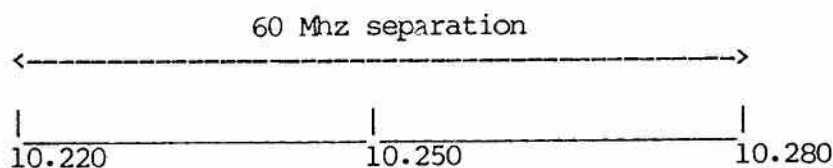


Figure 2





# CONTEST SCENE

By John Connor VE1BHA  
18 Deerfield Dr., Apt. 1112, Nepean, Ont. K2G 4L2



Nov 2/3— CW Sweepstakes  
16/17— Phone Sweepstakes  
23/24— CQ CW WW DX  
Contest  
Dec 7/8— ARRL 160M Contest  
14/15— ARRL 10M Contest

In this month's column, we will look at the results from last year's CQ WW DX Phone Contest, which appeared in the September issue of CQ.

Leading the way in the single operator all band category in Canada was Gary VE3GCO, sporting his new callsign XN3XN. Gary turned in a very fine score of 1.6 million points.

In the single band competition, Reg VE1BNN took the ten metre honours with his 51k score. On 15 it was XN2EVO coming first with 26 thousand points. Twenty metres went to Dave VE2ZP operating XN3OCU and rolling up 320k.

The big single band story last year was Yuri VE3BMV. (So what else is new?) Yuri demolished the old Canadian score, as well as bettering the previous world mark which was set in 1982. Yuri made 1900 QSOs for 546k points and the fourth world high score. As well, his score was also the top score in North America. Yuri also

gets to add the VE7KB trophy to his collection for being the high Canadian single band scorer.

In the other low band action, XN3EEW was top dog on 80M with 1200 QSOs and 104k points, while VE3OME made 13k points to lead the pack on 160M.

Multi-operator was fairly popular in Canada in 1984, with four multi-singles and two multi-multis. XN3BVD led the way for the multi-singles with 4.6M while VE7ZZZ scored 2.4M for the number one multi-

multi spot. BVD also takes home a trophy from the Calgary Amateur Radio Association as the top multi-single.

All in all, a good showing considering the relatively poor conditions that we are going through at this point in the sunspot cycle. Hope everybody did as well in this year's contest.

## December Contests

A couple of specialized contests highlight the month of December. These are the 160M and 10M contests, both sponsored by the ARRL. Activity in the ten metre contest will probably be rather low this year, which makes your participation all the more important. It is important to the participants in the contest, to the sponsors of the contest and it is important that we use the band. So get on and make a few contacts.

One-sixty should be quite interesting this year. Activity will undoubtedly be high and there should be some good DX to try and work.

Last but certainly not least, don't forget the CARF Canada Contest at the end of December.

I had hoped to have some CARF Contest results for this month, but they are still somewhere in the bowels of the postal system. With any luck, they will arrive in time to find their way into next month's TCA, along with the results of the CQ CW Contest. Δ

## 1984 CQ WW DX Phone Contest Canadian Results

CATEGORY	CALL	SCORE	QSOs	ZONES	CNTRYs
ALL BAND	XN3XN	1,579,648	1933	30	254
	VE2AYU	481,440	734	79	193
	VE2YM	249,696	475	61	143
	VE5APZ/3	180,441	482	49	441
	XN2PZ	156,520	474	60	90
	VE6AGV	75,968	363	39	53
	VO1AW	65,360	205	27	85
	VE2DT1	55,880	242	47	75
	VE3CWE	49,000	169	39	77
	VE7TGO	44,538	201	27	51
	VE2JO	36,328	200	22	54
	VO1CA	34,100	135	32	68
	XN2FD	32,775	151	28	67
	VE7IK	25,681	180	31	50
	VE2GON	13,286	79	26	47
	VE5AAD	7,200	85	20	20
28 MHz	VE1BNN	51,904	356	32	68
	VE3PPT	3,510	47	9	21
	VE2ABZ/3	2,675	40	8	17
	VE6GPP	1,615	32	8	11
21 MHz	XN2EVO	25,986	135	21	50
	XN3BXY	8,255	50	19	47
14 MHz	XN3OCU	320,880	1137	25	87
	(VE2ZP op)				
	X11GU	153,040	750	18	62
	XN7EIX	136,591	720	23	56
	XN2HDX	80,926	367	22	64
	VE4ALY	45,928	425	25	51
	VE2POT	28,080	143	21	59
	XN6CB	25,850	184	19	36
	VE7CWN	24,750	134	20	35
7 MHz	XN3MVF	546,615	1882	31	104
	X11CV	591,629	1406	29	90
5.7 MHz	XN3EEW	105,870	1146	16	51
	XN5BA	47,987	517	13	34
	VE7AO	16,399	266	12	19
	VE1ATN	7,560	105	9	27
1.8 MHz	VE3OME	12,690	446	6	9
	VE3WBZ	11,913	346	9	10
	VE3CTU	9,800	367	6	8
	VE7BS	1,656	45	9	9
	VE5XU	638	32	8	11
MULTI-SINGLE	XN3WVD	4,676,484	4115	121	353
	VE3CYI	3,555,900	2669	133	407
	VE6EP	122,148	714	25	53
	VE3JUT	28,982	155	36	50
MULTI-MULTI	VE7ZZZ	2,390,553	3699	100	197
	VE2UJA	1,890,472	3454	81	187



VE6VW Norm Waltho presenting BJ Madsen VE5ADA the President's Trophy for the highest scoring operator of a CARF Official Station, VE5VCA, in the Canada Contest 1984 with a total of 127,686 points.



## CARF Phone Commonwealth Contest

This contest is one of the lesser known contests and we are anticipating to expand this one to a well-known contest this year was poorly advertised, I have vowed to get it back into the public eye. There's always next year to look forward to.

### Results for the 85 CARF Commonwealth Contest

Call	QSOs	Total	Class
CGSRA	281	3185	Multi band
VE3CWE	14	270	Multi band
VE1ING	24	420	Single band
			14 MHz

Norm Waltho VE6VW  
Contest chairman



# CARF PHONE COMMONWEALTH CONTEST 1986

**April 12 1200Z to April 13 1200Z**

This contest is open to Amateurs in all countries of the Commonwealth of Nations. Entrants may work other Amateurs in the Commonwealth in the 80, 40, 20, 15 and 10 metre bands, using SSB (J3E).

**Classes of Entry:** Single operator stations only, in all- or single-band classes.

**Exchange:** RS report and a consecutive serial number, starting at 001.

**Scoring:** Work only Amateurs outside your call area. Each station may be worked once on each band. Each QSO counts 5 points. A bonus of 20 points may be claimed for the first, second

and third contacts with each Commonwealth Call Area on each band. See the accompanying table for a list of Commonwealth Call Areas.

**Suggested Frequencies:** Plus and minus 20 kHz of 3600, 3760, 7080, 14130, 21200 and 28480 kHz.

**Entries:** A valid entry must include Log Sheets, Dupe Sheets, a checklist of Commonwealth Call Areas worked on each band and a summary sheet showing claimed QSO and bonus points and final claimed score calculation. Summary and Call Area Checklist sheets are available for an SASE. Entries should be mailed within one month of the contest to:

Norm Waltho VE6VW

Box 1890, 9714 94 St.

Morinville, Alta. T0G 1P0

**Awards:** A plaque will be awarded to the top scoring all-band entrant. Certificates will be awarded to high scorers in each class in each Commonwealth Call Area.

**Results:** Will appear in *TCA*—The Canadian Amateur Radio Journal. Non-members of CARF may wish to include an SASE with their entries for a copy of the results.

This contest should not be confused with the RSGB's March CW Contest on which the rules of this contest are based. Do not send entries for the SSB event to RSGB, or CW entries to CARF.

## Commonwealth Call Areas for scoring in the CARF Phone Commonwealth Contest

A2 Botswana  
A3 Tonga  
A5 Bhutan  
C2 Nauru  
C5 Gambia  
C6 Bahamas  
G United Kingdom  
H4 Solomon Islands  
J3 Grenada  
J6 St. Lucia  
J7 Dominica  
J8 St. Vincent  
P2 Papua New Guinea  
S2 Bangladesh  
S7 Seychelles  
T2 Tuvalu  
T3 Kiribati  
V2 Antigua  
V3 Belize  
VE1 Maritime Provinces  
VE1 Sable Island  
VE1 St. Paul Island  
VE2 Quebec  
VE3 Ontario  
VE4 Manitoba  
VE5 Saskatchewan  
VE6 Alberta  
VE7 British Columbia  
VE8 N.W. Territories  
VK1 Austr. Capital Terr.  
VK2 New South Wales  
VK2 Lord Howe Island  
VK3 Victoria  
VK4 Queensland  
VK5 South Australia  
VK6 Western Australia  
VK7 Tasmania

VK8 Northern Territory  
VK9N Norfolk Is.  
VK9X Christmas Is.  
VK9Y Cocos/Keeling Is.  
VK9Z Mellish Reef  
VK0/h Heard Is.  
VK0/m Macquarie Is.  
VO Newfoundland  
VP2E Anguilla  
VP2K St. Kitt's  
VP2M Montserrat  
VP2V British Virgin Is.  
VP5 Turks & Caicos Is.  
VP8/f Falkland Is.  
VP8/sg South Georgia  
VP8/so South Orkney Is.  
VP8/sa S. Sandwich Is.  
VP8/sh S. Shetland Is.  
VP9 Bermuda  
VQ9 Chagos  
VR6 Pitcairn  
VS5 Brunei  
VS6 Hong Kong  
VU2 India  
VU/1 Laccadives Is.  
VU/a Andaman Is.  
VY1 Yukon Territory  
YJ8 New Hebrides  
Z2 Zimbabwe  
ZB2 Gibraltar  
ZC4/5B4 Cyprus  
ZD7 Saint Helena Is.  
ZD8 Ascension Is.  
ZD9 Tristan da Cunha Is.  
ZK1/c North Cook Is.  
ZK1/m Manihiki Is.  
ZK2 Niue

ZL1 New Zealand  
ZL1/k Kermadec Is.  
ZL2 New Zealand  
ZL3 New Zealand  
ZL3/c Chatham Is.  
ZL4 New Zealand  
ZL4/a Auckland Is.  
ZM7 Tokelau Is.  
3B6/7 Agalega/  
St. Brandon Is.  
3B8 Mauritius  
3B9 Rodriguez  
3D2 Fiji  
3D6 Swaziland  
4S7 Sri Lanka  
5H Tanzania  
5N Nigeria  
5W1 Samoa  
5X5 Uganda  
5Z4 Kenya  
6Y5 Jamaica  
7P8 Lesotho  
7Q7 Malawi  
8P6 Barbados  
8R Guyana  
9G1 Ghana  
9H Malta  
9J2 Zambia  
9L1 Sierra Leone  
9M2 Malaya  
9M6/8 Sarawak and Sabah  
9V1 Singapore  
9Y4 Trinidad & Tobago  
Antarctica— all stations operating from Commonwealth controlled areas of the Antarctic will count as if in one call area.





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

CANADA CONTEST  
CONCOURS DU CANADA

CALL  
INDICATIF \_\_\_\_\_

- ☐ single operator, all band  
opérateur simple, toutes les bandes
- ☐ single operator single band \_\_\_\_\_ MHz  
opérateur simple, une bande \_\_\_\_\_ MHz
- ☐ multi operator single transmitter all band  
opérateurs multiples, un émetteur,  
toutes les bandes.

