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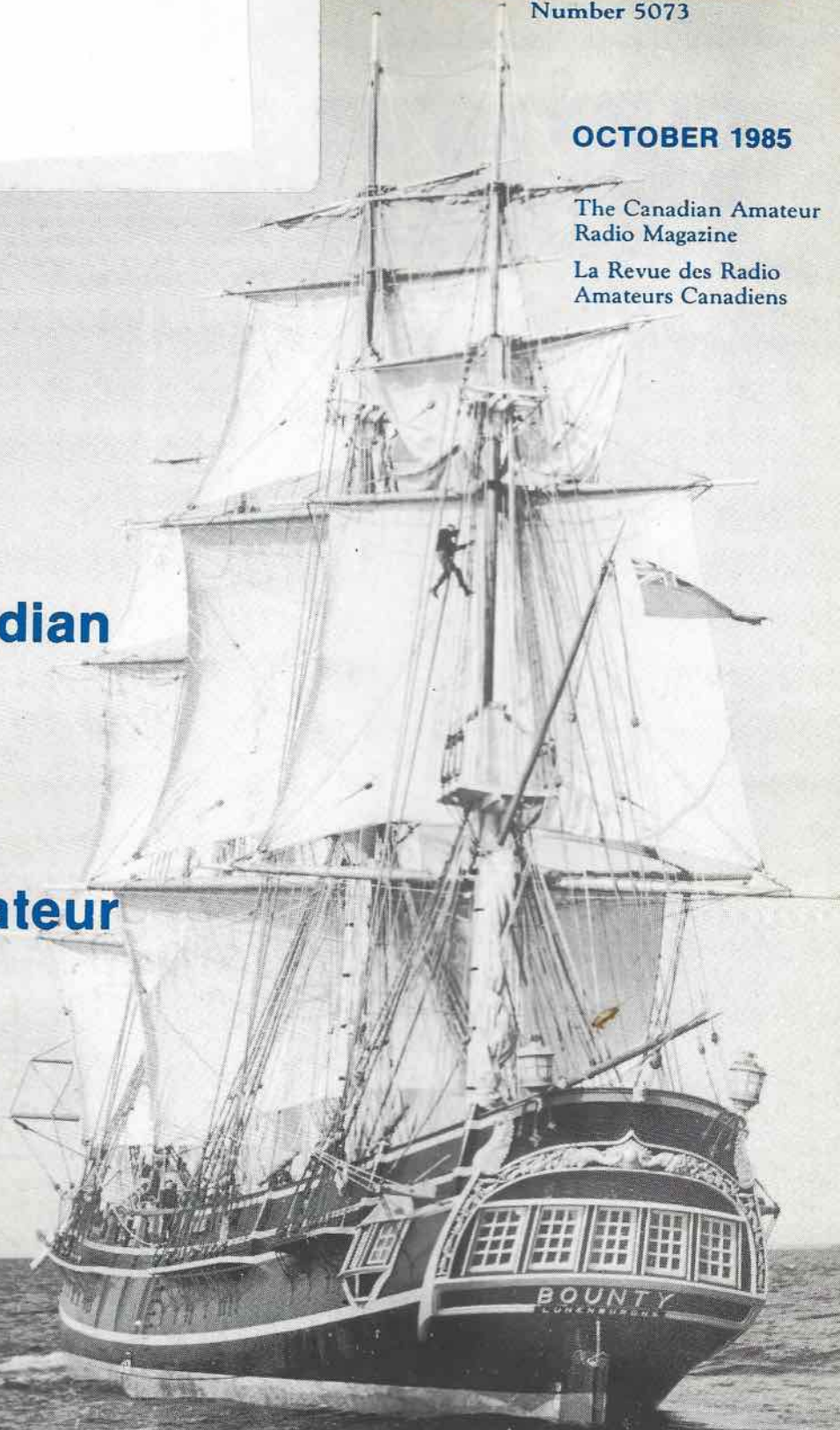
Second Class Mail Registration  
Number 5073

OCTOBER 1985

The Canadian Amateur  
Radio Magazine

La Revue des Radio  
Amateurs Canadiens

**T**he  
**C**anadian  
**A**mateur



Credit C.E. Young.

**Muster hands aft, Mr. Christian**

# TWO NEW HIGHER PERFORMANCE 2 METER BOOMERS 215 WB AND 4218 BOOMER XL

## **cushcraft** **BOOMERS** The Contest Winners

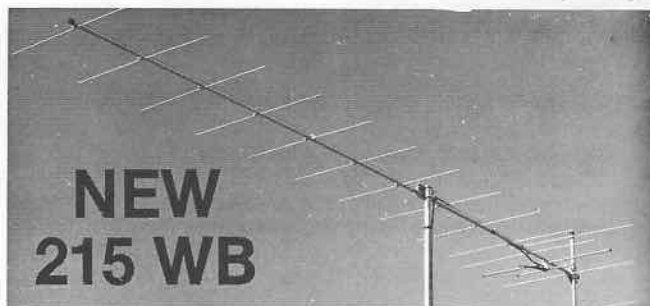
Antennas so efficient, powerful, and successful that they defy comparison. They have won every antenna measuring contest in which they have been entered. They have established new EME contest record scores. Boomer's computer based design has become the standard of comparison for others to copy. Listen on any VHF or UHF band, you'll hear experienced, knowledgeable hams using high performance Boomer antennas. Be prepared, Tropo scatter, E skip, meteor scatter, aurora, EME and VU Century Club will be yours with a Cushcraft Boomer.



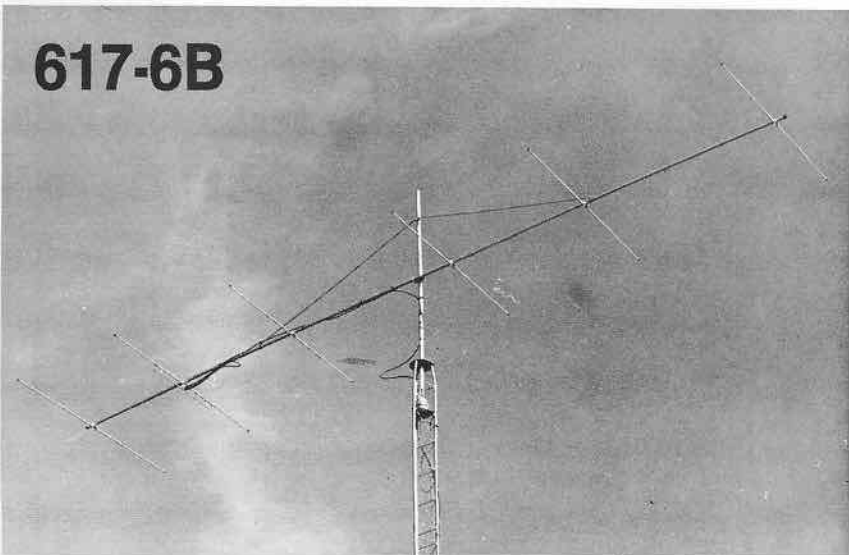
**NEW  
4218XL**



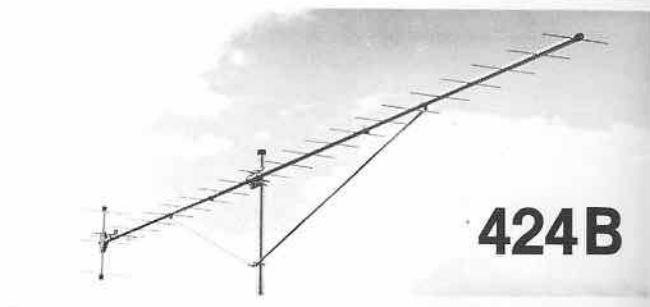
**NEW  
215 WB**



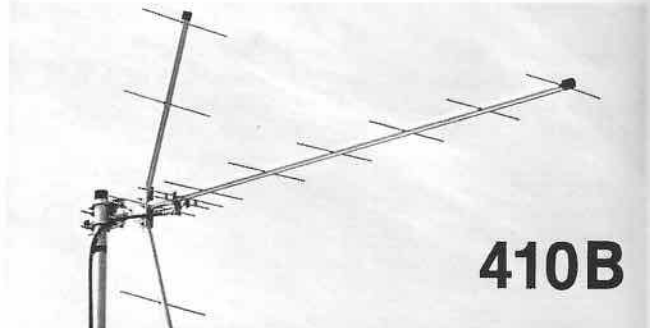
**617-6B**



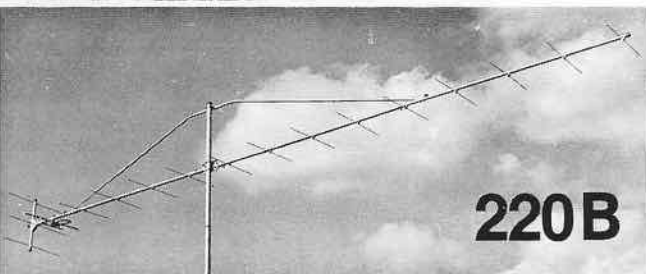
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**410B**



**220B**



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**THE CANADIAN AMATEUR**

October 1985

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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;
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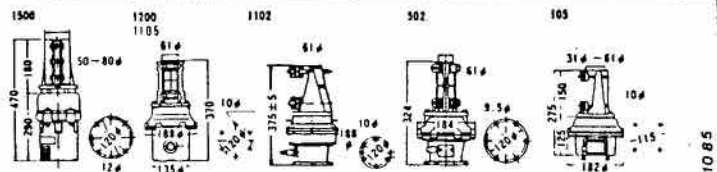
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ALLIANCE HD-73	1.0 sq.m./10.70 sq.ft.	
EMOTATOR 502	1.5 sq.m./16.20 sq.ft.	\$ 299
TELEX HAM-IV	1.4 sq.m./15.00 sq.ft.	
DAIWA MR-750E/PE	1.5 sq.m./16.10 sq.ft.	
EMOTATOR 1105	2.5 sq.m./26.90 sq.ft.	\$ 449
TELEX T2X	1.9 sq.m./20.00 sq.ft.	
TELEX HDR-300	2.3 sq.m./25.00 sq.ft.	