SCORE CALCULATION

total QSOs  
QSOs totaux

Canadian QSOs  
QSOs avec Le Canada  × 10 =  points

other QSOs  
autres QSOs  × 4 =  points

bonus QSOs  
QSOs bonis  × 20 =  points

QSO points  
points de QSOs =  points

multiplier  
multiplicateur  (see over for chart)  
(regardez au verso)

total score = QSO points × multiplier  
points totaux = points de QSOs × multiplicateur =  points

name  
nom \_\_\_\_\_ call  
indicatif \_\_\_\_\_

address  
adresse \_\_\_\_\_

TX/RX  
ÉMETTEUR/RECEPTEUR \_\_\_\_\_ POWER  
POUVOIR \_\_\_\_\_

antennas  
antennes \_\_\_\_\_

OPERATORS:  
OPÉRATEURS: \_\_\_\_\_

NATIONAL VOICE OF THE CANADIAN AMATEUR  
VOIX NATIONALE D'AMATEUR CANADIEN

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

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





# CANADA CONTEST CONCOURS DU CANADA

## MULTIPLIER CHART

## CARTE DES FACTEURS DE MULTIPLICATION

Fill in QSO number sent of each new multiplier in the correct box  
Entrez le numéro de QSO émis pour chaque multiplicateur nouveau dans le bon boîte

Province Province Territory Territoire	VO1 VO2	VE1 NS	VE1 NB	VE1 PEI	VE2	VE3	VE4	VE5	VE6	VE7	VE8	VY1	VE0	TOTAL
Band/Mode Bande/Emission														
1.8 cw														
1.8 phone														
3.5 cw														
3.5 phone														
7 cw														
7 phone														
14 cw														
14 phone														
21 cw														
21 phone														
21 phone														
28 cw														
28 phone														
50 cw														
50 phone														
144 cw														
144 phone														

TOTAL MULTIPLIER  
MULTIPLICATEUR TOTAL

=



# CARF CANADA CONTEST 1985

December 29 1985, 0000Z to 2400Z.

These contests are open to all Amateurs. Everybody works everyone on 160 metres through to 2 metres in both CW and Phone.

**Classes:**

Single operator, all bands.

Single operator, single band.

Multi operator, all bands.

**Contacts:** All contacts between Amateur stations are valid. The same station may be worked twice on each band, once in CW and once on Phone. No cross-mode QSO's allowed.

**Exchange:** Signal report, Consecutive serial numbers, Province.

**QSO Points:** 10 points for each Canadian station, 4 points for stations in other countries. VEO counts as Canada and 1 multiplier. +20 points may be claimed for each contact with a CARF Official Station that uses the suffix TCA or VCA. Official stations are not eligible for awards.

**Multipliers:** Total of Canadian Provinces and Territories worked on each band on each mode, i.e. VO1/VO2, VE1-NB, VE1-NS, VE1-PEI, VE2, VE3, VE4, VE5, VE6, VE7, VE8, VEO, VY1. Total of 2 per band using both modes.

**Frequencies, kHz:**

1810/1840      21025/21250  
3525/3775      28025/28500  
7025/7070/7155

50040/50110

14025/14150      144090/146520  
We suggest phone on the hour and CW on the half hour.

**Entries:** A valid log must contain log sheets, dupe sheets or statement, and a summary sheet showing claimed scores, QSO's, a list of multipliers and calculation of claimed scores. Summary and Multiplier sheets are available for a SASE. Entries must be mailed within one month of the contest, with your comments and photos, etc. to:

**CARF CONTEST**

c/o N. Waltho VE6VW

Box 1890, Morinville,

Alberta T0G 1P0

**Awards:** Certificates will be awarded to top scoring entries in each class in each province, territory, U.S.A. and DXCC country. Trophies will be awarded to the top single-op all

band and Multi-op all band stations.

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

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

## Spread the Word!

Next time you visit the public library, ask for and fill in one of these cards:

I WOULD LIKE TO SUGGEST THE FOLLOWING  
BOOK - OR RECORD - BE ADDED TO THE LIBRARY.

AUTHOR

C.A.R.F.

TITLE

Certificate Study Guide

PUBLISHER

CARF publications<sup>x</sup>

PRICE \$15.00

NAME

Lee Ever

TEL.:

987 555 1212

APPEND REVIEW IF POSSIBLE, OR GIVE DESCRIPTION - OVERLEAF

Box 356 KINGSTON, ONT K7L 4W2

On the back write: This book will greatly help those wishing to take the Amateur Radio Operator's Certificate examination, set by the Department of Communications.

## THIRD PARTY TRAFFIC AGREEMENTS

Canada has concluded agreements with the following countries to permit Amateur radio operators to exchange messages or other communications from or to third parties: Australia, Bolivia (Republic of), Chile, Columbia (Republic of), Costa Rica, Dominican Republic, El Salvador (Republic of), Guatemala (Republic of), Guyana, Haiti, Honduras (Republic of), Israel (State of), Jamaica, Mexico, Nicaragua, Paraguay (Republic of), Peru, Trinidad and Tobago, United States of America, Uruguay (Oriental

Republic of), Venezuela (Republic of).

Negotiations for the establishment of similar agreements or arrangements with Ecuador and the Federal Republic of Nigeria have been initiated.

Amateurs who wish to operate in Commonwealth countries other than those listed above should apply to the embassy in Canada or directly to the appropriate regulatory agency.

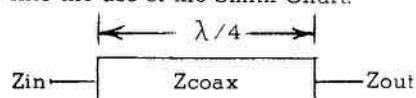
Does your local library carry the radio Amateur call books? If not, ask them!



## Quarter Wave Matching Transformers

### Using the Smith Chart

We'll do a quick review of the mathematics involved and then go into the use of the Smith Chart.



$$Z_{coax} = \sqrt{Z_{in} \times Z_{out}}$$

e.g.  $Z_{in} = 50 \text{ ohms}$ ,  
 $Z_{out} = 112 \text{ ohms}$

$$Z_{coax} = \sqrt{50 \times 112} \\ = 75 \text{ ohms}$$

To match a 112 ohm resistive load to a 50 ohm resistive load, an electrical quarter-wave of 75 ohm coax is required.

We will now do the same using the Smith Chart. Figure 1 shows a 112 ohm resistive load on a 50 ohm normalized system. (Recall from a previous article that the 1.0 centre of the chart is the normalized system—50 ohms here.) The 112 ohm point on the 50 ohm chart is  $112/50 = 2.24$ .

Convert this 112 ohms to a normalized 75 ohm system ( $112/75 = 1.493$ ) as shown in Fig. 1. Use a

compass centered on the 1.0 point with radius passing through the 1.493 point. Rotate  $180^\circ$  and mark the point (0.67). Remember that once around the Smith Chart ( $360^\circ$ ) is  $180^\circ$  electrically. Note that a half-wave of coax will give you the same impedance you started with provided no loss occurs in the coax. It is simply once around the chart on a constant VSWR circle. Now convert the 0.67 on the 75 ohm system back to the 50 ohm system ( $0.67 \times 75/50$ ) and you find the result is 1.0, the centre of the chart, and a perfect 50 ohm match.

You say the first method using math is easier; well for this example maybe you are right.

What if, for example, you are about to operate the ARRL VHF contest in January and your two metre antenna is iced up? You measure the VSWR and it is 2.0:1. Your new important radio with all its bells and whistles won't let you transmit into anything with a VSWR of more than 1.5:1. Time to panic! However, by using an RX meter, you determine the impedance at the transmitter end of the coax is 25 ohms and purely resistive.

Why not use a simple quarter-wave matching transformer?

$$Z_{coax} = \sqrt{25 \times 50} = 35 \text{ ohms}$$

All you have is 50 and 75 ohm coax for matching. Get out your Smith Chart. Refer to Fig. 2.

Mark the 25 ohm point (0.5 in the 50 ohm system).

Rotate through  $\lambda/4$  of 50 coax (i.e.  $180^\circ$ ) to get 2.0 (100  $\Omega$ ).

Convert to a 75 ohm system.

Rotate through  $\lambda/4$  of 75 ohm coax.

Convert to 50 ohm system.

You now have a 56 ohm load and a VSWR of 1.12:1. Your transmitter is now happy and you can go contesting with an iced-up antenna. The antenna pattern will be funny but you'll still make contacts.

GUD DXING.

△

### FROM THE BENCH

I realized that as a listener only, my code reading could improve with some key practice too. For the sake of domestic peace this had to be practically silent.

The problem was resolved with the use of an additional receiver with B.F.O. to propagate a heterodyne note. My usual receiver was then tuned to it but with a home-brew key interrupting the note to the headphones. As a precaution the antenna is disconnected during code practice.

—Percival N. Squibb

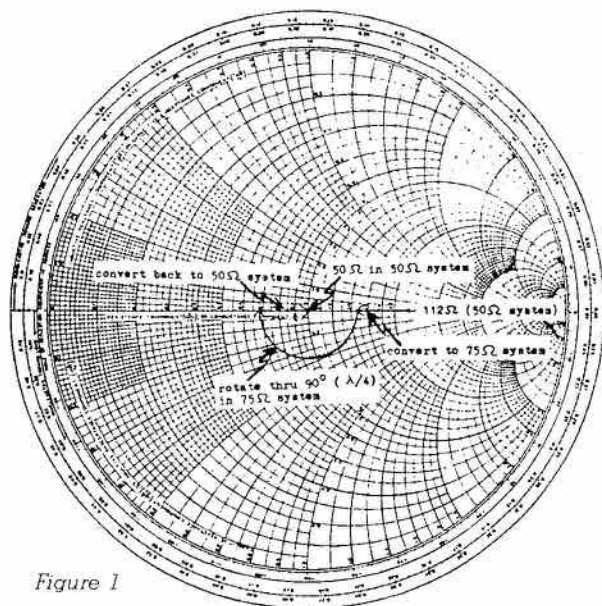


Figure 1

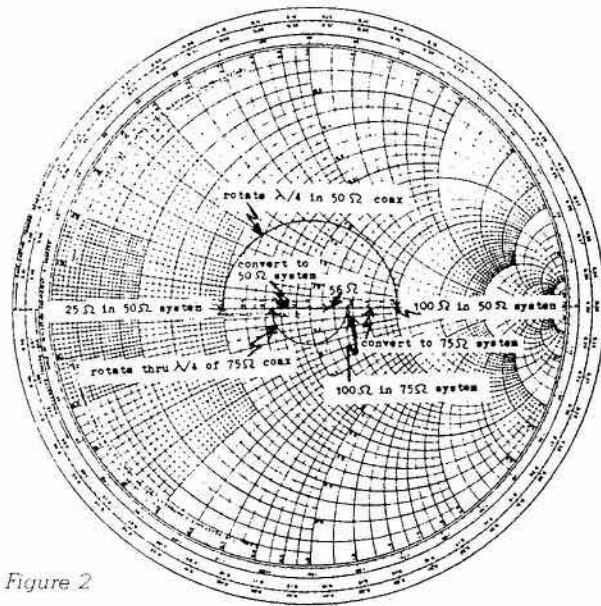


Figure 2





# YL NEWS & VIEWS

By Cathy Hrischenko VE3GJH

**A**s we all know— many Amateur radio operators were involved both during and after the Ontario tornado on May 31. Several YLs were involved and here is their story:

(From Gail VE3GSQ)

The tornado swept through Grand Valley on the late afternoon of May 31, demolishing about one quarter of the town, affecting houses, churches, the medical center, one school and town businesses. It proceeded west demolishing farms and houses, including the home of Devon VE3DEV and Fred VE3DMI, crossed Highway 10 and leveled the Cashway Plaza north of Orangeville. Hydro feed lines west of the area had been blown down first, so the potential of fire and electrocution was not a problem.

Local hams responded very quickly that evening. The emergency power generator at the local 2 metre repeater VE3ZAP was fired up and many local Amateurs with mobile 2 metre equipment headed into Grand Valley to offer whatever assistance was required. The phone lines were out and area police communications hampered by lack of hydro. Amateurs assisted in setting up road blocks, informing authorities of trees, poles and other debris blocking roadways and checking on safety of residents in the affected area. On Saturday the Amateurs removed the belongings of Devon and Fred to safe storage. We were all so relieved that they were uninjured and staying with friends in Orangeville.

On Sunday the Red Cross set up headquarters in the Grand Valley arena and Amateurs took shifts for the following week providing communications among the various Red Cross locations.