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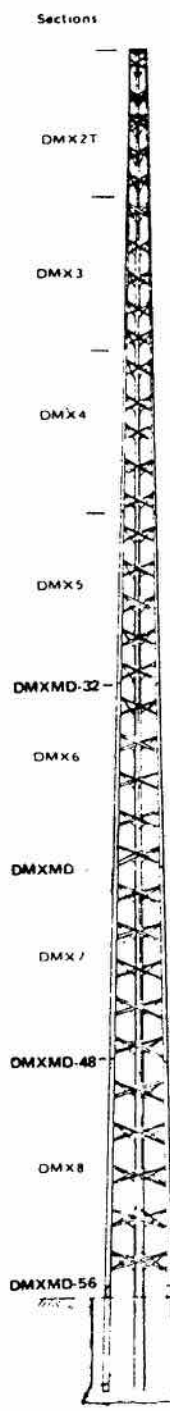
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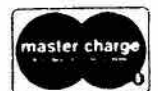
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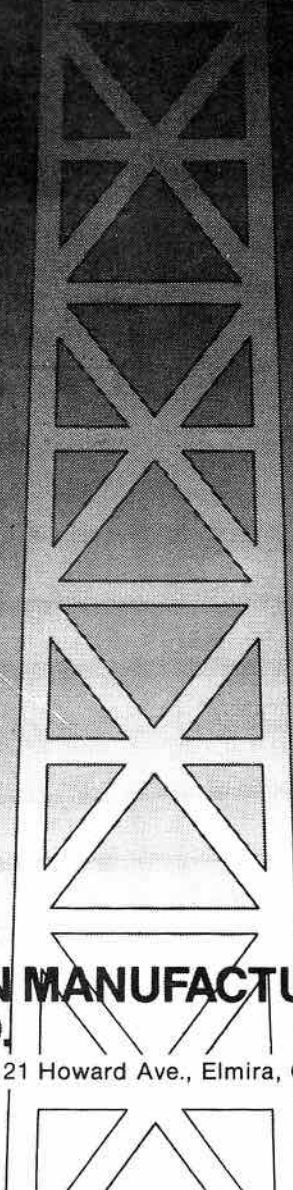
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1		R	146.940	"
3		T	157.845	GE Royal Exec
3		R	152.585	"

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

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Amateur bands	8.25	8.25
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5 - 5.9	10.90	13.15
4 - 4.9	12.00	17.50
3 - 3.9	13.15	17.50
1 - 2.9	17.50	—
55 - 100 (fifth)	13.15	13.15
Temp. Compensated Crystals		13.15
MPI Crystals		12.00

Below 1 MHZ, and above 100 MHZ, price available on request.

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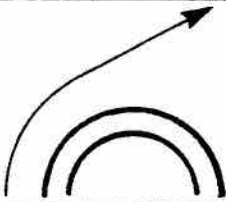
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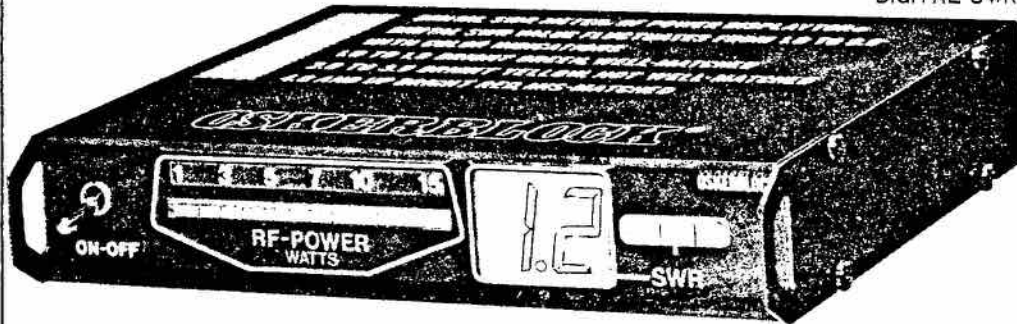
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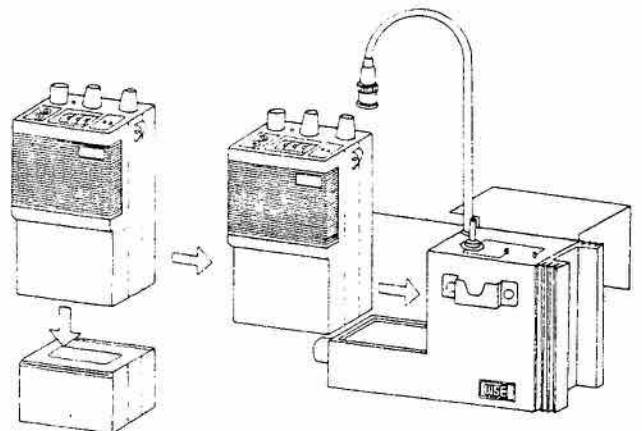
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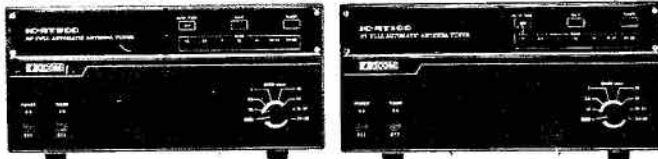
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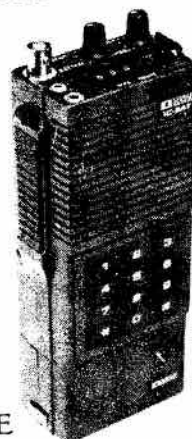
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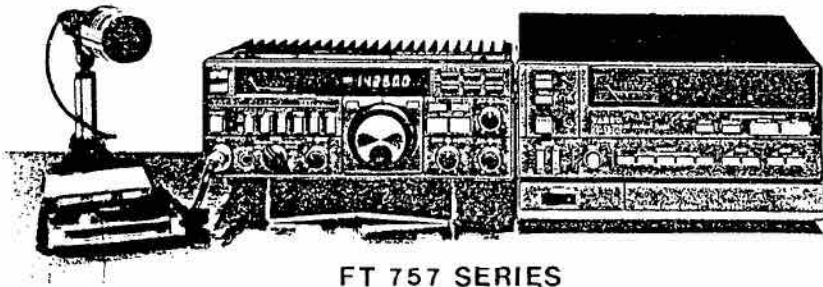
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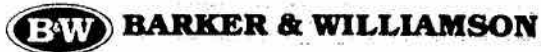
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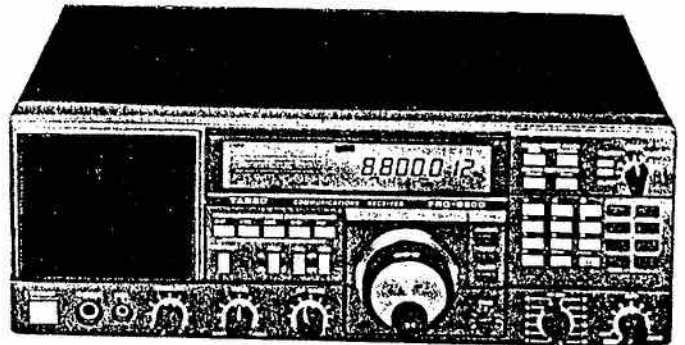
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QUA 

## New Life for a Dying Hobby



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Lyle Blake

Please address correspondence to the Editor at Box 855, Hawkesbury, Ontario K6A 3C9, telephone 613-632-9847.

### COVER PICTURE

What's Captain Bligh doing in TCA, you ask? Actually, it's not the Captain himself, it's his wireless op. Story Pg. 21.

Well fellow hams, it's time to bite the bullet and admit that the Digital Certificate is a flop! It just does not work. It has done very little to introduce new blood to the ham population. It is too difficult to attain for the reward that it gives. I propose to abolish the Digital Class of Certificate and to replace it with something which will add new blood to the ham population, namely a Novice Class.

*I propose that requirements for the Certificate for such a Novice Class should be: a 'knowledge' of Morse Code, some basic electronics theory, and Radio Regulations, all tested by way of multiple choice questions. Testing for the Novice Class would be done by clubs and/or groups of hams through their provincial organizations. Licensing for this Class should still be administered by the D.O.C., with the same fee and renewal structure as Amateur and Advanced Amateur licences now.*

The Novice would have restricted privileges; for example, CW on parts of 50 MHz and 144 MHz, phone and CW on 220 MHz, CW on parts of 430 MHz, and all privileges above 900 MHz. This would encourage exploration of the VHF, UHF, and SHF ham spectrum and introduce *new* people to the world of ham radio without compromising band-space for present users. All would benefit from this class of certificate: local clubs, provincial organizations, and our national organization.


Novices would be identified by a special callsign, say VN2, VN3, etc. Then if the Novice wanted to

upgrade, she or he would follow the regular course of action, that is, taking the Amateur exams as required and given by the D.O.C. every three months. This whole idea of a Novice Class would be a great way with no financial burden to the D.O.C., to get interested people started in Amateur radio. It would give local clubs, provincial organizations and C.A.R.F. better control over our ranks, that is, better self-policing. Prospective Novices would be directed to clubs, thus we would get more activity at the grass roots level where it counts.

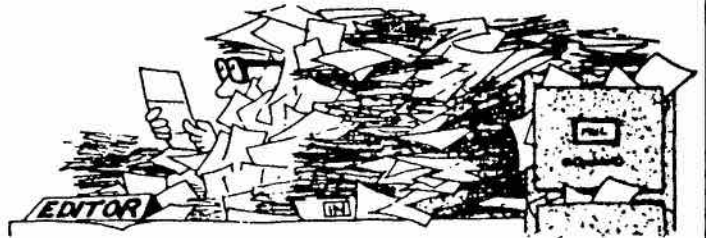
I would like to quote from K2EEK's editorial 'Zero Bias' (CQ Magazine, August '85): "The Amateur radio frequency spectrum is like land—there's only so much of it. And like land, it appreciates in value each year. Land, like the Amateur radio spectrum, can get to a point in value whereby it has more value for the common good than by those presently using it. At that point, it's simply taken away for the common good."

In sum, the Digital Certificate may have been an attempt to fulfill a need in Amateur radio, but we now must re-examine these needs. If Amateur radio is to survive in this ever more demanding world of spectrum users, we need an increase in numbers and participation in the many aspects of the hobby. So fellow hams, agree or disagree on this proposed Novice Certificate... how can we refuse?

Mike VE2AM

Quebec Director, C.A.R.F. 

# LETTERS



## RE: JULY 1ST HERITAGE PICNIC

Enclosed please find a photo of your team operating the ham radio station that was set up in the St. Lawrence Islands National Park at the July 1st picnic.

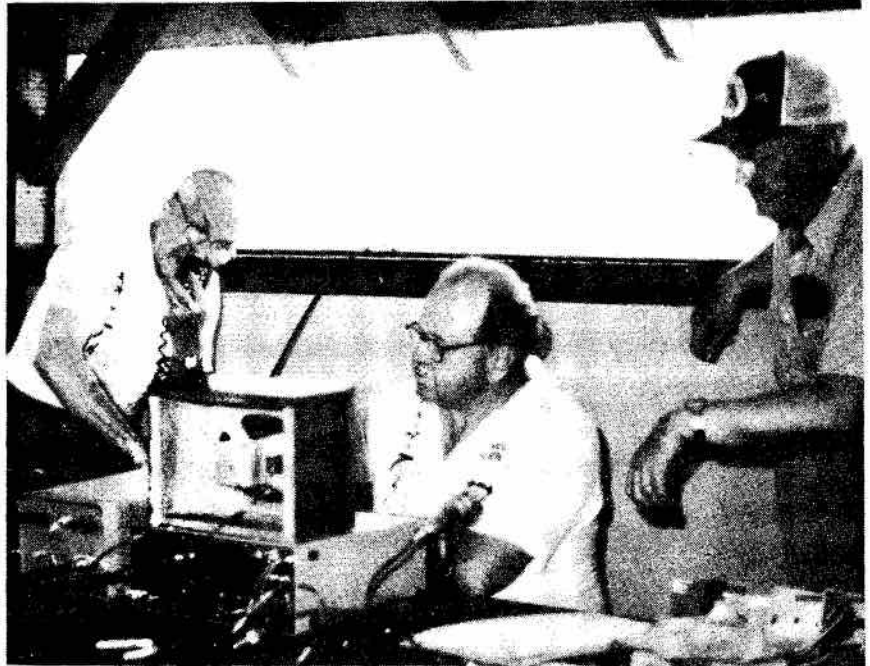
We would like to thank you again for your co-operation in the Centennial Celebrations.

Yours truly, Dave Warner,  
Superintendent, St. Lawrence  
Islands, National Park.

The letter from Parks Canada tells the story. We had a two metre hookup using the Watertown repeater for local work, and an HF rig and long wire for contest contacts.

In the picture, I am using the two metre rig, Bill VE3DXY is on the HF circuit and (standing, right) is Norm VE3NFW giving moral support. Bill sent our results, including contacts with five other Parks Canada stations, off to Canada Day Contest HQ.

73, Bert VE3EW



## JOCELYN LOVELL REPORT

Dominion Stores terminated their Tape Plan on March 31st, 1985 following takeover by A & P. A few days prior to that, the final collection of tapes was submitted to Dominion Stores Head Office, following which a cheque for \$791.44 was received from them and deposited in the Thornhill Radio Amateurs' Club Trust Account for Jocelyn, and he was duly notified.

The Dominion cheque, plus the Trust Account (containing deposits from very generous Amateurs and friends) amounts to a total of \$1,680.16. Jocelyn has expressed both his interest and his appreciation several times, however, it appears that at this time he is still not prepared to get involved in studying for his licence, for whatever reason.

The Club has decided to let things ride for a few months and let the account gain interest. Next Spring I will once again approach Jocelyn and should he conclude that his interest has changed, then this amount will be used to purchase radio equipment for some other disabled Amateur candidate with the same understanding that if the individual using the equipment should have a change of interest, or pass from this earth,

then the equipment would be returned to the Thornhill Radio Amateurs' Club for use by another disabled Amateur.

At this time I wish to thank my many Amateur radio friends for the very generous contributions of Dominion tapes and, in many cases, cheques for the Lovell Trust Fund. In due time I will inform this publication of further developments.

73 Libby VE3IOT

## VE3TOP

I wish to bring the attention of all readers to VE3TOP repeater located in Elliot Lake, Ontario and serving the north shore of Lake Huron.

The St. Joseph Island Repeater sponsors this repeater but is getting very limited Association support from Amateurs in the north shore, Elliot Lake areas. In fact, the general operation of the repeater is being subsidized mostly by Amateurs from Sault Ste. Marie, some of whom seldom use TOP and are in the Association mostly to support SJI repeater on St. Joseph Is., which the Association also sponsors.

Because of this current situation, there is a real chance that TOP will be shut down at or before year's end.

I am appealing to all users of TOP, especially in the corridor from

Sudbury to Thessalon, to consider, very seriously, making a generous donation to the Association to keep TOP up and running. I would be equally grateful to anyone else or any club that may wish to make a contribution.

Please send your donations and any comments or questions to: Gord Woroshelo VE3EYW (Custodian), P.O. Box 57, Manitouwadge, Ontario P0T 2C0.

73 Gord VE3EYW

## S.O.P.R.A.

It is with great pleasure that we announce the formation of a new packet radio group operating in the territory of Southern Ontario and henceforth known as the 'Southern Ontario Packet Radio Association' (S.O.P.R.A.). Membership is open to any individual interested in this exciting new frontier of communication and we invite you to participate.

The membership details and aspirations of this group are contained in our first Southern Ontario Packet Radio Association bulletin (SOPRA opera #1). These are similar or identical with the hopes and ideals of the A.R.R.L., C.A.R.F., R.S.O. and many other radio clubs.

Come join the rest of the 'PACKRATS' in our group and have



some fun while using and experimenting with PACKET Radio.

73  
Dave Kerr VE3FGK  
President

#### DOES IT PAY?

How often have we said to ourselves, "What's the use?" During a visit to our local library last winter I chanced to meet my MLA. It happened to be around the time the PCs were debating whether or not to charge us for our Amateur Call licence plates under the VANITY category and an exorbitant fee of something like \$75.

It so happened I had made up my mind earlier that the Government of Alberta were not going to get vanity rates for licence plates from my ego trip in jamming and accordingly voiced this opinion among many reasons and excuses. He made a note on the back of an envelope he was carrying while we discussed the weather and the library.

Each time the subject has arisen since causes a click in the computer and the ROM light comes on. Today's mail brought those long sought licence plates whose application had been marked 'no charge.'

Don't tell me it doesn't pay to put in your nickel's worth once in a while!

Vy 73,  
Moe VE6BLY

#### THE NATIONAL PARKS 100 AWARD

May I extend my personal thanks and congratulations to CARF and Dr. Gord Murray VE3JSJ for organizing the PARKS CANADA network on Canada Day, July 1, 1985. It was an excellent activity and there were thousands of contacts made among Canadian Amateurs on Canada Day between themselves and PARKS CANADA stations. I personally contacted some 19 different NATIONAL PARKS or NATIONAL HISTORIC PARKS. Norm Waltho VE6VW should be very busy checking Canada Day logs with the high level of participation observed here at XJ3XN. Thanks to all Amateurs who gave of their time, equipment and energy to make this Canada Day the most exciting ever for this Amateur.

A certificate, the National Parks 100 Award for 1985, has been printed in the National Parks colours, why not try for it?

The idea is to earn 100 points by working Canadian stations during this anniversary year. For Canadian stations, contacts with most Canadian stations count for 1 point; contacts with Canadian stations using special prefixes count for 5 points; contacts with Canadian stations operating from Parks Canada sites count for 10 points. For U.S. and DX stations,

points are doubled. To receive the award, send a copy of your log, certified by two other Amateurs, to CRRL National Parks 100 Awards Manager, Garry Hammond VE3XN, 5 McLaren Avenue, Listowel, Ontario N4W 3K1. Please include a donation of \$1 or 3 IRCs to help pay for the cost of printing and mailing the awards. And now, work those stations!

Garry VE3XN

#### THE NCDXF BEACONS

I was pleased to receive your note and to hear of TCA's interest in our 20-metre beacon network. But about those two South American beacons—we are both chagrined and disappointed at the developments.

Although the Argentine equipment was received by LU9CN, the custodian, in late May, the beacon is still not on the air. The Colombian situation is even worse. Although we were advised of the assigned callsign, HK4LR/B, so that we programmed the controller and have the unit all ready for shipment, here it is nearly the end of July and we are still awaiting shipping instructions!!

Having given up on the HK, we have looked into a location in Singapore or Indonesia but with no luck at all. The effort of locating Beacon No. 10 is now being directed again toward Western Australia.

But we do have good fortune in having great reliable custodians for the working units. In late May, the controller for the 4X6 beacon failed. Dr. Steve Friedland, WA6DBP/4X, a professor at Tel Aviv U., and beacon custodian was in the hospital. Ahron Slonim 4X4FQ at the university diagnosed the problem as a failed EPROM. That's the memory chip which stores the message. He contacted a Washington, D.C. Amateur who phoned out here, Jack Curtis, of Curtis Electro-devices programmed a new EPROM, we flew it back to Tel Aviv, and the beacon was back on the air in jig time. Sad ending of story is that Dr. Friedland passed away. He taught at Tel Aviv during the school year and worked here at the Lawrence Livermore Lab during the summer.

Some construction work on the Stanford campus has caused us to relocate the W6WX/B unit temporarily. Reception reports indicate that few noticed the change. And Bob Jones, custodian of KH60/B, has just advised me that he has changed from a vertical to a horizontal antenna on the beacon installation there to correct a problem of hifi interference by the neighbours! We are certainly fortunate in having the present custodians, but it is the very devil to find additional ones!

Alan Taylor G3DME, the beacon coordinator for the IARU, has a great plan for a 15-metre beacon network.

He proposes having all beacons on one frequency with time-sharing as is done on our NCDXF 20-metre network. If his plan really does get off the ground, the Foundation may join in providing the controllers. He also has a further plan of trying to consolidate all those catch-as-catch-can 10 metre beacons into a similar setup. I wish him well. Political problems, import restrictions for the equipment, licensing, and finding reliable custodians is no easy matter. It has taken the NCDXF over five years to get this 20-metre net to its present level of organization.

Reports of beacon reception, requests for information on the beacons and suggestions continue to come to me at a fairly steady rate. Your letter was logged in as Incoming Correspondence No. 518. And I've answered most of them also! That's why the typing is so ragged—I often overrun the thing and miss letters—of course, I often overrun my brain also.

I am enclosing a copy of the updated Sunspot Cycle chart. This Cycle is certainly dropping rapidly. In the RSGB RADCOM, G6KG forecasts an earlier-than-usual end of this cycle—maybe a ten year cycle. But other 'experts' have the bottom of the cycle out toward the middle of 1988.

Good to hear from you, and luck with the TCA!

Vy 73,  
Al W6RQ

*And please keep 14.090 to 14.110 MHz clear! — Editor.*

#### YOU'RE WELCOME, LOU!

On behalf of the Winnipeg Senior Citizens Radio Club I want to thank you for the photograph which appeared on the front cover of THE CANADIAN AMATEUR, July/August issue.

Six of our blind ham class tried for their licence, and four of them passed. Some with excellent marks. The other two should pass in a few weeks. This will increase the blind Winnipeg Ham population by 100%. I am going to do a story on them as soon as all six get their tickets.

Again, Frank, I thank you for the picture on the front cover of The Canadian Amateur.

73 Lou VE4AEM.  
*See Lou's picture on p.45.*

#### RADIO OPERATOR, NASCOPIE

Your feature 'The Saga of Northern Radio,' July/Aug. 1985 TCA, was enjoyed, and I look forward to the continuing portion.

I had the pleasure of making the 1938 Eastern Arctic Patrol on the Nascope, GPLS, as second radio operator with George Horner and Captain Smellie, and participated in

*Continued on Page 24* ▶

# DOC DOINGS

## Third Party Traffic/Phone Patching

By Art Stark VE3ZS

There appears to be some confusion and misunderstanding between Third Party Traffic Agreements and phone patching. Just because a Third Party Traffic Agreement is in effect between two countries does it mean that phone patching facilities are available or permitted?

Complaints have been heard from Canadian Amateurs such as: "I was talking to VK4GZ and when I asked for a phone patch he told me he could not do it. Why? We have a Third Party Traffic Agreement with Australia."

Two reasons: Phone patching is not permitted in Australia and consequently he didn't have any phone patch equipment.

Certainly Canada has a Third Party Traffic Agreement with Australia which means that messages may be handled for others than the two licensed Amateurs conducting the exchange of communications, but it does not automatically authorize phone patch connections to the domestic telephone systems.

Agreements concerning Third Party Traffic are between two countries and come under rules laid down by the International Telecommunication Union (ITU). In #6355A of the ITU Radio Regulations it is stated that:

"It is absolutely forbidden for amateur stations to be used for transmitting intercommunications on behalf of third parties."