Amateurs provided generators for the town and for area farmers who were without hydro for several days.

Many individuals and groups provided help. The Mennonite community laboured long and hard at clean-up and restoration, as did bus loads of high school students and many concerned groups and individuals. Local church groups provided an abundance of nourishing food for volunteers and townfolk. A special word has to be said for people of Grand Valley who



*The home of the Raymonds, Fred VE3DMI and Devon VE3DEV, the blind Amateurs of Barrie, was demolished during the tornado of May 31. A team of Mennonites and Amateurs have rebuilt the house for them. Here they are, in front of their almost completely rebuilt home.*

immediately and quietly set about rebuilding their town. Those with homes intact accommodated those whose homes were demolished or damaged. The hydro crews worked around the clock restoring lines and hydro to the area.

As Amateur radio operators we learned a lot from this episode. We now realize how necessary it is to acquaint local authorities with the communication services we are able to offer. Our partnership with the Red Cross is extremely important in these situations. If there is another occasion we would contact them immediately. I have since become involved with the Amateur traffic handling system and realize how helpful it would have been to encourage local residents to send messages to friends and relatives via the N.T.S. As they say hindsight is perfect vision.

I have not mentioned the names and calls of Amateurs involved here because I think every one of them in the area contributed in some way and many from other areas helped as well.

(From Jan VE3BII)

I took over from VE3AL on 80 metres for a time, trying to handle inquiries as to the welfare of friends and family. I learned of several

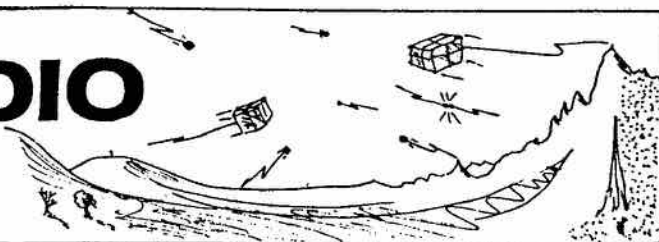
Amateurs in the Tottenham area and began reaching them by phone to ascertain who might be available. Soon we had enough volunteers to provide Betty Aldridge (who was coordinating emergency aid in Tottenham) with her own private funnel direct to Barrie Red Cross and via that marvelous 'Link' to Red Cross H.Q. in Toronto. Another Amateur had been on duty at Grand Valley from the Friday night of the disaster (Dufferin A.R.C.). There was no Red Cross crew there until Monday! The hams offered their services to police and others but had a frustrating time of it— authority and knowledge do not always go hand in hand! **The Amateur fraternity needs to make a great effort to educate those in authority as to the services we are capable of providing in emergency situations.**

The Red Cross Director in Barrie put me in touch with a local Red Cross volunteer in Alliston. A high school teacher, he was attempting to get what information he could with the help of the O.P.P. and local volunteers doing a door-to-door canvass of the affected area in Tottenham. The info comprised the Lot and Concession numbers, family names, first names of

*Continued on next page ▸*

# PACKET RADIO

By Brett Delmage VE3JLG  
5-136 Woodridge Cres.  
Nepean, Ont. K2B 7S9.



## 125 attend Barrie Packet Radio Symposium

About 125 enthusiastic packet radio operators and others interested in the technique participated in the Central Ontario Packet Radio Symposium and Fleamarket held on Saturday, Sept. 21 in excellent facilities of Georgian College in Barrie, Ontario. The symposium was the first of its kind to be held in Canada. It was hosted by the HEX 9 group, members of the Barrie ARC interested in packet radio.

The day's activities began with the opening of the fleamarket at 0800. There was plenty of seating available in the fleamarket area, which provided an opportunity for many of the attendees to get to know each other, between purchases. Amateurs arrived from a wide area—Montreal, all parts of Ontario—Ottawa to Windsor, Sudbury to Hamilton.

American Amateurs from several states including New York and Michigan also attended.

At 1100 Bev Poste VE3NP presented an entertaining and informative introduction to packet radio for those in attendance who were newcomers to it. A pocket-size glossary of Packet Radio Terms was presented to everyone.

After lunch the real 'symposium' began. Representatives from various Packet radio groups reported on developments and operating activity in their areas.

Dave Kerr VE3FGK, President of SOPRA, the Southern Ontario Packet Radio Association, introduced this relatively new organization, which was officially formed on July 1 of this year. There are currently about 30 'Packrats' in SOPRA, located throughout Southern Ontario.

SOPRA publishes a regular operation bulletin, known as 'SOPRA OPERA'.

A surprise announcement by a representative of Northern Cable demonstrated that a cablevision company and radio Amateurs can get along! Newly acquired microwave relay sites, used to relay television signals to Sudbury cablevision subscribers, were made available for the installation of digipeaters to link the rapidly growing group of packet operators in Sudbury to other activity further south.

Antti VE3NHF informed the audience about packet radio activity in Sudbury, which is centered around Cambrian College. Six instructors at the college, including VE3 JIH, OTB, AQQ, NHF are active. Additionally, several others outside the college including VE3ILK and VE3DXH are currently active. The area digipeater, VE3FPS, operating on 145.01 MHz, is located at the college. Antti is currently teaching an Amateur Digital Radio Operator's Certificate course to about 15 students.

Glenn Simpson VE3DSP of The Hamilton and Area Packet Network (HAPN) reported on several exciting developments in the group. A board is being developed that will plug into an IBM PC or compatible computer and enable it to operate AX.25, V2 and other packet protocols, with appropriate software loaded from disk. The board contains a standard 202 class modem. Other members of the group are working on a 4800 bps modem that will work with a standard two metre FM transceiver.

Packet operators from the Windsor-Detroit area reported that packet radio really shone at a recent simulated air-crash. Three packet stations were able to handle traffic more effectively than many more stations using voice.

Brett VE3JLG, representing PRANC, the Packet Radio Association of the National Capital, summarized packet operations in Ottawa since 1978, leading up to the recent linking to EASTNET and Barrie.

After the area reports, the group reviewed current use of two metre frequencies for packet radio. It was noted that most Amateurs in Canada live within radio range of the U.S.

► Continued from page 39

all residents—brief damage report—who was injured—who was treated and released, and who was still in



Photo: Barrie Banner

Marion VE3NLN, net control of the Barrie Emergency net. Her own story was printed in TCA July/August—worth re-reading.

what hospital, and where each was presently located, and a phone number where they could be reached. This info was of course vital to the Central Registry from which all enquiries from around the world were being replied to.

There have been many fund-raising events, and many reports of the generosity of many. There have been concerns too, the psychological effects on all who went through those few seconds of terror, the children in particular; the fact that all levels of government were not prepared with an emergency plan in the event of a disaster; the difficulty some hams had in convincing authorities in some areas that they were providing communications and had authority to go into restricted areas to do so; the fact that not all Amateurs ready and willing to assist had any message handling experience.

Other YLs involved were Ruth VE3ATP, Brenda VE3HUG who, I'm told, had a TV spot about the tornado, and Libby VE3IOT. Brenda and Libby worked Red Cross, Toronto area, coordinating food trucks, health and welfare, and relative inquiries.

No matter who I talked to, YL or OM, they all agreed Marion VE3NLN put it in and held it all together. When I talked to Marion she said: "I just did what had to be done." △



## Warning

A recent club newsletter urged Amateurs to go for a 24 MHz band award. They'd better not! *American laws do not apply in Canada, and we are not yet permitted on this band.* American publications are not reliable sources of information on Canadian affairs. CARF and TCA are. Wait until you read in a CARF bulletin or in TCA that such activities are legal, or you may have an unpleasant visit from a DOC inspector.

## Canadian Time Service

### BULLETIN TF-B-152 UTC TIME STEP

on the 1st of July 1985

In accordance with Circular E13 of the Bureau International de l'Heure, a positive leap second was introduced at the end of June 1985. The sequence of dates of the UTC second markers was:

1985 June 30, 23h 59m 59s  
1985 June 30, 23h 59m 60s  
1985 July 1, 0h 0m 0s

The difference between UTC and the International Atomic Time TAI is:

from 1983 July 1, 0h UTC, to 1985 July 1, 0h UTC: UTC-TAI = -22s

from 1985 July 1, 0h UTC, until further notice: UTC-TAI = -23s

Electrical and Time Standards Section

### SAUT DE TEMPS DE UTC

Le 1er Juillet 1985

Une seconde intercalaire positive a été introduite a la fin de juin 1985. La séquence des dates des repères de secondes de UTC était:

1985 juin 30, 23h 59m 59s  
1985 juin 30, 23h 59m 60s  
1985 juillet 1, 0h 0m 0s

La différence entre UTC et le Temps Atomique International TAI est:

de 1983 juillet 1, 0h UTC, a 1985 juillet 1, 0h UTC: UTC-TAI = -22 s.

de 1985 juillet 1, 0h UTC, jusqu'à nouvel avis: UTC-TAI = -23 s

Service Canadien De l'heure  
Section des étalons  
d'électricité et de temps

Beaten paths are for beaten men.



Who the HEX(9) are these guys? Left to right: Mike VE3NBN, Bill VE3HHW, Steve VE3AEN, Don VE3GSI, Jack VE3EP, Len VE3FIB, Alex VE3NIV, Bev VE3NP, Alex VE3MDY, Doug VE3CWO.

border and that it was essential to develop a plan that worked with current American operations.

A majority of those present agreed that usage according to Table 1 would be promoted in individual areas and that area repeater frequency coordinators would be advised of the intended use of these frequencies.

After further discussions in other areas of interest, and a well-deserved round of applause for the organizers, the main body of the symposium separated into several discussion groups—linking, bulletin board systems and other interests. With the use of a blackboard, VE3DSP led a

lively discussion of the current and planned linking activity throughout Ontario. The operator of the HEX 9 bulletin board system, Bill VE3HHW answered questions on PBBS operation and discussed pros and cons of particular PBBS implementations.

At 1700, participants reluctantly began to vacate the closing building, already looking forward to next year's symposium in Barrie.

Already, another meeting is being organized for the spring, sponsored by SOPRA. Further details will appear in future columns.

Δ

TABLE 1—  
RECOMMENDED TWO METRE  
PACKET RADIO USAGE

FREQ.	USAGE	
145.01	NATIONAL AX.25	Wide-area digipeaters
145.03	LAN AX.25	local area network,
145.05	LAN AX.25	intra-city connections
145.07	LAN AX.25	"
145.09	V? & EXPERIMENTAL	non-standard protocols or modulation
145.59	NATIONAL AX.25	
145.65	V?	used for older radios
145.71	V?	

## Hot Watch

OPP in Thessalon have a Midland-Radio. If you lost it call them. FRG-7 Yaesu receiver: ID inside B.1947. 29. Bought by bad cheque. Gear of VE3OEC.

Kenwood TR795 Ser.No.—3080499: No ID. Stolen from truck. Gear of VE3GUE. Yaesu Charger NC8A: Stolen from house. \$50.00 reward. Gear of VE3AJQ.

Note: if you find any gear, call your local police or VF3OEC. Don't call the ham! Let the police do it.

I'd like to thank CARF and Bill VE3FQV for their support.

If you have lost any gear send a list of it to me. Gear, homebrew, antenna, computers, etc. If you or your club would like this list, send 12 S.A.S.E. to—Bob Fletcher VE3OEC, 208 Admiral Dr., London, Ont. N5V 1H8. Or give the info to VE3FQV on Ontars 3.755 MHz. My phone No. 1-519-455-9547 after 4:00 days.

Help take a big bite out of crime.

Δ





# Compu-stuff

By Lyle Blake  
165 Ontario St., Apt. 609,  
St. Catharines, Ont.

**L**ast month's column introduced an example computer system and laid out some of the ground work for a look at some of the goings on. This month we'll take a look at the CPU or Central Processing Unit and its role in the system.