However, this is immediately followed by an escape clause in #3656 which reads:

"The preceding provisions may be modified by special agreements between administrations of the countries concerned."

Thus in spite of the uncompromising taboo in #6355A, Third Party Traffic between specific countries is provided for.

Now we come to phone patching. This is strictly a domestic concern, usually controlled by the telephone, not the radio, authority of the country concerned. Generally speaking in

countries which have a government-owned and operated telephone system, phone patching is not permitted—usually on the grounds that it would be competitive with a resultant loss of revenue. In Canada (and the U.S.) we are lucky, the private or public owners and operators are more enlightened. In Canada there are no federal government regulations concerning phone patching in relation to Amateur operations. There may be telephone company rules concerning the connection of external equipment to their lines, but these are of a technical nature to protect their equipment from signal overload, mismatching, etc.

However, there do not appear to be foreign regulations in countries which permit third party traffic which would prohibit the third party to be present at the station in communication with a Canadian station from using the microphone and for the Canadian station to effect delivery of the message (the conversation) to the addressee by phone patch in Canada.

## Try these/Essayons

Which of the following statements is false?

The operator of an Amateur station (1) shall transmit his assigned call sign at the termination of each exchange of communications with another station.

(2) may transmit superfluous signals.  
(3) may pass third party traffic during an emergency.

(4) shall not transmit profane or obscene words or language.

Lequel des énoncés suivants est faux? L'opérateur d'une station d'amateur

(1) doit émettre l'indicatif d'appel qui lui a été attribué à la fin de chaque échange de communications avec une autre station;

(2) peut transmettre des signaux superflus;

(3) peut communiquer un message au nom d'une tierce personne en cas d'urgence;

(4) ne doit pas transmettre des paroles ni des mots grossiers ou obscènes.

Answer/Réponse: (2)

### From recent DOC examinations D'après des examens MDC récents

A C.W. transmitter feeding a 50 ohm resonant antenna has a plate voltage of 500 VDC and a plate current of .1 ADC. The TX output stage has a rated efficiency of 65%.

a) What is the DC input power?

b) What is the output power?

c) What is the antenna current?

Un émetteur d'ondes entretenues alimentant une antenne résonante de 50 ohms a une tension anodique de 500 V c.c. et un courant anodique de 0.1 A c.c. Le rendement nominal de l'émetteur est de 65%.

a) Quelle est la puissance d'entrée c.c.?

b) Quelle est la puissance de sortie?

c) Quel est le courant d'antenne?

nearly/approximativement

a) 50 W; b) 32.5 W; c) 0.8 A

Answer/Réponse:

When operating an Amateur mobile/station:

1) a continuous watch must be maintained on the distress frequencies.

2) an authorization must be obtained from the Department of Communications to extend operation beyond a period of 48 hours.

3) operation in the 1.8-2.0 MHz band is forbidden.

4) the use of teletype or facsimile is forbidden.

Lorsqu'une station mobile d'Amateur est exploitée:

1) on doit constamment se tenir à l'écoute des fréquences de détresse.

2) une autorisation doit être obtenue du ministère des Communications pour pouvoir prolonger la durée de l'exploitation au-delà de quarante-huit heures.

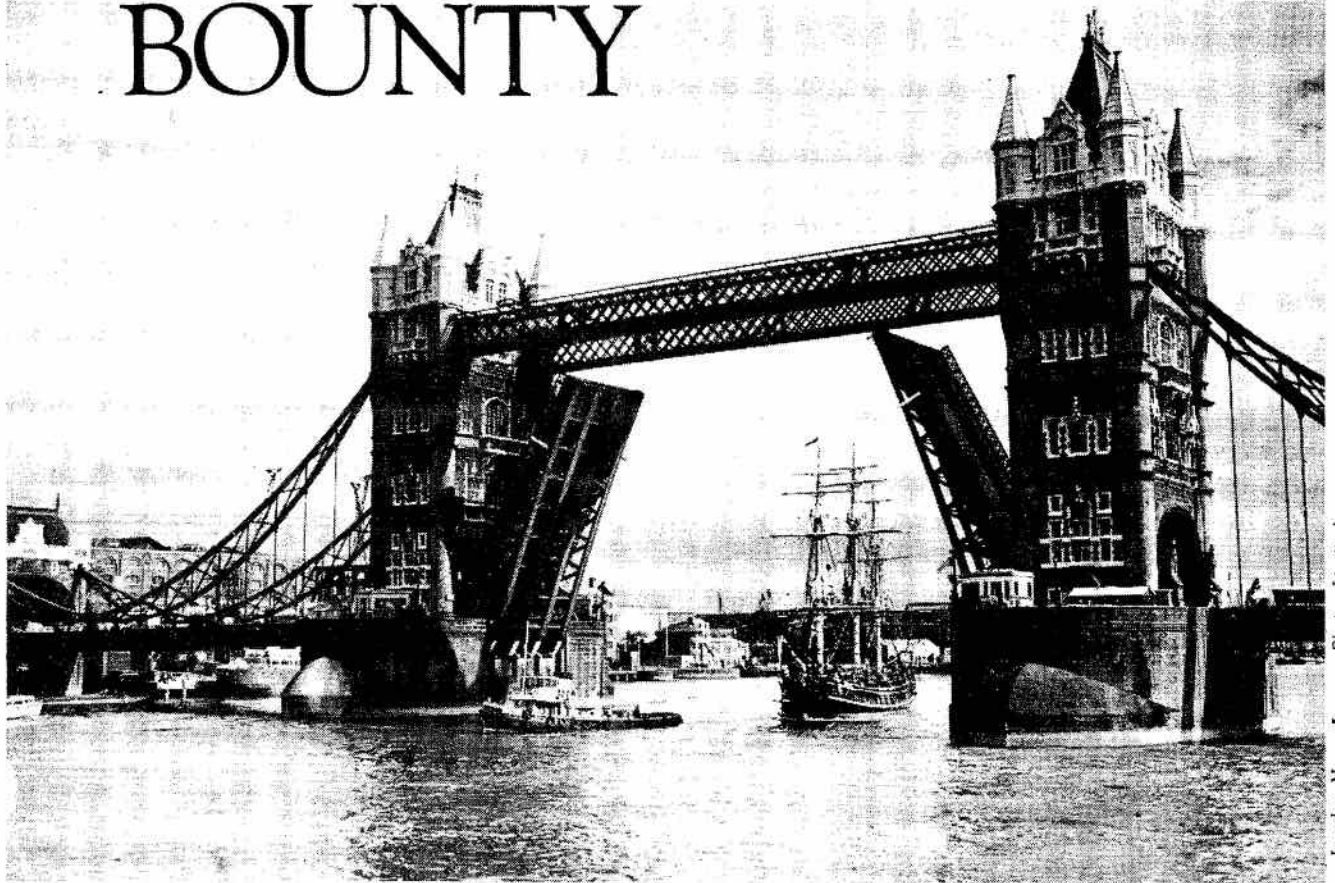
3) l'exploitation dans la bande 1.8-2 MHz est interdite.

4) l'utilisation du téléimprimeur ou du fac-similé est interdite.

Answer/Réponse: 3



# BOUNTY



London News Agency Photos Limited.

The Canadian replica of H.M.S. BOUNTY passing through Tower Bridge, September 1962.

By Spud VE1BC

**M**en, I have kept you here after the reading of the 'Articles of War' to hear a recitation by Signalman Roscoe. It concerns a crew of mutinous dogs who met a miserable and well-deserved end some years ago. Ponder their fate, and avoid it yourselves. Roscoe!

Sir!

You may start your recitation when ready. At ease, men.

Aye, aye, sir.

Well, shipmates, in 1786 a vessel with the name BETHIA made a voyage from London, England, to Nova Scotia. This vessel was built at Hull, England, 1784. I have never been able to prove that this was the same vessel, but one fitting this description was purchased by the British Admiralty (Royal Navy) and was refitted, renamed the BOUNTY, and was sent to the South Seas (South Pacific) to load a cargo of breadfruit plants for Jamaica. Captain William Bligh was placed in command of this ship.

On April 28, 1789, Fletcher Christian led a mutiny against Captain Bligh in BOUNTY. He cast Bligh with 18 crewmembers adrift in BOUNTY's boat. Bligh and all but one

of those with him survived this ordeal to return to England. Christian, nine mutineers, six men and 12 women from the island of Tahiti, settled on the island of Pitcairn in 1790.

Since the ship TOPAZ put into Pitcairn Island for water in 1808 and discovered the sole survivor of this mutiny, John Adams, this has been one of the best sea stories of all time. Adams was botanist in BOUNTY and the lone survivor from vicious fighting among the colonists because the number of men outnumbered the number of women.

The BOUNTY I joined as Radio Officer, in 1962, is a replica of this vessel. Christian had burned the original in what is now known as Bounty Bay, Pitcairn Island. This replica is the first replica of a ship to be built from the keel up for the sole purpose of making a movie. The movie is 'Mutiny on the Bounty,' starring Trevor Howard and Marlon Brando.

This BOUNTY was built and is registered at Lunenburg, N.S. She is 118 feet long. A bit longer than the original's 96 feet. This one is also a bit beamier. This is to compensate for her

large diesel engines and to permit the movement of cameras around her deck.

She has four Caterpillar Marine Diesel Engines. Two of the size found in the D8 Caterpillar Bulldozer for main propulsion and two smaller diesels each connected to a generator for electricity. One diesel generator was in use at a time, developing both 110 volts and 440 volts for the ship's electrical requirements.

She has ten thousand square feet of sail, ten miles of running rigging (the ropes which operate the sails) and official number 312725. She is 110.98 net tonnes and 415.52 gross tonnes. Her international call sign is VYFM. One of the best call signs I ever sailed with. By dragging the Y and M, snapping and V and F quickly, one could make this quite distinctive. At least I felt that it gave this call quite a personal characteristic in CW.

The efficient operation of radio equipment requires a good electrical connection with the earth's surface and BOUNTY's wooden hull made this very clear. All of her main

Continued on next page ▶



electronic equipment was leased from the Radio Corporation of America. The electronic equipment was the latest tube type; the transistor was just starting to make an appearance. BOUNTY had a main medium frequency transmitter (350-515 kHz 250 watts), a high frequency transmitter (2-24 MHz 300 watts), and two general coverage super-heterodyne receivers (85-560 kHz and the other 1.9-25MHz), from the RCA 5U Console and CW only.

A small 2 MHz AM radiotelephone of around 50 watts was mounted on top of the two receivers. All of this equipment was installed in my cabin with my bunk, locker, desk or shelf for operating, bookcase, and shelf with this equipment secured to it; one of the most convenient stations I have operated.

Frank Milton W6BZN, supervisor of the sound department at Metro Goldwyn Mayer was instrumental in obtaining the Amateur radio station for BOUNTY. Frank's name will often appear in the sub-titles shortly after the Lion roars in many MGM movies. Frank and I fitted the Amateur station in the radio room, on one of the book shelves, while alongside Long Beach, California. A Collins KWM-1 via home-brew tuner to the main antenna switch which permitted the use of one of the inverted L antenna. This was towards the end of filming the movie and just prior to sailing on a publicity cruise to advertise the movie.

BOUNTY's chart room had a Loran receiver, small ten-inch radar, and a small Bendix direction finder. The radar antenna was mounted up on the foremast, with plug-in connectors so that it could be removed easily and not appear in any of the film. For the same reason the loop antenna of the direction finder was mounted on top of this unit in the chart room. Therefore, the direction finder never worked as designed, but made an excellent broadcast receiver.

The company officials insisted that her main aerial had to be cap-tarred in order to protect the seamen working aloft on her sails. BOUNTY's first antenna was a long piece of electrical welding cable, the stuff that runs from the welder out to the clamp holding the welding rod. This of course is cap-tarred, but horrible stuff for an aerial.

The actual wire inside is multiple strand fine copper resembling horse hair. When salt water struck these fine wires, they turned the many shades of the rainbow, and many more shades of their own, in other words corrosion and high resistance to electricity.

This main aerial entered the radio room via a large feed-through insulator. The inside connection was above the operating desk. The outside connection was up above the after-channel on her starboard side. Every

so often I had to climb over the bulwarks and get down on this channel, then remove a foot or so of the main aerial to get rid of this corrosion.

Captain Coggins got a new aerial for the station just prior to crossing the Atlantic. It was proper ship's antenna wire, the seven-strand heavy copper, but cap-tarred.

BOUNTY's main aerial was the standard inverted L or Marconi configuration. It ran from the insulator above the channel to the top of the mizzen mast over to the top of the main mast. I can see it in the movie a number of times, and in every photograph I have ever seen of this BOUNTY.

In addition to the main aerial, there were two more. A long vertical wire ran from a small feed-through insulator on the opposite or port side



Signalman Roscoe.

Holman Studios, Middletown, N.S.

of the ship to the top of the mizzen mast. This we called a receiving aerial. I had a small knifeswitch for this on the bulkhead separating the radio room from the chart room next door, in order to use this on the main receivers, but rarely used it and left it switched to the loran in the chartroom.

The third aerial we called the radiotelephone antenna, mainly because this is where we found the radiotelephone worked best. I could use this as the main station's emergency antenna via the large main knifeswitch mounted on the radio room deckhead just above the main feed-through insulator. This was another Marconi or inverted L arrangement which ran up and across from the mizzen to the main mast, crossing at the main yard.

"Sir, sir, the mainbrace atween mizzen and main, it's slack, sir!"

"Thank you, Easy. That's the aerial. Continue, Roscoe."

One cannot blame Frank Milton W6BZN for being rather disappointed with the licensing of the Amateur Station he and I fitted in BOUNTY, VEØMO. The Collins KWM-1 was the top of the line Amateur rig of the time: a Transceiver, USB or CW on the 10, 15 and 20 metre Amateur bands only.

The Canadian Maritime Mobile Licence at that time permitted one to use from 14.00 to 14.25 MHz only in the 20 metre band, and all of the 10 and 15 metre bands while on the high seas. This did not permit a daily sked on 14.3 MHz as Frank had planned.

The real problem lay in the fact that there was still a lot of AM equipment in use. A good portion of the Amateur community had little if any use for SSB. There was a gentleman's agreement that the SSB transmissions were to stay out of the band from 14.20 to 14.25 MHz. This, in effect, did not permit American phone operation on 20 metres with this KWM-1.

Frank and I had a few QSO's in this forbidden area, but in the end I simply hung out around 14130 kHz. The pile-ups were unreal. Any time the band was in, all I had to do was give my call on this frequency and the explosion of many stations was the reply. I fully expected this explosion to blow the speaker off the bulkhead at any time.

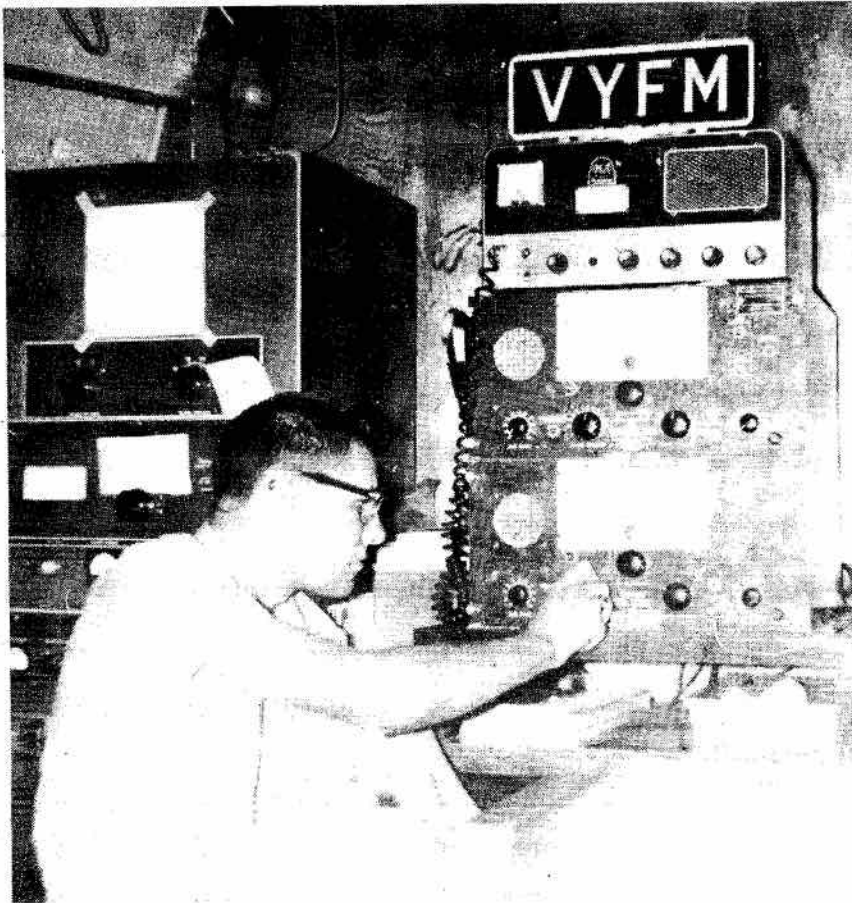
My first QSO with the KWM-1 was with Ken K2JBB. Talk about a small world. Ken was operating club station KL7AIZ at the U.S. Naval Communications Station, Adak, Alaska. With Ken was Chief Petty Officer Dick Ogden, USN. Dick and I were together for nearly two years at HMCS Coverdale, Moncton, N.B., three years previous to this QSO on June 29, 1962.

I spent all my time on the air. When not on watch on the marine bands CW I was on the Amateur bands, mainly on phone. The agreement was that the KWM-1 was mine on completion of the voyage if I would use it. I wanted to make certain that it was felt that the agreement was worthwhile.

On July 1, 1962, two days after my first QSO with Ken, I managed to connect with a most amiable group of VE7 Hams. We had sailed from Seattle, Washington, on June 28, after visiting Vancouver and Victoria, and were now southbound of San Francisco. The Seattle World's Fair was on during our visit and at one point we had more people visit BOUNTY than this World's Fair. We were quite an attraction at all our ports of call. By July 1st we were far enough from VE7 land that I was putting a good signal into that area on 20 metres. I had a QSO with Len







Joan Roscoe

The radio room, BOUNTY.

VE6TF and Russ VE6VK on the 29th. I did not work a VE on the 30th.

On my third VE QSO, my Amateur operating got a good injection of proficiency. I was not well-organized. I never had a proper Amateur Log Book. I simply used a spare Proces Verbal Marine Log which is a very poor Amateur Log. Fortunately I had learned good log keeping from the Navy. I hate to think of what it could have been without that experience.

Frank W6BZN sent me a telegram stating the Amateur Call Sign while we were in Seattle. I did not receive the actual licence until we arrived in San Francisco and I did not receive permission to operate in U.S. territorial waters until we arrived in Balboa, Panama.

My third VE QSO was with Marv VE7AKD. By this time I had accumulated a few questions and VE7AKD asked me to stand by for 15 minutes at which time he came back on with several more VE7's. Two were most helpful. The first was George Kitson VE7ALE who volunteered to be my QSL Manager. Up until then I had spent the best part of each QSO transmitting the address for BOUNTY. I was not in a Call Book at the time and received my first call, VE1AGN, while sailing in BOUNTY.

Only one who has been in a similar

position can fully appreciate this move by George. George was most helpful in many ways. The other most helpful contact was Laurie VE7IT. It was Laurie who put me in contact with the late Floyd McCoy VR6AC, a direct descendant of the BOUNTY mutineers. I managed my first QSO with Floyd on July 13. He was receiving me a bit better than I could hear him, but none the less a most enjoyable QSO.

Prior to this first QSO with VR6AC, Laurie VE7IT had mentioned to me that VE1BC, back home in Nova Scotia, was most anxious to contact me. VE1BC and I had our first QSO on July 12. VE1BC was the late William S. Bligh, a descendant of Captain William S. Bligh of the original BOUNTY. Via Amateur radio I had made contact with the descendants of both sides of the mutiny within a day of each other.

We tried to make a three-way contact with BOUNTY, VR6AC and VE1BC, but never succeeded. Our best effort was on July 17 and I have QSB very bad recorded in the old Proces Verbal Log. VR6AC 3/3, VE1BC 5/5, and with VE7IT and VE7ALE as 4/4. BOUNTY's QTH is recorded as 2040N 10700W— off the tip of Baja California, Mexico. I remember Bill VE1BC stating that he

could just hear Floyd VR6AC and that was about all. Floyd VR6AC said he could not hear Bill VE1BC at all.

It is amazing how many fond memories come from this old Amateur Radio Log. It has been a long while since I last dug it out and looked through it. I can still hear a few of the QSO's recorded in it. Bill VE1BC owned a Radio TV business in Halifax. In his store window he kept a photo of BOUNTY and a chart. He kept a daily sked with me in BOUNTY and kept our QTH plotted on this chart. He had our wives over to his home for a chat with their partners in BOUNTY and went out of his way to make life much better for us in BOUNTY.

It was with great pleasure that I was able to present Bill VE1BC, and his XYL Evelyn VE1OW, with a large engraved silver tray that the crew in BOUNTY had purchased for them in appreciation of their service to us. I was able to do this shortly after arriving home from BOUNTY.

My experience in BOUNTY seems more like a dream than anything else. After a visit to Balboa, Panama, we visited New Orleans, Miami, Boston, Calais, France, Dover and London, England, Santa Cruz de Tenerife, Canary Islands, and then New York City for the premiere of the movie on Nov. 8, 1962.

After New York City we made a quick run down to visit Baltimore, Philadelphia and Washington, D.C. We then sailed to Oyster Bay, New York, and paid BOUNTY off at Jacobsen's Shipyard. Here, BOUNTY was stripped of our accommodation below decks and made to more closely

*Continued on next page* ▶



Joan Roscoe

Main operating position, BOUNTY. Spud sends message from Bligh to Admiralty. Credit Joan Roscoe.



resemble the original ship for the New York World's Fair of 1963. After this World's Fair she was towed to her present berth in a Tahitian Village at St. Petersburg, Florida.