## Our Example Computer

Figure 1 shows in block form the essential inputs and outputs of a CPU chip. The example chip is a Z-80. This is an older design of CPU and is very widely in use because its powerful instruction set comprises both 8 or 16 bit functions. Z-80's are very easy to work with as the core of a system and would make a good chip to use in a first-time construction project. I have seen them sold as cheaply as \$6.00.

In order for a computer to run, a clock is needed. The clock can run at any frequency up to the limit of the CPU chip. (In the Z-80 case this can be as high as 4 MHz.) The clock is a stream of square waves fed into the CPU to trigger internal counters and logic functions.

The 16 pins comprising the address lines are outputs used to

select memory addresses and I/O 'Ports'. When executing a program the contents of an internal register (Program Counter) are transferred onto these lines and the next instruction is read from memory into an Execution Register in the chip where the appropriate action is taken. The address lines also are used in writing data, reading data and for I/O Functions. When memory is addressed the whole 16 lines are used and only the 8 low order lines are used during input or output functions.

The 8 bit data path is used during all information exchanges. These pins serve outputs during a data write cycle and inputs during reads.

As well as these points there are a number of control functions necessary to operate the system:

**Read**— This pin goes from logic 1 to logic 0 whenever the Data lines are

used as inputs (read cycle).

**Write**— Low when data is output from the CPU.

**Memory**— This pin goes low to select memory and deselect I/O.

**I/O**— This pin signals that the in/out Buss is to be selected instead of the memory Buss.

**Refresh**— Used with Dynamic R.A.M. (Random Access Memory). More on this in a future article.

**Wait**— This pin signals the CPU that the memory or I/O device selected will be slow to answer and stops the cycle until the device is ready.

**Reset**— in a Z-80 this pin forces the program counter to 0000 (HEX) and restarts the CPU.

**Interrupt**— The Z-80 has 2 interrupt inputs, one called INT can be shut off in software; the other, called NMI, cannot. Both are used to signal the CPU that an external device needs

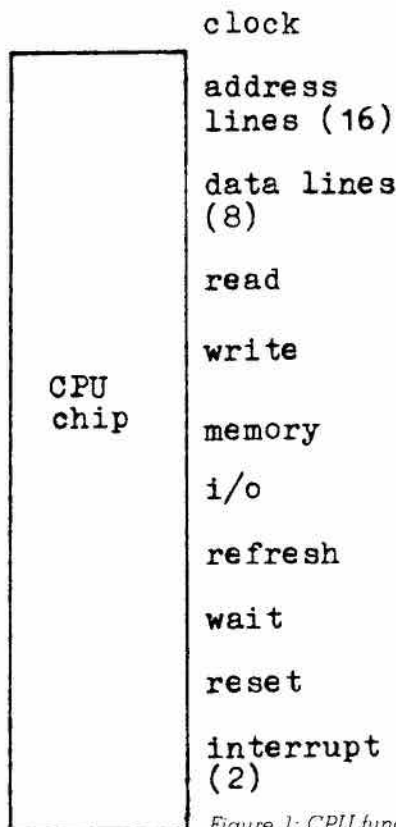


Figure 1: CPU functions

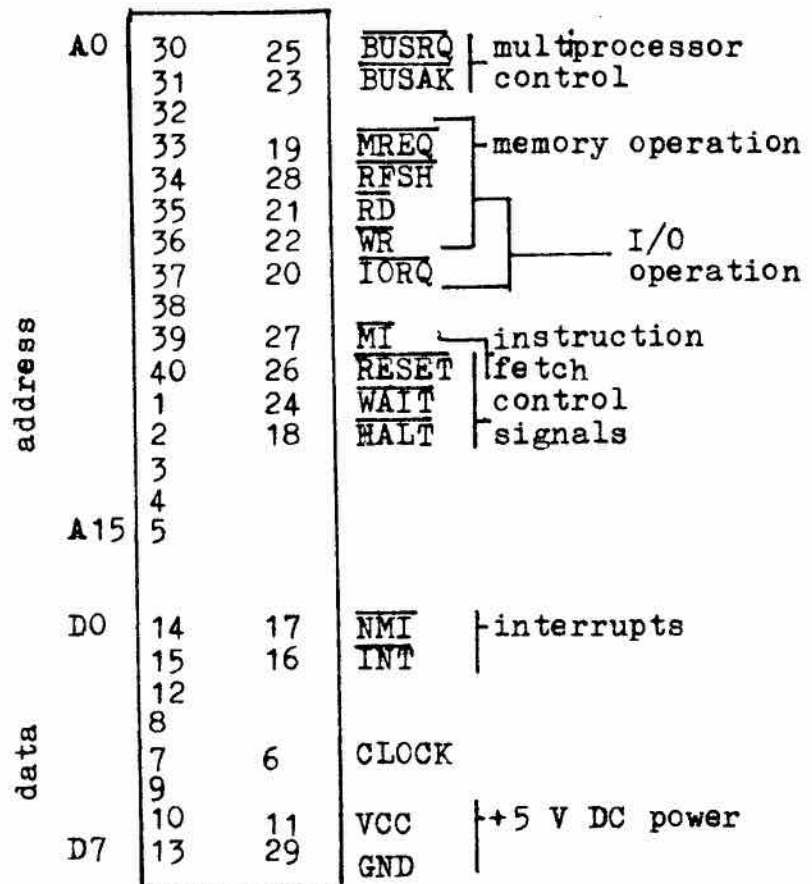


Figure 2: Z-80 pins

note: signal = active low



immediate attention. (Ever notice how often your phone interrupts what you're doing?— same idea).

There are a few more control signals on a Z-80 but they are for systems much more complex than our example and need not be discussed here.

Figure 2 shows the actual pin out

of a Z-80 CPU chip. If you have a Z-80 based machine and an oscilloscope try looking at each pin, you may be surprised how busy they are.

The Z-80, as do all CPU's, runs in cycles. There are basic cycles 'Read' and 'Write.' During each cycle a distinct sequence of events takes place. As can be seen from the

diagrams (Figures 3 and 4) these cycles are not especially complex. The important thing to see is the differences in signals and timing between the cycles.

The 'wait' signal can extend T2 by one or more clock signals. If not used in a system the wait pin (24) can be tied to +5 volts and forgotten.

Most other CPU chips generate similar cycles and are as easily understood but I prefer Z-80 as an example because it is such an easy chip to work with. A typical Z-80 based system can be taken from P.C. board to working computer in very short time.

The actual role of the CPU is that of a slave. It is subservient to your programming and operates all other hardware in the system. In essence it reads memory to retrieve its instructions then quite mindlessly executes them. All it can do beyond this is logical operations, (AND, OR, XOR), add and subtract. (In fact most CPU chips add to subtract.) So once again I stress Software makes the Hardware go round!

Next month— Map Generators.  $\Delta$

## QSO's in Japanese

The large number of Canadian operators within range of U.S. repeaters may now be hearing QSO's in Japanese. As of the first week of September a U.S.-Japan agreement has made it possible for Amateurs of those two countries to have visitor's operating privileges. It is not however, a true reciprocal operating agreement but one loaded in favor of JA ops. The agreement permits any and all categories of Japanese Amateurs to operate in the U.S. and this includes the more than 900,000 no-code 10-watt HF phone licensees. That ticket is similar to a now defunct but once famous radio program, 'Twenty Questions.' That's all the JA Candidate has to do— 20 questions, the responses to which are pretty well-known and are, according to *WYSYI Report*, published as well. These codeless CB-type licensees must operate above 30 MHz when in the U.S.

The same newsletter quotes the *Japan Times* as saying that agreements are being negotiated with West Germany, Australia, New Zealand and the U.K.

DOC policy is to grant visitors operating privileges only reciprocally, that is, on a class-for-class licence. As there is no code-free ticket here except for the VHF and UHF digital certificate, full reciprocity could not be realized with Japan if a condition was to include the 10 watt HF code-free licensees.  $\Delta$

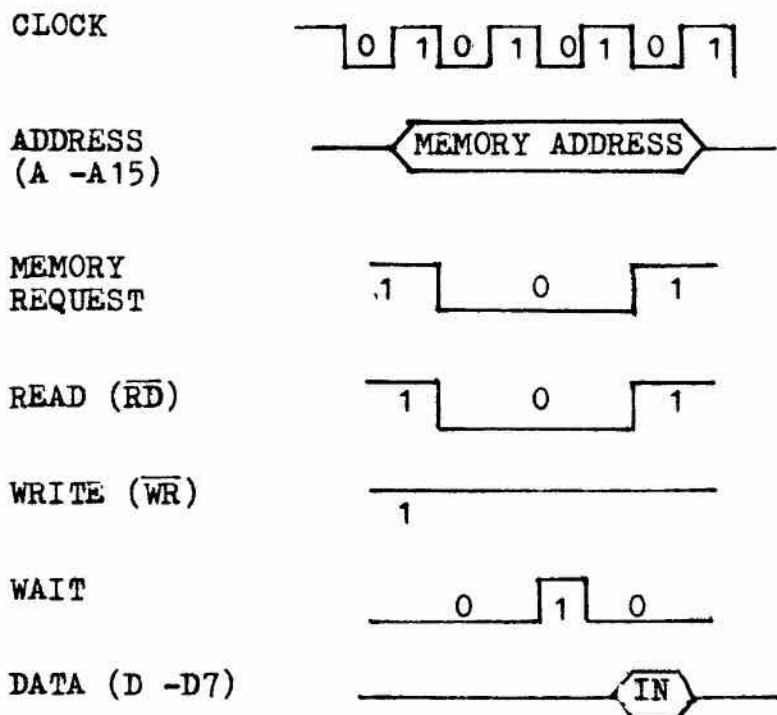


Figure 3: Read cycle

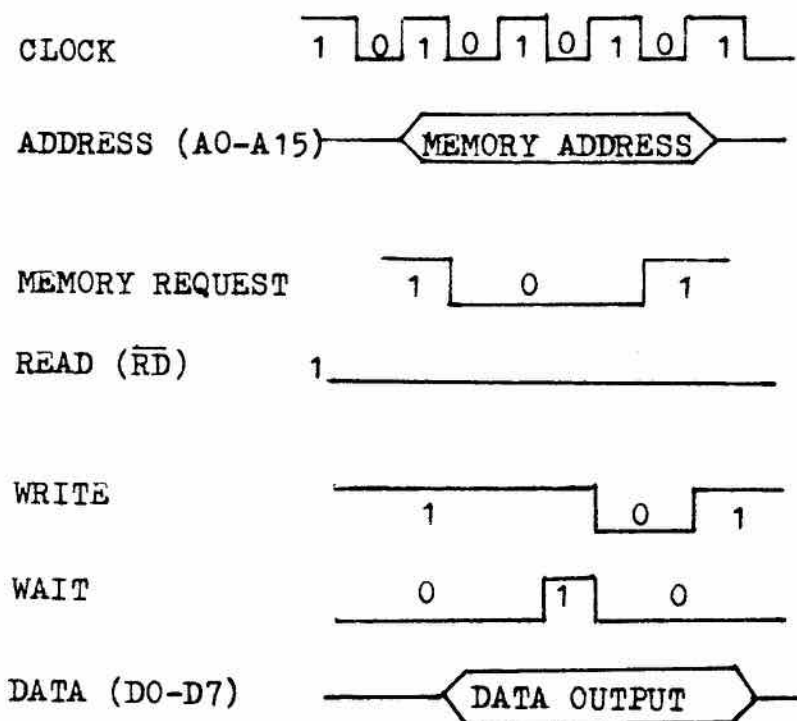


Figure 4: Write cycle

# Qu'est-ce que l'UMS?

Suit et fin

L'UMS c'est aussi des amis qui nous ont quittés pour un monde meilleur, parmi eux plusieurs pionniers de la radio Amateur au Québec: Jean VE2AV, Gaston VE2AI, Gaston VE2KB, Paul VE2KC, André VE2DS, Fernand VE2FJ, Adrien VE2AN, Jean-Marc VE2BTZ, François OA4QJ, Marcel VE2ALB, Bernard VE2BTW, Walter VE2TD, Gilles VE2APF après un court séjour dans le monde Amateur; et quelques autres, ils n'ont peut-être pas tous été membres du club, mais ils ont tous su nous inspirer et guider à l'occasion. Nous leur devons tous un petit quelque chose...