My final QSO was with Thomas F. Kelly W3AEC on Nov. 19, 1962. We paid off BOUNTY on Dec. 5 and I got to keep the KWM-1. The Air Cadet Club Station at Saint John, N.B., had the KWM-1 the last I heard of its whereabouts.

"...a pusser red lead and bacon breakfast..."

"SILENCE ON DECK! Continue, Roscoe."

In May of 1965 Bill Bligh VE1BC met an early demise, unfortunately, from a brain tumour. Evelyn VE1OW, changed her call to his shortly after this but was never very active. She let me have the VE1BC call sign ten years ago and has not held one since.

Since I sailed in BOUNTY the people of Pitcairn Island have always seemed like family to me. Those who know that I sailed in BOUNTY often send bits of news about the island. Tom Christian VR6TC was active while I was in BOUNTY. At the time he was CW only and used to work cross-frequency, which I presume is the proper terminology. Tom transmitted on one frequency and listened several kilocycles (they were then) up the band on 20 metres.

I tuned this performance in one evening with the idea that I would have a QSO with him. The pile-up was even more severe than the one I was able to generate from BOUNTY. Without the limitations of the KWM-1 transceiver in working VR6TC cross-frequency it would have been most difficult for me to make contact with him. I have never had a QSO with VR6TC.

My only QSO with the island was via Floyd VR5C. Brian Young's XYL Kari is now VR6KY. Kari was a ship's

Radio Officer and apparently chose this trade back at her home in Norway in order to be able to visit the island. There are others who hold the VR6 call apparently for the occasional DX expedition only. Tom's XYL Betty often works CW from the marine radio station on the island, ZBP, but I have no knowledge of her working the Amateur bands. Irma Christian also operates CW from ZBP, but I have no knowledge of her working the Amateur bands either. Possibly Betty and Irma enjoy rag-chewing with the ships going by more than the pile-ups they would have to contend with while on the bands.

The ship's company thanks you, Roscoe. Any seaman who dares to

complain to the editor of TCA about Roscoe's narration will be keel-hauled.

We've been long enough on this tack, I think, Christian. Dismiss the watch below and prepare to wear ship. ▲



Joan Roscoe

## Fonds de défense de Jack Ravenscroft VE3SR

Jack Ravenscroft VE3SR, anciennement VE2NV, fait face à une poursuite civile présentable en cour de comté de l'Ontario, le 3 mai 1985, par laquelle on demande une injonction permanente lui interdisant d'utiliser son transmetteur Amateur.

Le demandeur soutient que l'opération par VE3SR de son émetteur cause, d'une certaine façon, un effet quelconque sur des appareils ménagers et constitue un risque d'incendie à cause du fonctionnement intermittent du four micro-ondes chez le demandeur.

Il est prouvé que VE3SR opère sa station selon les conditions de sa licence; par contre le fonctionnement du four n'a jamais été prouvé.

Tous les propriétaires d'émetteur

devraient s'inquiéter sérieusement du succès possible de cette action civile, qui aurait pour effet d'établir une jurisprudence permettant à quiconque d'obtenir des injonctions civiles contre tout propriétaire d'émetteur autorisé par licence fédérale.

On peut trouver des détails relativement à cette cause dans le rapport du comité sur les interférences du Club de radio-amateur d'Ottawa. Ce rapport est intitulé: "Appliances susceptibility and the Radio Amateur".

On demande des contributions en argent qui peuvent être envoyées à: Fond de défense Jack Ravenscroft, Casier postal 8873, Ottawa (Ontario), K1G 3J2. ▲

## CNIB Amateur Radio Program Newsletter

Since 1967, CNIB has had an Amateur radio program which, amongst other things, provided Heathkit HW12 and HW32 rigs to blind hams at a very low cost. This enabled over 600 whitecaners to get on the air, and the program has been very successful. But the HW transceivers are nearly 20 years old in design, and furthermore, are only single band rigs. They now are obsolete, although still functional.

We now will be providing a replacement rig which is truly state-of-the-art, a TEN-TEC Argosy II. This is an all-transistor rig, with only the frequency to tune, no final tuning. It is rated at 100 watts input, and has six bands covering from 80 to 10 metres,

including the new 30 metre band. First units are expected to be in our hands by August 1985, at the latest.

We have experimented with three types of multi band antennas that do not require an antenna tuner or ground. All are available from commercial outlets in Canada, but we are investigating the possibility of constructing them ourselves, as we do for the coaxial dipoles. If we succeed in this, they will be made available at cost from CNIB. Use of one of these antennas will permit multi band operation with only the one antenna. Of course, if you have the space, you can erect a separate coaxial dipole for each band, and these will continue to be supplied as at present, but for a nominal cost. (Extract.) ▲

▷ Continued from Page 19

establishing the HBC stations installed in 1938.

In the fall of that year the HBC arranged with me to instruct three persons of their northern staff in code transmission and reception, as they were expected to operate CW stations upon their return north following furlough.

The 1938 trip of the Nascopie was a high point in my ten years at sea, sailing out of East Coast Ports, and my last trip as a commercial operator.

My thanks for references to a part of the communications industry, which has been my life since 1927.

73

Del Black VE3CNP.

▲



# Back from the Dead

By Marcel Gervais VE3CPA (ex VE7DSR)

**O**n August 19, 1974 at 21:30 h, I killed myself. Some of you people may ask: "How can you kill yourself and still be here to talk about it?" It's like this. You have about one chance in a million of surviving an 18,400 volts electrical shock. I have been given a second chance and would like to share my experience with you.

In 1974, I moved from Ottawa to Fort Nelson, B.C., milepost 300 of the Alaska Highway. Fort Nelson is a small village of about 5000 habitants, half of whom are native Indians. I was working for CP Air at the airport and also living on the airport grounds. In a small village you get to meet everyone.

I let it be known at the time that I was an Amateur radio operator. I also let it be known that I would be erecting an antenna and beam on a 50-foot tower. At this point several people volunteered to help, even offering the use of a Jet Ranger Helicopter to raise the antenna. I would have to wait a week to two for the chopper. We would do it after work, some night. No problem, because the sun shines until 23:00 hrs. in the north during summer.

However, as you all know, we Amateurs are very impatient and cannot wait to erect antennas. Tuning the receiver with a piece of wire as an antenna, what DX I can hear! It did not matter what the time of day, I heard it all. I could not wait, I wanted to put up my beam right then and there!

I had some friends from the airport come over to help raise the antenna. We had a few beers before we began. It would not be difficult as the antenna was only 50 feet and had a single 6 element beam at the top. Or so we thought... We used a forklift to raise it up as much as possible.

However, it had rained during the day and the grass was still wet. Because of this, the forklift could not get enough traction to push the antenna up. We then decided to pull it up with a rope and truck. What a mistake that was! We were not sure if it would work. Some said, "Yes it would" and some "no."

At that point we should have stopped, but again the usual impatient Ham... We fastened the guywires to the tower. Three people

held on to the guywire to hold it steady while pulling it in place with the truck.

At this point we were about 10 feet from the high voltage line. "No problem" we thought. Boy oh Boy!!

With the guywires manned, and the rope tied to the truck, I put my foot on the base of the tower to hold it in place. I signalled to the truck to pull. As I said, I had my foot on the base of the tower and had placed my hands on the tower itself, trying to hold it in place while the truck was pulling.

A split second later, I was dead. The time it took to look from the truck on my left to the top of the tower, it was too late. I was dead. The tower had tilted a bit, hit the power lines and I had electrocuted myself.

After the power had been turned

---

**Learn from other people's mistakes. You won't live long enough to make them all yourself.**

---

off and the wires broken, Dick Brown, an ex-armed forces person with paramedic training administered mouth-to-mouth resuscitation to start me breathing again. This, I'm told, took four to five minutes. Lyle Kennedy administered C.P.R. for about three minutes before my heart began beating again.

Thank God there were people there who knew what to do. "What did it feel like, one might ask?" It didn't hurt. I felt a great vibration going through my body. I remember screaming, then all I remember is hearing Lyle Kennedy, an RCMP neighbour, say: "He's breathing now. He's O.K."

The pain started once I was resuscitated. Lyle had his hand on my chest and the weight of it was unbearable. I could not move at all. I could not even lift my head off the ground. My right foot was burning and it looked as if I had spilled acid all over my hands. They were burned and looked dull brown.

The pain in my right foot was excruciating. It felt as if a torch was burning it; the skin was black and there was a gaping hole in the foot

where the bone was showing through. What pain!

Someone called for the volunteer ambulance. It took 35 minutes to arrive. At the hospital, a new doctor met me and did not seem to know what to do. He gave me something for the pain and kept an eye on me for that night. You cannot imagine the pain.

But my problems had just begun. I spent three weeks in this small hospital. During this time, I was given pain killers and was told by the doctor that the wound should heal by itself. They never cleaned the foot, only put a powder on the burnt area.

I felt high all the time because of the drugs, and I noticed that my foot was turning green. At that point, I signed myself out of the hospital and C.P. Air flew me to Ottawa. I was admitted to the Ottawa General at once and began a series of treatments and operations.

The pain was still unreal. They did not give me any more drugs because of the excessive amount I had been given while in Fort Nelson. Here, I underwent six operations and two skin grafts. I spent four months on my back in bed and cried a lot because of the pain. I also thought continually about what had happened. I was just glad to be alive.

What had really caused me to have this avoidable accident? It's simple. I did not take the time to check all the things that could possibly go wrong. I knew what could go wrong, but I chose to ignore it. This will never happen to me again.

**But believe me, it could happen to you. You must never take a chance, you must play it safe. Wait and be sure, wait and be safe.**

Stay away from the power lines, well away from them. Don't be impatient. Don't kill yourself. Life is worth living.

Amateur radio is a fun hobby, keep it that way.

My thanks to Lyle Kennedy and Richard (Dick) Brown for saving my life. Thanks for giving me a second chance. Make sure you don't need a second chance. Do it right the first time. Be a safe Ham. ▲

---

Principles have no real force except when well fed.



# YL

# NEWS & VIEWS

By Cathy Hrischenko VE3GJH



**S**usan VO1OI told me that the Canadian Girl Guides were celebrating their 75th anniversary this year. She wondered if we could have a national JOTA (Jamboree on the Air) as a project for CLARA (Canadian Ladies' Amateur Radio Association).

I presented it to CLARA asking for YL participation and any OM that would like to help. And—that's how it all got started.

A call to Girl Guide headquarters was received with enthusiasm. They suggested we use Feb. 17 to 24 as Thinking Week for the JOTA. I was given names and phone numbers to call in my area where I was again met with excitement from the leaders and skeds were set up with the girls.

The next one to give me assistance was Dave VE3FOI from St. Catharines. Dave did all the footwork in getting permission and use of the special CG call. Newfoundland used VF1.

The idea of a Jamboree on the Air (JOTA) has been used by the Boy Scouts for years and gradually the Girl Guides have been participating in their October JOTA. This was special as it was the first joint CLARA and Girl Guides only, to celebrate the Girl Guide 75th anniversary. I'd like to say the OMs were most helpful, both in planning and in participation.