L'UMS c'est la multi-nationale "Rabbin & Son's," son conseil d'administration étant anonyme, il a été possible de se rendre compte que quelques Amateurs, membres élités du club y détenaient des actions privilégiées ont même poussé l'audace de discuter, à mots couverts bien sur, d'affaires sur certains répéteurs de la région...

L'UMS c'est un club qui sait reconnaître et remercier pour les services rendus. La plus haute décoration étant "L'ORDRE du K-nob," décernée à Marcel VE2JM, pour services extraordinaires rendus à la cause radio Amateur il y a quelques années, ou bravoure et haute technologie ont été utilisés avec succès pour enlever des intrus qui utilisaient impunément le répéteur de la 'Défense'.

... et en 82-83,

L'UMS c'est une équipe au conseil d'administration sous la présidence de Robert VE2FKD, entourée de plusieurs comités qui ont réussi à assurer une suite d'activités durant l'année qui a su plaire à tous... ou presque.

L'UMS c'est une série de conférences qui ont informés les membres sur plusieurs sujets intéressants: Pierre VE2GFH et la télégraphie; Bernard VE2LC et la sécurité dans la station; Pierre VE2FFE et les réseaux de trafic; Jean-Guy et le répéteur VE2RMB; Gerry VE2AW et les 'Field Days'.

L'UMS c'est une participation de la station VE2UMS avec plusieurs opérateurs aux concours 'CQ World Wide CW' et 'CQ World Wide WPX SSB' sous l'habile direction de Pierre VE2GFH. Toute l'équipe a participé allègrement et les buts fixés ont été atteints.

L'UMS c'est des activités pour les membres et leurs familles qui se sont répétés durant l'année. Il y a eu la soirée dansante des fêtes, la visite à Mirabel, la partie de sucre. Remerciements aux organisateurs

dont Robert VE2FKD et Pierre VE2GKX.

L'UMS c'est "Nouvelles de l'UMS" qui vous parvient depuis décembre dernier. Ce changement se veut une suite aux efforts de ceux qui ont précédés et une adaptation réaliste aux facteurs économiques des années courantes sans taxer indument les volontaires. Normand VE2GKL et Bernard VE2LC espèrent pouvoir continuer à vous offrir ce service et souhaitent votre collaboration.

L'UMS c'est Claudette VE2ECP qui s'occupe des cotisations depuis plusieurs années et qui, avec l'aide de Jean, VE2BEU, font l'adressage et expédition des convocations, journaux ou bulletins depuis bon nombres d'années.

L'UMS c'est toute l'équipe qui s'affaire maintenant à organiser le 'Field Day' à Terre des Hommes pour les 25 et 26 juin prochains pour célébrer dignement L'Année Mondiale des Communications.

L'UMS enfin, c'est une relève qui doit se préparer pour continuer l'effort entrepris par tous ceux qui y ont participé depuis le début. Il ne s'agit pas de comparer ou mesurer, il faut y aller avec franchise et honnêteté selon ses propres possibilités.

L'UMS, c'est près de 400 membres qui ont une passion commune, la RADIO; c'est TOI..., c'est MOI..., c'est 'Tout nous autres...'.

△

## SWAP SHOP

**WANTED:** Manual for a Motorola Compa-Station UHF repeater Model No. C53GKB-1100B-SP3. Trans. type no. CC3026. Will pay shipping/copying costs. J. Siegmund VE6CPP, 935-44 Ave., North Lethbridge, Alta. T1H 5P2.

**FOR SALE:** New 4CX1000 with socket, chimney and Filament transformer \$250.00. 2 New 833A Tubes and sockets, 80 watts per tube—\$35.00 each. Icom 2022 metre SSB Portable—\$100.00. Bill Richardson VY1CW, Site 20, Comp 63, RR #1 Whitehorse, Yukon Y1A 4Z6.

**FOR SALE:** Allied AX-190 recvr w/speaker. Yaesu FL100B Transmitter 80-10 metres. Both units in excellent shape and come with manuals. \$150 each OBO. Wayne Pedersen VE6CLG, Box 1030, Clareholm, Alberta. T0L 0T0. (403) 625-2646.

**ESTATE SALE:** Kenwood TS930S/AT \$1795.00, Kenwood MC85 mike \$125.00, Kenwood TS530S \$795.00, Kenwood MC60A mike \$95.00, Kenwood CW Filter YK88CN 270 Hz \$79.00, Kenwood TU-79 Tone Unit \$55.00, Heathkit Power Meter HM-102 \$45.00, B&W Phone Patch 3002 \$125.00, Larsen 5/8 PO M/M \$55.00. VE2OU, 2785 Valcourt St., Ste Foy, Quebec G1W 1W2.

**FOR SALE:** Hallicrafters HT37 SSB Transmitter \$195.00; 2 Cornell Dubilier Capacitors 4 MFD, 4000 volts \$45.00; National Receiver type RCK, Serial No. A49 c/w manual \$275.00; 4-1000A & Chimney SK506

\$150.00; 2C39A New tube \$25.00; New transformer PRIM 120V Sec. 1050 V CT @ 900 ma + 550 V CT @ 75 ma \$45.00; Wireless sets No. 19 MK II c/w DC and AC p/supply, variometer, Control boxes, headsets, mic., etc. \$250.00; 2 Signal Corps U.S. Army Telephone Sets EE-8-A in leather cases (v. old) \$100.00, Radiola IIIA, Type RL, Westinghouse 1924 \$95.00. Please call or write: Radio VE6SP, Sig Preuss, 12216-60 Street, Edmonton, Alta. T5W 3Z9, Canada. 1-403-471-3531.

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### COURSE INSTRUCTORS: PLEASE HELP

Results of the October DOC examinations should be through soon. Please let Debbie know names, calls and addresses of your newly licensed students. They rate a free TCA. Her address: CARF, Box 356, Kingston, Ont. K7L 4W2.





# TECHNICAL SECTION

TECHNICAL EDITOR  
Frank Hughes VE3DQB  
P.O. Box 855  
Hawkesbury, Ont. K6A 3C9



## A Vertical Antenna in Cramped Quarters

**M**y backyard is only ten feet by 23 feet. I live in a two-storey apartment complex. The most practical antenna for this situation is either a short random wire, or a vertical. I have used both and decided to stick with the vertical. The performance of an outdoor random wire and the trap vertical were similar. I chose the vertical because it is self-supporting and looks nicer.

The general layout of the yard, building and antenna are shown in the figure. The vertical, despite looking at a building to the East, works fine in that direction. I read somewhere that a brick building could attenuate RF energy as much as 20 decibels. But I find the building doesn't block out signals at all. If the building had a lot of steel in it then there might be more noticeable effects.

I mainly operate the lower HF bands, 40 and 80 metres. With the small backyard, I was restricted to only a few ground radials and ground rods. Three or four radials each 33 feet long and bent to fit around the perimeter of the property were used. Ground radials can be bent, zig-zagged, helically wound to fit in the available space.

Even if there is no space for ground radials, the vertical could be used without them. I worked a fellow in Hamilton regularly on the TP net (40 metres) who used a Vertical with no radials. His signal was on par with some of the other signals on the band. Ground rods are good for electrically grounding the antenna system (in case of lightning) and to my surprise, my signal was 10 dB stronger with ground rods connected to the base of the antenna. Two other local stations (VE3AK and VE3JN) and I conducted this test using S-meter readings on the 40 metre band.

### Grounding

An inexpensive source for ground rods is a plumbing shop. I used three: eight feet long, half-inch diameter copper pipe. It is important that all joints in the ground system and the antenna itself be secure and protected against oxidation. Failure to take this precaution could lead to poor results.

I strongly emphasize that the "put it up then tear it down" method is to be avoided. You will have more money in your pockets and more time to enjoy radio. Take it from one who has gone both routes.

The antenna performs well enough in the two years I have been using it. The best DX was Australia on 40 metres with a 55 signal report. On 80 metres DX is harder to come by because the antenna is short in terms of wavelength, being only 19 feet high, but I get out fairly well locally and I seem to do well into the Maritimes. DX is heard but I haven't worked any yet. Perhaps the recent acquisition of a 1 KW amplifier will help.

### A tuner helps

SWR is a problem on 80 metres, and because the antenna is so short, the usable bandwidth is only about 40 kHz. The use of a tuner has allowed me to obtain satisfactory results across the entire band. On 40 metres the antenna will work without a tuner from the bottom of the band up to 7280. I have done most of my operating on 40 metres. I have regularly controlled the Trans-provincial Net on 7055 kHz and I have done many comparison tests on both transmit and receive. The antenna works as well on receive as any other dipole, vertical, or random wire. The one drawback of using a vertical as compared to a horizontally polarized antenna is that it will be more prone to pickup QRM, QRN, and broadcast harmonics. On transmit, the vertical doesn't do as well compared to other locals who use full-

size dipoles, or even a good random wire antenna. S-meter exchanges, both locally and in Ontario, Quebec, the Maritimes and Alberta indicate that the vertical will often be two or three S-units below a dipole. There are many variables, but I believe that a shortened trap vertical, surrounded by buildings and with a less than ideal radial system cannot be expected to perform as well as a full size dipole or inverted vee.

### Try one!

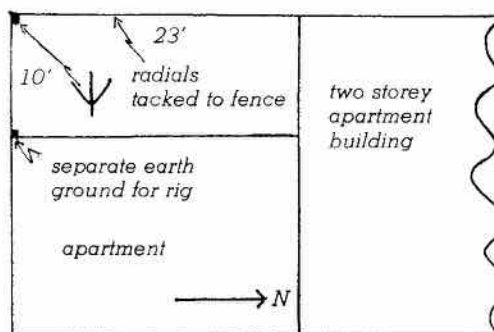
I hope this article will encourage those who live in apartments and other dwellings where big outdoor antennas are out of the question. I have worked other Amateurs who were using balcony antennas, short helically wound antennas, indoor antennas, and one fellow who claimed he was using the aluminum siding on his house as an antenna. None of them were clobbering my S-meter but they were Q5 so long as the QRM level was low.

Limited space antennas should be developed for HF (160, 80, and 40 metres.) HF operating by those who have limited space antennas should be encouraged.

I can think of one way. How about a Cliffdwellers Activity Night? Perhaps one day of each week for a couple of specified hours those who are using limited space antennas could meet on the 80 metre band to establish contact with each other and other interested Amateurs.

I would like thank all those other Amateurs who participated in the comparison S-meter tests.  $\Delta$

E.E. Andrews VE3NVO



# Mobile Installations

By Rob Bareham VE7CFK

**T**he way you install your transceiver in your vehicle can make a great difference in the way it operates and your ability to operate it.

Because of the variety of vehicles and mounting situations we will not go into specific mounting locations but general areas.

## Transceiver Mounting

### • Under dash installations

If you are bolting through a plastic dash, ensure that the bolts also go through the steel dash frame to allow better mechanical stability and improved grounding of the transceiver case. Under dash installations provide more convenient routings for cables to the radio and accessories.

### • Transmission hump mountings

Two important precautions. If your floor is covered in carpeting, do not drill through the carpet. The drill bit will catch the carpet threads resulting in a run in the carpet. After determining bolt hole locations, use a razor knife to cut a neat square hole around the proposed bolt holes.

The second precaution, when the drill bit finally pierces the sheet metal floor, STOP! Any further and you will have a neat hole in your transmission which generally sits  $\frac{3}{4}$  inch below the floor. Don't laugh, I have seen this happen twice to new radio installers in the shop. Some of those transmission housings are made of aluminum which drills like warm butter.

## Antenna cable routing

**Warning: Visualize complete cable run before doing any drilling.**

### • Rear deck area:

Remove rear passenger bottom seat and removable cover plates on lower door frame on driver's side. Whether you use a no-hole antenna mount, bumper mount, or drill into the body (preferable) the antenna cable routing is the same.