I'll start with activities on the east coast via Susan VO1OI. The OMs taking part were: VO1AB, VO1CA, VO1CE, VO1JO, VO1LR, VO1KV, VO1GE. YLs: Susan VO1OI, Isobel VO1PV, Mary VO1MF, Chris VE1AKO, Alma VE1MY, Ann VE1TK, Marg VE1YU, May VE1AMB and Jeanine VE1BWP.

Susan reports: 75th anniversary went with a bang, with over 250 girls and leaders taking part. Newfoundland Amateurs were quick to volunteer and rounded up Brownies, Guides and Pathfinders in shacks from St. John's to Port aux Basques to Labrador City.

Jean VO1KV acted as NC during Saturday. Mary VO1MF had her shack full of Guides. VO1PV had Brownies in her Guides shack, operating under OMs call sign VO1GE. Most of their operation took place on 80 metres with about 20 VO stations.

VO2CP Randy ran 53 girls past his

microphone. VO1CE Mac had 24 girls and a large assortment of leaders and managed to record all their names, classifications (*he now knows what a Tweenie is*) and everyone of them with something to say. Mac will be guest speaker at their Annual Mother-Daughter banquet.

Susan missed out on most of the VO activity being the furthest west and one of the few that could copy the VE1s well. The girls in her shack



*Cathy VE3GJH and Tina share the microphone. That's Dot VE3HUO (Cathy's daughter) looking on.*

talked to Guides and Pathfinders in Grand Falls N.B. with Jeanine VE1BWP and Rene VE1CH. Roger VE1BWQ showed the group outside to watch the beam rotating. They talked to Guides in New Waterford N.S., with Mike VE1BYR and a Pathfinder with Don VE1CEN.

Marg VE1YV in Moncton had 2 guides. Ann VE1TK received greetings from Cape Breton Guides via Vern VE1AJ. A Guide and Brownie in VO1RM's shack in Corner Brook Nfld. had a contact from Stan VE1UV.

Stan told the girls about his days as one of the first blind Scoutmasters in Canada in the 1950s. He first became involved as a CW expert to help the boys with a badge. Then he took the plunge and became a leader.

I had girls and leaders in every day

of Thinking Week. About 100 Brownies, Guides and Pathfinders plus several leaders and a father of a Guide (not Bride). Also Barbara Miesner from Girl Guide Headquarters.

I was surprised to find that rarely was anyone mike shy. In fact, had I not pulled the switch they would have talked all night. Irene CG3IRS and Thelma CG3CLT were on nightly to talk to the girls.

Fred and Dave using the Salvation Army station CG3SAS were regulars. VE3BJR and VE3EQE Marg talked to the girls here. Jean CG3MNI and new Guides talked to my group and she helped with others. Grace CG3HZV Elliot Lake, Neal VE3LDV, Ralph VE3UY with Susan VE3BEC called in Pauline VE3LQA. Jean VE3MNI, VE3HQR/W4, Alma VE1MY came booming in to us to talk to the girls.

Fern VE3CPB and Ollie VE3LXO who is a leader had 11 brownies and 3 leaders at their shack from Gananoque.

Gerry CG3MPH—the girls were fascinated when they were told she was blind and how she became a ham. They were also interested in her seeing-eye dog and asked questions about it and how she was able to do housework.

Then XO1ANK came on with his special 200 anniversary call—CG Girl Guide outdone by 125 years! VE1BYR came on to say he'd be on Saturday with Guides.

Then we worked several G stations (one Guide) GB2TD—thinking day—Dennis had two boy scouts at the headquarters with him. At that time they were just SWL but have since taken their exams.

I was given an official message from Girl Guides of Canada Headquarters. Our first contact was super—clear 5-9, but wouldn't you know, the day we had the message to deliver conditions had deteriorated, but with the help of Gord VO1CU we got the message through.

Message read: via GB2TD.

To the United Kingdom Commissioner

Greetings from Canada on both your birthday and ours.

Congratulations on 75 years of fun, adventure and challenge.

I wonder if Lord Baden Powell ever envisioned that 75 years later, his



philosophy would be shared by 8.5 million girls and women around the world.

73, Best wishes as we look forward to the future and excitement that be ahead in Guiding.

Mrs. Rita Currah,  
Chief Commissioner,  
Girl Guides of Canada.

We also had QSOs with G4XPL, Tim G4STH whose YL is Hazel G4YLO, VO1CU, VF1OY and VF1CE. Hope I haven't missed anyone.

The girls exchanged ideas for raising funds. They made arrangements to be pen pals. They told what each group did to celebrate Thinking Week, and most of all— they enjoyed themselves.

The general opinion on the whole project was— when can we do it again? The girls have all sent me personal Thank Yous.

I'd like to thank all those that took part in any way. The girls would like to thank you and CLARA and Girl Guides of Canada would like to thank you.— Cathy VE3GJH.

Report from Ollie VE3LXO, a Brown Owl, and her OM Ferd VE3CPB from Gananoque: Feb. 19 at 6:30 p.m. local time the 3rd Gananoque Brownies and leaders met at Brown Owl's house. They were going to take part in the Canadian Girl Guide I.O.T.A. There were 11 Brownies and three leaders.

The girls were given a demonstration of different modes of Amateur Radio using the computer and receiving teletype sent by John VE3LGS on 2 metres. Each one of the girls talked to Joe WB2TUP in Watertown, New York, U.S.A., through the W2WLR repeater.

Then came the big moment the girls had been waiting for. They were going to talk to Cathy VE3GJH and the 11th Richmond Hill Brownie pack on HF. In their pack, there were 24 Brownies and six leaders.

The 3rd Gananoque Brownies Laureann, Jessie, Kathryn, Lesley, Jennifer, Amy, Megan, Shelley, Angela, Nicole, and Robin. Leaders were Nancy, Laura and Ollie.

Thanks to Cathy CG3GJH for the contact. The Brownies and guides that took part in the Jamboree will remember it for a long time to come.

△



Sweet lasses of Richmond Hill.  
Photo: VE3MPG.



Ollie VE3LXO (back row, left) asks the third Gananoque Brownies: "Now what mischief have you been up to?"

to KATY  
From  
CHRISTA



BROWN OWL



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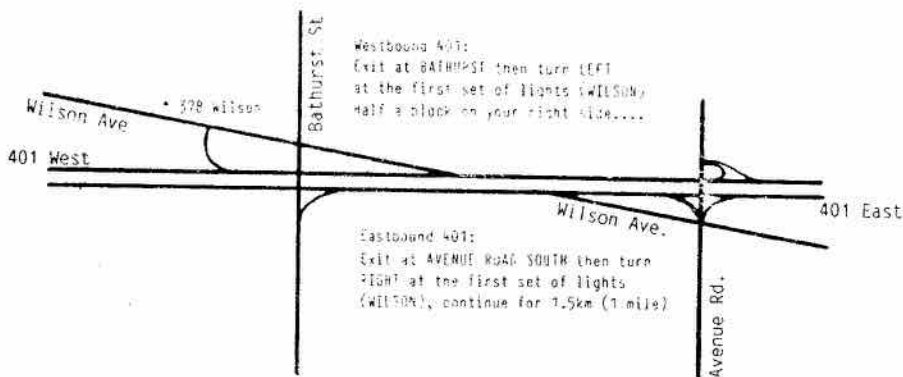
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# From the Clubs

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



**A**fter hearing so much criticism of CARF in recent months as it attempted to cope with some serious administrative problems, I felt compelled to respond to Ron Walsh's appeal for assistance. After all, CARF, which does so much for all Canadian Amateurs, can exist only through the efforts of volunteers. And one of the easiest ways to discourage volunteers is to continually criticize their efforts when they are trying their best to do a difficult job at the expense of their valuable free time.

So, with a certain amount of trepidation, I offered my services, not knowing just how I could be of assistance. And probably with an equal amount of trepidation, Ron asked me if I would be interested in looking after the Affiliate Club Program. And with a naivete bordering on foolhardiness, I agreed to do so without having any idea of what was involved.

After asking a few questions, I found the following information:

• **WHAT IS AN AFFILIATE CLUB?** That's easy. An Affiliate Club is one that is on our mailing list.

• **HOW DOES A CLUB BECOME AFFILIATED?** That's also easy. A club can become affiliated simply by requesting to be placed on the mailing list, and providing the name of a club representative and his or her address.

• **WHAT ARE THE ADVANTAGES OF BECOMING AFFILIATED?** There are several advantages to affiliation; for example, members can renew their CARF memberships and can obtain CARF publications through their affiliated club at a discount; clubs can use the facilities of CARF to publicize their special events, etc.

After my discussions with Ron and others, I can see the Affiliate Club program as an opportunity to help clubs across the country share ideas.

Most Amateurs seem to be very interested in what other Amateurs are doing, especially if those activities are a little out of the ordinary. I would like to hear about any activity that you and your club are particularly proud of. You can use this column as a means of 'blowing your own horn.' Your activity might just be the spark needed by some other club.

Of course, we are interested in your

special events as well; if you have something planned, let me know so that I can help you with your publicity.

Finally, I would like to make two requests: first, to be sure that I have a correct list of affiliated clubs, would you please send me the correct mailing address of your club or your CARF representative (your club QSL card, perhaps?); and second, from now on would you please send a copy of your club bulletin to me rather than to either Frank Hughes or the Kingston office. I would also like to suggest that if there is some information in your bulletin that you would like to see written up in *TCA*, mark it in such a way as to bring it to my attention.

73 to all for now.

## Ham Memories

The North Okanagan Radio Amateur Club is publishing a very interesting column in their publication called 'RAGCHEW' headlined 'Ham Memories.' This is a series of experiences and memories related on tape by senior hams living in the Vernon area. These stories have been solicited and prepared by Lou Melanson VE7BAJ and Blake Tweddle VE7EFA.

Now, there's a good idea. Maybe a lot more clubs should consider doing the same before much of the early history of our service is lost forever. Thanks to Victoria Short Wave Club Inc., *Zero Beat*.

Thanks to *Zero Beat* also for the following.

## A New Club...

The Gorge Road Hospital Amateur Radio Club will have its official opening on June 14. This venture, which was promoted and engineered by Al Fast VE7XZ, is a joint funding effort of the Kinsmen Clubs of Victoria, Saanich and Juan de Fuca, The Kinsmen Rehabilitation Foundation of British Columbia, and the British Columbia Lottery Fund.

This Amateur radio station is being established for the use of residents of the Gorge Road Hospital Extended Care Unit, where there are presently 24 young adults (about half are high quadruplegics). All of these high quads are mentally alert, the majority are men, and the average age is 28. Because the mobility of these

residents is so limited, their awareness of the 'outside world' becomes very limited as well. By broadening their contacts they will become less institutionalized and make contacts outside the hospital. Also, Amateur radio will become a real equalizer in that they can communicate with others who can be completely unaware of their physical disability. Even those with speech difficulties will not be limited as they are presently all accessing their computers with Morse Code and so will very easily use the radio.

When discussing the Ham Radio, one of the residents summed it up: "It would really help to pass the time." One thing these residents do have is an abundance of time, and by helping them use that time productively and positively we enrich their lives and expand their horizons.

CARF wishes GRHARC the very best.