The professional installer's secret weapons are an old speedometer cable, an opened coat hanger and a four foot piece of spring steel electricians' fish tape. Pass the cable from the trunk, under the rear seat, under the carpet or matting and through the door channels you removed the cover plates from. From here it goes up through the side wall beside the driver's left foot and under the dash. The entire run should be done on the left side of the car. The left side has several advantages over a

right side mounting, one of which is keeping the antenna furthest from trees and pedestrians.

## Roof top mounting

Not recommended unless the dome light is within a foot of proposed antenna location. If your dome light is in or near the center of the roof, remove it and drill from inside out. Antenna mounts use either a  $\frac{3}{8}$  or  $\frac{3}{4}$  inch hole, depending on the model of mount.

The cable is usually routed to the right front window frame which allows direct access to just under the glove box. Confirm this with your speedometer cable before drilling.

## Power connections

An excellent way to bring power from the battery is with RG8 antenna cable. Do not attach the RG8 directly to the battery, it is too stiff. Solder about eight inches of flexible wire to the center and braid conductors of the RG8 for connection to the battery. The shield goes to the negative terminal of

course. Do not use a firewall hole that passes a moving control cable, throttle, clutch etc.

For a less elaborate power connection and one that will turn your radio off when the key is turned off, connect the radio's positive wire to the accessory jack on the fuse panel. Not recommended for radios requiring more than about 5 amps. Also, this connection will be more prone to electrical noise than a direct connection to the battery. The negative cable attaches to any convenient bolt going into a metal support under the dash.

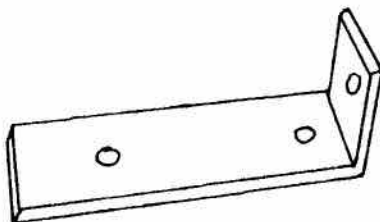
If you have any questions on this or other related subjects, please write to this column, in care of the technical editor. We will attempt to have your question answered by the appropriate trades persons and publish their answer for you in this column. Please restrict your questions to a general nature.

If you have any hints or suggestions for others, please pass them along for publication.  $\Delta$

# Key Lead Adaptor

By Moe Lynn VE6BLY

What with today's readily available phono cords of all descriptions it seems a good idea to spend a few minutes updating the leads on our hand keys and bugs. Streamlining this proliferation of cords also simplifies future projects and their testing before mounting in a fancy box.



A piece of plastic (clear or otherwise) or any suitable insulating material about 2.5 cm wide by 10 cm long and 3 mm thick ( $1'' \times 3\frac{1}{2}'' \times 1/8''$ ) is easy to work.

Measure the distance between key-lead posts and drill these holes starting about 1 cm in from one end. Drill a third hole about 1 cm in from

the other end for the phone jack. Now, cut this last end off so it is about 2.5 cm square.

Depending on what path your key leads follow along the desk or table top, you then decide where to attach the phono jack section, in a vertical position, on the horizontal section. Hot glue is one method of attaching the two pieces together, two part epoxy is another and you might even get lucky with some plastics and use a soldering iron!

Mine attaches to the end as in the drawing and the phono jack is wired so the bug base is 'ground' in case it moves up against ground somewhere else. A recent CMOS keyer is also built using phono jacks.  $\Delta$

Send your contributions to 'From the Workbench', Robert Bareham VE7CFK, 3 Howard Ave., Burnaby, B.C. V5B 3P3.

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# Tuning and Modifying the 18AVQ-WB Trap Vertical

By Gerard Plette VE3GF

A few years ago I purchased a 5-band trap vertical manufactured by Hy-Gain. After ground mounting it against 100 radials totalling some 10,000 feet of copper covered steel wire, it became apparent that the previous owner had tuned the antenna for phone operation. A quick look at the assembly instructions yielded the necessary measurements for the tubing length needed between the traps to resonate the antenna in the DC portion of the bands.

## Tuning the antenna

The antenna can easily be tuned on each band, some on the CW portion, some for the phone portion. Firstly, a wooden ladder is guyed in the vertical position next to the vertical using some nylon ropes. Then the antenna is energized on 10 m and the length between the base and the 10 m trap is adjusted to a minimum SWR.

It is necessary to walk away from the antenna while this is done as your body will affect the antenna's resonance. (VE3KOY was in the shack operating the rig and calling out the SWR readings on the 2 m HTs between

each adjustment.) Then came 15 m and the length of the tubing between the 10 and 15 m traps is adjusted.

So on and so forth till you get to 40 m. You will notice that there is no 80 m trap, but rather a big coil with a rod sticking out of it, this coil resting on four spokes radiating out of its base. When excited by 40 m power, this antenna behaves like a loaded vertical with three inductances in series, these being that of each trap since traps are parallel tuned circuits.

These tuned circuits, when excited by energy at a frequency lower than their resonant frequency, appear as inductors. On 40 m, only the portion below the 80 m coil is radiating. Remember that the top of a resonant quarter-wave vertical is a point of high voltage and that no current can flow beyond this point. Therefore placing a coil at this point will not do very much since no current will pass through the coil. For a coil to work, current must pass through it.

At the top of a 40 m antenna excited by 40 m energy, there is little current passing in to the 80 m coil, so its presence can be neglected. The four spokes referred to earlier further isolate the coil and its whip when the antenna is operated on 40 m. If you can't get the SWR down on 40 m as

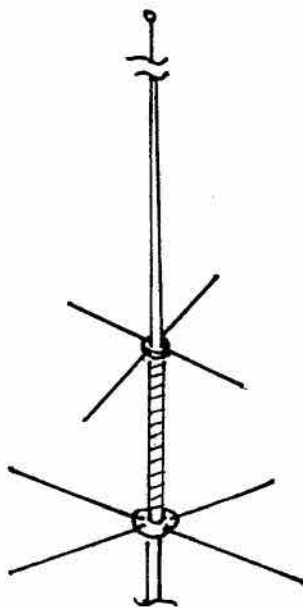
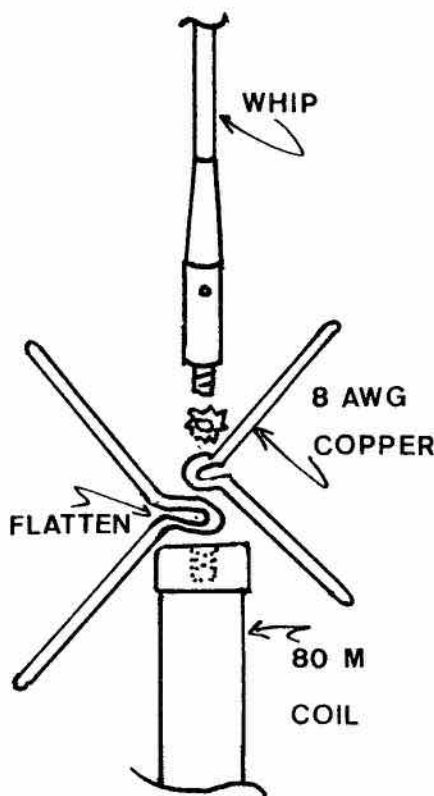
you did on the higher bands, don't get alarmed, the antenna is physically extremely short, although electrically of the proper length.

Physically short verticals exhibit a very high Q and very low radiation resistance. Hy-Gain has provided a matching coil at the base of the antenna so that the 35 ohms or so antenna can be fed with 50 ohm coaxial line. On 40 m, when operated against a low loss ground, the antenna presents a lower radiation resistance, of the order of 20 ohms, at resonance. There will be a slight mismatch at this coil, making a minimum SWR higher than those measurements obtained on the higher frequencies.

## Operation on 80 m

Again, the antenna is physically extremely short, consisting of the three traps and the 80 m loading coil. This loading coil is topped with a stainless steel whip that serves two purposes: one to extend the extremity of the antenna past the coil so that current will flow in the coil. If it was not for the rod, we would need an infinite number of turns in the coil to resonate the antenna. To change the resonant frequency on 80 m, we can change the amount of inductance in series with it. The coil itself is not adjustable but the stainless steel rod is. The instructions provide you with a chart that will let you cut the rod to the proper length. The warning not to cut too much off at a time must be taken seriously as each inch represents about 25 kHz. It is not the few inches cut that changes the length hence the resonant frequency; it is the resultant change in current drawn through the coil that makes all the difference.

The second way you can lower the resonant frequency on 80 m is to add capacity to the 80 m coil. In this specific case the antenna was cut too short, making it resonate at 3800 kHz. If it had been cut too long, I would have to shorten the whip. Mine was short. Buying one was too expensive, besides it may be desirable to tune it to phone portions of the band from time to time and back to the CW end at a different season, so this approach was rejected. Changing the length of the rod changes the current in the coil and the different length of wire above the coil changes its capacity to the coil below, adding to or subtracting from





# Installation de mobile 2 M

Par Camille VE2GKB

**Q**uelques points importants dont il faut tenir compte lors de l'installation d'un VHF dans un mobile.

**REGLE D'OR** à observer avant d'effectuer toute transmission, même très courte:

vérifiez que le 'rig' est compatible avec:

A- le voltage et la polarité d'alimentation

B- l'impédance du fil coaxial; que celui-ci est bien branché au rig et à l'antenne.

C- le type d'antenne utilisé qui donnera un minimum d'ondes stationnaires.

Ne commencez pas à opérer le 'rig' sans en avoir complété l'installation permanente, sinon vous aurez de la

difficulté à trouver le temps de la terminer complètement.

**INSTRUCTIONS DU MANUFACTURIER.** Cela peut paraître superflu de le répéter, lisez les attentivement avant de faire quoi que ce soit; clarifiez les points qui vous sont obscurs. Une simple erreur ou mauvaise interprétation peut ruiner votre appareil neuf ou en diminuer le rendement, sans compter que cela peut vous sauver bien du temps ainsi que des frustrations.

**CHOIX DE L'EMPLACEMENT.** Etudiez plusieurs alternatives; pensez que vous aurez peut-être d'autres appareils ou accessoires à installer plus tard. Faites un choix logique dans lequel le rig sera visible autrement qu'au travers du volant ou en vous penchant. Choisissez le meilleur compromis possible.

Il devrait être à la portée directe de la main droite (ou la plus habile des deux), ainsi que le micro.

Attention qu'une fois installé il ne constitue pas un danger ou un risque de blessures graves en cas de collision frontale.

Pensez à la chaleur excessive qui va sortir de la chaufferette et excéder la limite permise par le fabricant.

**FIXATION.** Habituellement un support solide et adéquat est vendu avec l'appareil. Utilisez le de préférence. Ce support doit être mis à la masse pour éviter les parasites inutiles pendant la transmission. Il permet de sortir l'appareil sans être obligé de démonter autre chose. C'est pratique si on craint le vol, ou en hiver lorsque le véhicule reste dehors à des températures minimum en bas de celles prévues par le fabricant.

**LA POLARITÉ.** La plupart des rigs sont alimentés en courant continu par un câblage à deux conducteurs branchés à l'intérieur même du rig. L'un des conducteurs est généralement rouge et comporte un fusible de protection calibré; c'est le 'positif' ou B+, souvent appelé 'vivant' qui devra être branché au positif de la batterie (la plus grosse des deux bornes identifiée par un gros signe +). Il pourra aussi être branché à une borne positive éventuellement disponible dans la boîte à fusible du véhicule à l'endroit marqué 'ACC' (pour accessoires). L'avantage alors est de couper l'alimentation du rig en même temps que l'on arrête le moteur, donc on élimine le risque de l'oublier et d'affaiblir considérablement la batterie en période hivernale ou tous les Joulés disponibles sont nécessaires au démarrage matériel à froid.

L'autre conducteur, le plus souvent noir, c'est le fil de masse ('Ground') qui sera relié par un bon branchement serré sur des surfaces sans peinture, ni rouille ou mastic, avec des rondelles de blocage, à une partie du véhicule de préférence soudée à la carrosserie.

La polarité doit absolument être respectée. Si la polarité d'alimentation était malencontreusement inversée, de gros dommages au rig s'en suivraient immédiatement.

**LE VOLTAGE.** Bien vérifier que le voltage d'alimentation demandé par le fabricant soit compatible avec celui fourni par la batterie du 'mobile.'

Par exemple, voltage normal requis 12 à 14 volts. Tolérances extrêmes 13.8 volts +15%. Ce qui veut dire que les voltages tolérés à l'occasion pourront varier entre 11.8 et 15.8 volts. Généralement c'est le cas et le rig peut être branché tel quel sans autre opération.

Si des problèmes électriques sont fréquents sur le véhicule tels que: ampoules ou fusibles qui brûlent souvent (indication d'un voltage à vide trop élevé, voir la boîte de contrôle).

démarrage difficile à froid ou même à chaud (indication d'un voltage trop bas du à une batterie usée, défectueuse ou une courroie d'alternateur qui glisse).

Ou encore si le véhicule acheté usagé récemment n'a pas été utilisé pour la peine; il y a lieu alors de craindre pour le VHF et de procéder à des mesures de voltage avant l'installation (moteur à environ 1500 tr/mn):

A- avec tous les accessoires allumés pour mesurer le voltage minimum en charge.

B- avec tous les accessoires éteints pour mesurer le voltage maximum à vide.

C- avec le moteur arrêté, voltage minimum 12 volts.

On peut comparer et voir s'il y a lieu de faire vérifier le circuit de charge du véhicule.

**AUDIO.** Pensez que la qualité de l'audio du rig va être diminuée par la fait que le haut parleur est installé sous le tableau de bord. Il est important de penser à installer un H.P. extérieur qui fournira une qualité d'audio meilleure.

S'il est placé à gauche du volant, vous l'entendrez bien et peut être que votre XYL appréciera de pouvoir écouter son programme FM préférée. Vive la bonne harmonie...

**COAXIAL.** Faites cheminer le

► Continued from page 47

the inductance, depending whether the rod was made longer or shorter. It was decided to add capacitance to the coil, but not to extend the whip, which would have required some mechanical work. Instead a small capacity hat consisting of four spokes measuring 20 cm each was added to the top of the coil, underneath the whip. Initially these were placed directly above the four spokes already in place below the coil. The resonance on 80 m now was below the band edge. Shortening the top hat radials by 2 cm each at a time made the antenna resonant exactly on the bottom band edge. Then a 45 degree rotation of the top hat placed each spoke in between the bottom spokes and shifted the resonant frequency up to 3528 kHz, the desired spot. The vertical on 80 m is a very high Q device and yields a SWR bandwidth of 50 kHz at the 2:1 points.

## Conclusion

Tuned this way, the bottom end of the band is now available on an antenna that originally was tuned to the phone portion of the 75 m band. This simple modification can be removed easily, permitting operation of SSB. A smaller top hat can be made to shift the frequency up from the bottom end if desired. Trap verticals when operated against a good RF ground are efficient antennas, radiate at low angles above the horizon, are simplest to use and adjust. Tradeoffs are narrow bandwidth on the lower bands, difficulty in putting up enough radials, and QRN and electrical noise pick-up. Understanding its operation will permit you to properly adjust them. Happy tuning! ▲



cable coaxial le long de la carrosserie. Evitez les dessous de tapis et fixez la gaine métallique formant le blindage ne soit pas endommagée, ni ne baigne dans des accumulations d'eau et de calcium dû à la neige fondante apportée par les pieds. Un coaxial d'une seule pièce sans boucle évitera des parasites ainsi que des pertes de sortie RF et autres inconvénients tels que mauvais raccordements ou débranchement accidentel pouvant causer des dommages au rig lors d'une transmission dans cette condition.

**ANTENNE.** Tout en considérant l'efficacité recherchée il faut garder en mémoire plusieurs points:

1- la dimension physique. Par exemple une collinéaire CGT-144 de Hustler a un excellent gain mais sa longueur 85" est considérable. Elle peut s'installer sur un véhicule bas, un couvercle de valise, un parechoc, mais bien difficilement sur une camionnette genre 'van' etc... ou attention en passant à la station

d'essence, aux postes de péage, un parking souterrain ou... votre porte de garage. Imaginez le tableau si vous l'oubliez comme moi, ne serait-ce qu'une seule petite fois! Aussi pensez qu'elle peut par hasard toucher une ligne électrique basse et le danger que cela représente pour vous, vos passagers et le rig bien sur!

2- la fixation. Magnétique par exemple, très solide mais un fil coax qui passe par une porte, une fenêtre et se balance dans le véhicule, avec parfois de jeunes enfants ça peut causer des problèmes. En plus attention à la peinture du toit chaque fois qu'on la 'décolle.' Permanente, très bien aussi, mais attention aux entrées d'eau par le trou de fixation, la rouille qui ne tarde pas et les problèmes qui s'en suivent. Une surface bien nettoyée, une bonne étanchéité, un coaxial bien installé dans la garniture du toit et voilà l'affaire, mais... s'il y a des Amateurs d'antennes 'empruntées' dans votre quartier, alors pensez à un modèle

dont le fouet est facilement démontable; la base permanente seule, ne représente que peu d'intérêt et d'attrait pour eux.

Important: n'oubliez pas de 'couper' l'antenne à sa longueur de résonnance dans la partie de la bande que vous utiliserez le plus (environ 146.5 MHz).

#### QUELQUES CONSEILS D'AMI.

Un beau rig dans un mobile, une belle antenne ça tente bien du monde; ne les mettez pas trop en évidence et dissimulez-les à l'occasion. Débranchez le micro; recouvrez le rig avec un vêtement quelconque. En plus en été ça évitera des dommages par le soleil au travers des vitres. Enfin, quand vous commencez à opérer en 'mobile'... redoublez, triplez votre attention sur la conduite car c'est bien le 'Fun' un beau QSO en mobile, mais c'est distrayant par dessus tout... VE2 Golf, Kilo, Bravo mobile... hop... BANG... hop... Trop tard!

—du UMS

## Counting Calculator

By Moe Lynn VE6BLY

One, two, three, is fine when testing a PA system for the local barn dance or church social. Very few of today's Amateur Radio enthusiasts can keep up to the likes of today's electronic gadgets, the least of which most everyone has, either homebrew or commercial. One of these is an electronic keyer and yours truly is no exception for no other reason than to find out how they work.

There being no personality attached to this CMOS digital integrated conglomeration with the homebuilt paddle, it never did replace the semi-automatic Vibroplex on my desk. For one thing it is impossible to send landline Morse on it because of its inability to reproduce a long dash for the letter L. You can push the press-to-tune switch located above the right index finger while on the air, if you are quick and nimble.

One advantage of this particular model, besides the \$15 layout, is the built-in NE555 oscillator which does away with listening to the bug rattle for mistakes. Could even be adapted for use on 2 m CW if Amateur Radio ever got their band back.

What about changing speeds you say? Easily done on the bug with the weight on a swinging link extended above the bar and on the CMOS, by twisting a knob. But how fast are the words spewing forth? If you have a pocket calculator that requires pushing the = (equal) key for a total

then you can adapt it to perform external counting duties.

#### Identify/Modify

First check to see that the calculator is the right type by entering 1+1 then hitting the = key twice. If the answer is 3 you know now you have the makings of a counter! Take off the back or whatever is necessary to get inside to work on the electronic innards. Find the two wires or printed circuit traces leading to the equal key and solder a piece of hook-up wire to each one, being careful to apply heat quickly so as not to lift the foil or over-heat other components.

Replace the batteries and check that you have the wires secure before the next step by adding 1+1 and using the extended wires as your = key. Drill a hole in the calculator case to take a 2-pole jack (earphone or power type) of the non-shorting variety. Solder your extension wires to this jack.

#### Testing

Using one of a myriad of cords and adaptors available on today's electronic gadget market or of your own manufacture it is now a simple matter of plugging everything in. Homebrew keyers can use an extra jack for the counter. If you do not get a display on test, interchange the leads from the keyer output to the counter because the keyer transistor likes to see its own polarity. If your keyer has a relay in the output (to key your tx)

then polarity is not important.

Now, hit 1+1 before sending a burst of dots. Time the burst for one minute, divide the total on your display by 25 if your keyer has a 1:3 ratio of dot dash duration (most have this ratio) and the result is words-per-minute. Or count dashes for one minute and divide by 12 for wpm. The dial can now be calibrated and the panel marked in wpm using your new-found speed settings.

And to think we used to count characters with our left hand, one eye on the sweep second hand of our watch while sending code practice on the bug. Seems everyone wanted to know at the end of 20-30 minutes just how many words-per-minute were in that last session.

Δ

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## Chapter 4

# The Antenna Laboratory

By VE3DQB

Continued from last issue

The received power varies with the height of the antenna above ground (the ground being in this case the aluminum foil). The reason for this is that the energy from the antenna reaches the receiving antenna by two routes. The direct ray, which travels straight from the one antenna to the other, and the reflected ray, which travels from the transmitting antenna, strikes the aluminum foil, and is reflected there to meet the receiving antenna. This is shown in Figure 41.

Now the important thing is that these two rays are of different length. The direct ray is always the shorter. The reflected ray is longer by an amount which differs from the direct ray by an amount which depends on the height of the transmitting antenna above ground. Figure 41 shows this.

If the lengths of the two rays are measured in quarter wavelengths, only occasionally will two peaks of voltage coincide at the receiving antenna. When this happens, the received power is almost twice that of one ray alone. On the other hand, occasionally the two rays are felt as equal and opposite voltages at the receiving antenna. When this happens, the received power is zero. (See Figure 42).

There are two important uses of reflected energy. The first uses the ground to complete a quarter-wave antenna to a half-wave one. This can be shown by cutting a quarter-wave antenna and placing it vertically upon the ground, and insulated from it.

One of the feedline connections is grounded, the other is connected to the antenna. (See Figure 43). With the receiving antenna vertical too, the antenna-plus-ground is indistinguishable from a dipole in the same position.

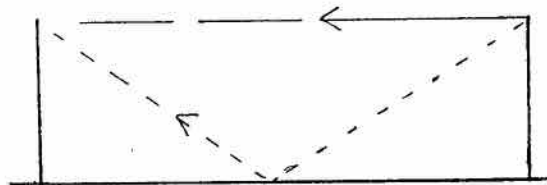


Fig. 41: The paths of the direct and reflected rays from transmitter to receiver over the ground.

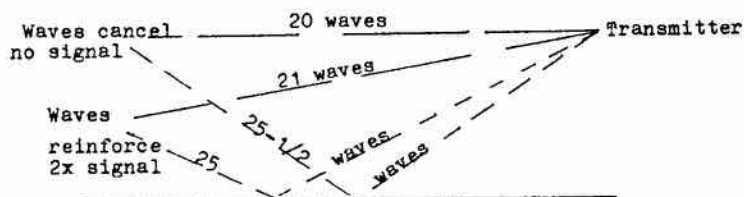
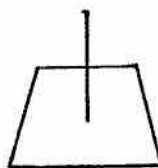
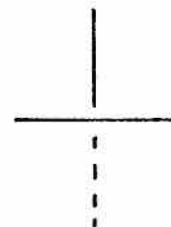


Fig. 42: Different heights give different path lengths.



A quarter-wave antenna on a reflective surface



acts like a half-wave antenna with its reflection.

Fig. 43: A quarter-wave antenna, vertically over a ground, performs like a half-wave dipole.

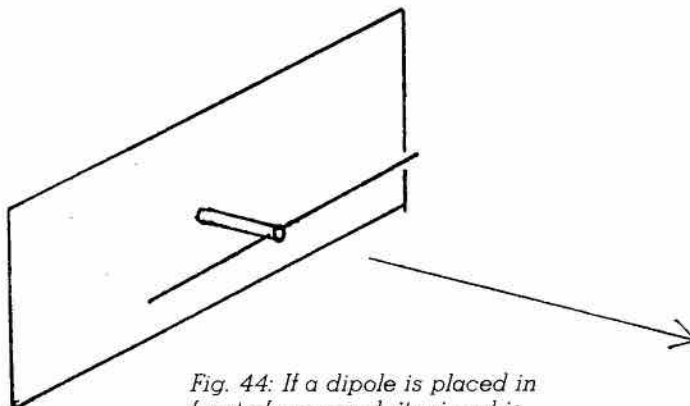


Fig. 44: If a dipole is placed in front of a ground, its signal is improved in the direction away from the ground.





If the quarter-wave antenna is placed on an ordinary mirror, the reflection makes it look like a dipole. Indeed, an ordinary mirror can be so used, if we connect the feedline ground to the silver of the mirror.

The other case is that where the reflector is arranged behind the antenna. If a metal sheet is placed behind a dipole antenna, the amount of energy leaving the antenna in the forward direction is altered, just as when the antenna is placed above ground. If the distance from the antenna (called the **DRIVEN ELEMENT**) to the reflector is  $1/10$ - $1/4$  of a wavelength, more energy goes forward to give a useful increase in directivity, as in Figure 44. The reflector is a *Parasitic Element*.

If the metal sheet is large (several wavelengths square) this arrangement is insensitive to changes in frequency. If the metal sheet is made smaller, then the directivity is only available over a small range of frequency. If the reflector is reduced to a rod or wire one-half wavelength long, the useful range of frequency is very small. Nevertheless, such an arrangement is of great use for **Amateurs**, who often operate in a narrow frequency band—say from 14.0 to 14.2 MHz. A two-element antenna cut for the middle of this band will work satisfactorily, though it will not work properly at 14.0 MHz. These are called **YAGI** antennas.

#### Reflectors and Directors

To show these effects at 435 MHz, cut a wire reflector  $34\frac{1}{2}$  cm long, and support it 15 cm behind the transmitting antenna. Then with the antennas horizontal and arranged for maximum signal, take a signal strength reading. Rotate the transmitting antenna ten degrees, take another.

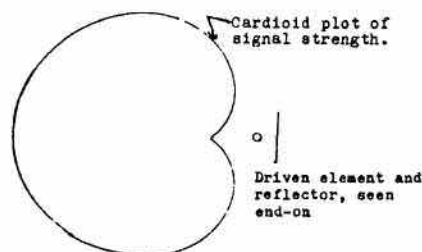


Fig. 45: The dipole-and-reflector of Figure 44 give this cardioid pattern.

Continue round the circle, and plot the pattern. It is a *Cardioid*, that is, heart-shaped (Figure 45).

Cut a director  $31\frac{1}{2}$  cm long, put it in place of the reflector, and plot the pattern again. Put the reflector in behind the antenna-director combination, and plot the pattern. Compare the forward gains of the antennas.

This sort of enjoyment can be continued endlessly, by constructing model antennas and testing them out. There is no more pleasurable way to learn how the skywire works in practice than by handling transmitter and receiver at once, like this. (End of Chapter 4)

## Chapter 5

# Antennas for 160 Metres

An antenna for this, the lowest frequency Amateur band, is long. A quarter-wave at center frequency (1.9 MHz) is 130 feet. The problem with horizontal dipoles at this wavelength is not length so much as height. A 50-foot mast lifts the antenna only one-tenth of a wavelength: too low for efficiency.

If the dipole is impractical, we are left with vertical antennas. A vertical 130 feet high is an excellent radiator, if working against a good ground, but is still beyond the reach of most of us. A usable arrangement would be 100 feet of TV antenna tower, well guyed, with a long whip antenna on top. A suitable whip is available as surplus (used on army tanks). The tower, working against a good ground, would be as good a radiator as the best available at that frequency.

Practical, and easily available, is a TV tower, topped with a long

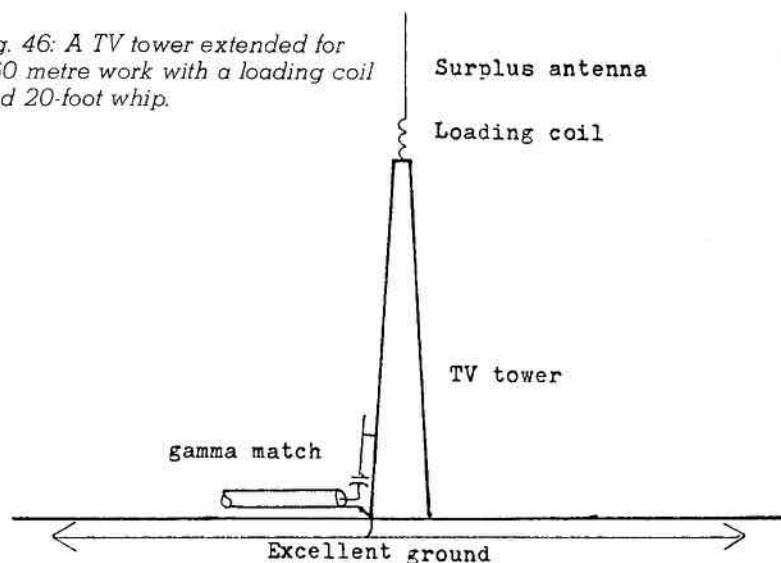
whip antenna, the two parts being connected through a loading coil, Figure 46. This is called *center-loading*. This shortens the antenna with a slight loss of efficiency, but is perhaps the preferable antenna at this frequency.

These antennas are usually connected to the transmitter by a *gamma matching section*, explained in Chapter 11.

If three heavy-duty porcelain insulators can be obtained, the TV mast can be insulated from ground, Figure 47. The loading coil can now be connected between mast and ground. The coax feedline braid is connected to ground, and the inner conductor tapped to the coil. Putting the coil between the antenna and ground is called *base-loading*.

Antennas of this general type, where one side of the transmission line is connected directly to ground are called *marconi*

Fig. 46: A TV tower extended for 160 metre work with a loading coil and 20-foot whip.



antennas. Dipoles, and antennas derived from them where both conductors of the transmission line are connected to antennas, are called *hertz* antennas.

The base-loaded system is attractive, for it allows the mast to be used on three bands: 160, 80, and 40. The loading coil is in an insulated, waterproof box near the base of the antenna, and the bands can be changed by tapping the coil—that is, by short-circuiting part of the coil.

Capacity loading is another possibility. Extra conductors, connected near the top of the mast, will reduce the needed size of loading coil. If the tower is

guyed, the guys can be electrically connected to the top of it, and insulators put into the guys part-way down, Figure 48. A cross of self-supporting tubing or a ring of conductor are other capacitance-loading devices. The important point is the supply of extra conductor at the top of the mast or tower, into which the electrons can travel. This increases the number that can go in at the feedpoint, with consequent increases of efficiency.

Wire antennas can be arranged. A dipole erected for 80 metres can be used as a top-loaded Marconi by connecting

the feeders together at the transmitter end, Figure 49. A wire, as high as possible, with a downlead to ground, acts similarly. A site surrounded by high trees might allow for several wires stretching from the trees to the common point, from which the vertical wire leads to the matching equipment.

Base-loading such antennas is practical. Again the loading coil is contained in a waterproof, insulated box and the taps on it changed to match the antenna to the feedline. Center-loading is only possible if a secure point at height is available to support the coil.

All these Marconi antennas need an excellent ground. A set of radials, many of them, each 1/4 wavelength long, buried in the ground under the antenna, is the ideal. It is attainable by those who have a 260-foot diameter circle unoccupied beneath their antenna, and plenty of scrap wire. Those who have not enough space or wire just have to bury as much wire as they can spare in the area available.

Reception of 160 metre transmissions from such antennas may be satisfactory—it depends on the locality. Being mainly vertical, these antennas are more liable to pick up impulse noise, like car ignition interference. Moreover, they are omnidirectional.

Directivity in transmitting on 160 metres is possible with phased vertical radiators. ('Phasing' is supplying several antennas with the same radio frequency energy, but controlling the exact positions of the wave to each antenna. If the waves supplied to two antennas reach the positive peak at the same time at each antenna, the antennas are *in phase*. If one reaches the positive peak as the other reaches the negative peak, they are *antiphase*. Any condition in between can be arranged, if desired.)

Continued next issue

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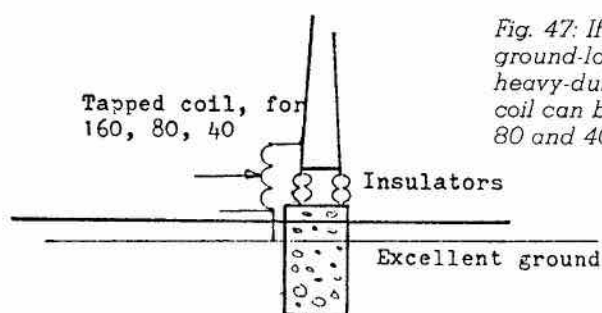


Fig. 47: If the tower can be ground-loaded, by supporting it on heavy-duty insulators, the loading coil can be within reach for use on 80 and 40 metres as well.

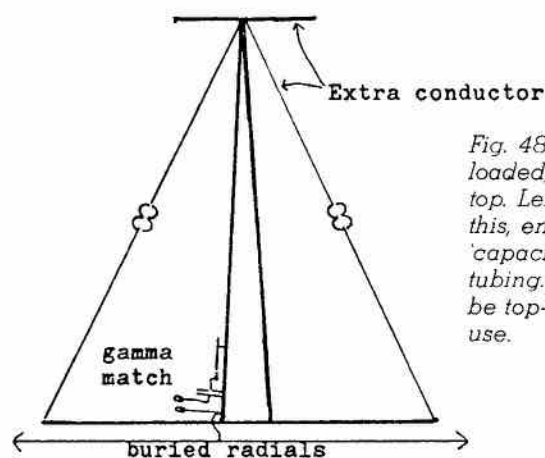


Fig. 48: The tower may be top-loaded, by extra conductor at the top. Lengths of guy-wire can do this, ending at an insulator, or a 'capacity hat' built from aluminum tubing. Even a rotatable beam can be top-loading for low frequency use.

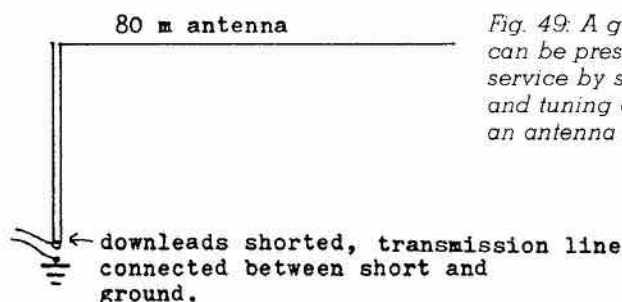


Fig. 49: A good 80 metre antenna can be pressed into 160 metre service by shorting the downleads and tuning out any reactance with an antenna tuner.



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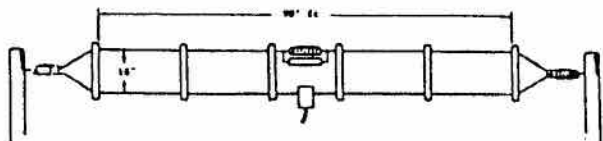
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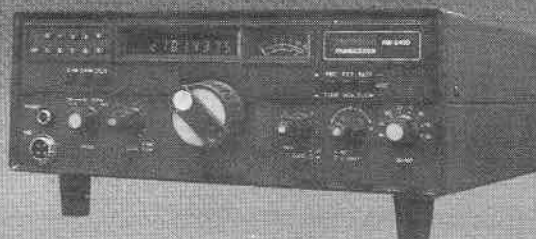
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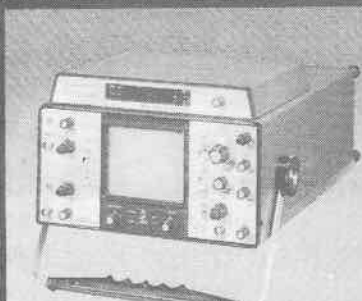
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