## ...And another

We have a new Affiliate Club, the Baden (West Germany) Amateur Radio Club. The President of BARC, Bob Shehyn VESAF/DALJG reports that "...the club is exclusively Canadian and we are very proud of it too! However, there is one thing lacking and that is the club is not a member of CARF. (This has since been corrected.)

"A little history of our club reveals that the rotation of personnel each year causes quite a stir within the club. Sometimes our club members which make up the club are newly licensed hams and have not got their feet wet yet! Since my arrival last July, 1984, we have recruited 10 chaps who left for Canada and I just met a VE2 who would like to become one of our members. As you can see by the figures, ours is not a large group. Last October, our club held classes for the Amateur group and by the end of the June sitting of the DOC exam, two of the chaps earned their theory and regs. Now they must knuckle down and learn the CW. Our third chap, VE3OKC— Bob Salamon— earned his Advanced Certificate. I look forward to our new season.

"On the fifth of March this year, we moved into a brand new facility which also houses the entire Canadian community activities offered here. Our room is quite large and together



with the new crank-up/fold-over 18-metre tower we are well on our way to better things in Amateur radio. We hope that's with all the goodies available, it will encourage more people to get interested in our fine hobby."

Bob says he hopes to be able to carry on the traditions of some of his predecessors by contributing to *TCA* some articles from DA-land. We will be looking forward to hearing from him.

### Manitoba Marathon 1985

The seventh annual Manitoba Marathon was held on June 16, 1985. It started at the University of Manitoba and ended 26 miles 385 yards later at the Pan-Am Stadium, also at the University of Manitoba.

There were but 3500 runners entered, divided between four events: the Full Marathon, the Half Marathon, the Challenge Relay, and the Super Run. The Super Run was a 2.6-mile course aimed mainly at inexperienced runners and junior or high school students. The Challenge Relay was a full marathon relay event. Teams of five runners ran the full marathon course in 5 mile legs. About 265 teams entered the relay this year.

The race started at 7 a.m. and the winning runner crossed the finish line in 2 hours 18 minutes.

The Manitoba Marathon is run in support of the Association for Community Living (formerly known as the Canadian Association for the Mentally Retarded). Runners are encouraged to sign sponsors to pledge a certain amount of money per mile completed, with prizes offered to the runners who collect the most pledges. This system has raised close to 2 million dollars since 1979. The money collected is used to build and maintain group homes for mentally retarded people throughout the province. Placement in such a home is the first step towards integrating them back into society.

In late January I contacted all volunteers from 1984, then looked for new blood. In March and April I wrote letters to various businesses and organizations which donated equipment or services in the past. In early May I followed up with telephone calls to ensure the availability of the necessary equipment.

I prepared a complete information package for each operator, listing his duties, location, times on and off duty, name of contact person and other pertinent data. In conjunction with the Timing Committee Coordinator, I held a briefing meeting for all Timing Network Amateurs.

On Wednesday evening, I held a briefing meeting for Amateurs participating in the Administrative Net. At each meeting, I covered all

aspects of our responsibilities, handed out information packages, and answered all questions. I also emphasized our importance to the success of the Marathon. As a result, only one out of 40 slept in. Luckily, I had an extra ham 'stashed' at the Legislative Buildings for just such a contingency. He rushed to the aid station and took over.

On Saturday, I set up our Communications Headquarters at the Pan-Am Stadium in our usual spot. Set-up took about an hour. We used one Ringo Ranger atop a 20-ft pop-up for the main frequency with a magnetic mount atop a motor home for the backup. While testing the system, we worked a simplex station in the far north end of Winnipeg. This assured us of simplex coverage over the race course in case a repeater should fail.

More than 40 Amateurs assisted with the marathon. We were split up into two distinct nets, administrative and timing. The timing net used VE4RAG repeater for on-course communications and 146.52 simplex for in-stadium. Timing teams were located at the 1-mile mark, then at each 5 km point along the course. Each timing team had a radio operator. As the leaders in various categories passed their location, the Amateur would transmit their numbers back to the Pan-Am Stadium. We also had a ham stationed near the stadium entrance. He broadcast runner numbers to the Net Control Station for the PA announcer. All this information was correlated and broadcast over the PA system for the benefit of spectators at the stadium.

All Amateur radio operators not directly involved in timing monitored the administrative net. This net used VE4WPG as the main frequency, with VE4CNR as backup. Administrative traffic consisted of missing water truck, lost aid station supply vehicles, requests for ambulances, runner alerts and miscellaneous other problems.

All administrative and timing frequencies were declared part of a closed, directed net at 0530. This meant that only hams directly involved in the Marathon were to use them. At 0655 both nets were put on hold until after the start of the race, and control was turned over to the hams at the start line. They broadcast the start signal all along the course. Control was then given back to the Net Control Stations for the duration of the net.

The Communications team had operators aboard both lead vehicles, at all aid stations, at all timing stations and at other strategic locations along the course. We also drove five donated vans, each of which carried a medical team, our own 'in-house' ambulance

system. These vehicles travelled the course in a predetermined route, but thanks to our radio system, were able to divert to an injured runner whenever necessary.

The peak period on both nets was from 0630 until 1030. During that time, VE4WPG scarcely had a chance to drop out. Traffic levels dropped off significantly after 1015 as the early aid and timing stations closed down for the day. The timing net closed down at 1100 and the administrative net at 1215.

There were few problems with our communications system. All repeaters functioned very well. VE4WPG provided excellent coverage throughout the course, including at the University. All stations were manned on time, and not one piece of equipment failed throughout the day.

There was one humorous incident to report concerning the Marathon. It seems that at some of the early checkpoints, volunteers were handing out Vaseline on tongue depressors to the runners. They were yelling 'lubricant' as the runners took them. Some weren't paying close attention, since they ate it like a sucker. This was usually followed by a resounding 'YUCK.' Vaseline is usually used to prevent chapping and other problems between the legs.

I would like to thank the following groups and businesses who contributed Amateurs or equipment: Winnipeg Amateur Radio Club Inc.; University of Manitoba Amateur Radio Society; The Winnipeg Repeater Society Inc.; VE4FRD, the Fred Net; Winnipeg Senior Citizens Amateur Radio Club; Prairie Communications; Harrison Nowell; Manitoba Hydro; Variety Cub of Manitoba Tent 58; Children's Home of Winnipeg Group Home; St. Amant Group Home; St. Boniface General Hospital; CNR and GNR Camping World.

I would like also to thank the following Amateur radio operators VE4's IY, AJG, SM, AMC, AY, ALZ, AKX, RM, VD, NU, MT, ACT, AHQ, ACF, AMP, ACX, DB, AKO, AKI, AEO, AG, AJA, ANA, AJW, ADS, ANG, AGR, AJR, TI, AIU, ADU, AMQ, ZH, AKZ, BC, MJ, ADT, AJO, SE, ALO.

Congratulations, Manitoba, on a job well done, and thanks to Dick Maguire VE4HK for the above information. ▲

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**\$50 Prize** for best photograph. For details, see September *TCA*.

~~~~~

A new scientific truth does not triumph by convincing its opponents and making them see the light; but rather because its opponents die and a new generation grows up that is familiar with it.

# Barrie and area Tornado Disaster

**R**eport dated: June 4, 1985

Report submitted: John Langtry VE3NEC, Halton ARC

## Events and Personnel:

Friday May 31 at 20:30 a radio call was received from Paul Whitehead VE3DDW indicating that a major storm had knocked out the power to repeater VE3ZAP— offered loan of Halton ARC's generator to help restore service, offer accepted. Both Paul and I were concerned by the lack of any station's activity in the Grand Valley, Shelburn and Orangeville areas. Offer of generator was accepted and additional Amateurs concerned with this move were:

- 1) Roger Fonck VE3HGC
- 2) Dick and Nellie Scheeringa VE3HDJ
- 3) Rod Hillman VE3NXM
- 4) John Langtry VE3NEC

The above stations arrived in Grand Valley at 22:45 to discover that the town was decimated by the tornado. There was no hydro or telephone service. Members of the Dufferin ARC had set up command station in the Civic Centre with Lloyd Ferns VE3BZF as net controller via repeater VE3ZAP.

With things well in hand, we departed from Grand Valley at 23:40 and continued to monitor the activities should additional stations be required.

## June 1:

On Saturday at 11:10, I received a telephone call from Paul Whittaker VE3IAC, requesting a message to be relayed to Pierre Mainville VE3LPM who was on duty at the C.A.R.F. booth in Guelph. It was later learned that the Brampton (North Peel) Branch of the Red Cross required an Amateur station as telephone service to the afflicted areas was not available.

At 13:00, Dick and Nellie

Scheeringa VE3HDJ and John Langtry VE3NEC proceeded to the Red Cross Centre on George Street in Brampton to install an emergency Amateur radio station. By 14:30 radio station VE3RCP was ready for operation with about a dozen Red Cross R&I requests ready to send.

The radio station was not activated until 13:35 due to the fact that no preassigned frequency was designated; the repeater used in the last s.e.t. did not appear to be in service. It took time to ascertain that Red Cross Central were operating radio station VE3RCO via repeater VE3GER and using the link system to interconnect VE3ZAP and VE3LSR.

Operations continued through that afternoon, on overlapping shifts which were staffed by:

13:00-16:00 VE3NEC John Langtry, 13:00-19:00 VE3HDJ Dick and Nellie Scheeringa, 16:30-20:00 VE3FHJ Tom Gracey, 19:00-20:00 VE3KVG Roger Heed, 19:00-20:00 VE3NEC John Langtry, 13:00-20:00 VE3LPM Pierre Mainville. (co-ordinator).

Operations were suspended at 20:00 at the request of Red Cross central.

## June 2nd:

Operations were scheduled to commence at 08:00, with the following operators in attendance:

07:30-21:00 VE3LPM Pierre Mainville. (co-ordinator), 08:00-12:00 VE3FHJ Tom Gracey, 09:00-14:30 VE3FOX Vic Henderson,

10:00-14:00 VE3NXE Pieter Kooiman, 14:00-18:00 John Langtry, 14:00-18:00 VE3KVG Roger Heed, 14:00-21:00 VE3NEX Andy Wemyss, 18:00-21:00 VE3NXE Pieter Kooiman

Operations were terminated for the day at 21:00 under direction of Red Cross central, with operations to resume at 08:30.

## June 3rd:

Operations commenced at 08:30, control operators on staff were: 08:00-21:00 VE3IXB Rod Pears (co-ordinator), 08:30-12:00 VE3FGK Dave Kerr, 08:30-12:00 VE3NEC John Langtry, 12:00-14:00 VE3MAS Peter West, 12:00-16:30 VE3IYQ Ed Hunter, 12:00-14:00 VE3IYY Mary Drummond, 14:00-19:00 VE3NXE Pieter Kooiman, 19:00-21:00 VE3NEX Andy Wemyss.

Operations concluded at 21:00 at the direction of Red Cross and was scheduled to resume operations at 08:30.

## June 4th:

08:00-21:00 VE3IXB Rod Pears (co-ordinator), 08:30-17:00 VE3IYY Mary Drummond, 13:00-15:00 VE3NXE Pieter Kooiman, 18:00-19:30 VE3NXE Pieter Kooiman, 19:00-21:00 VE3NEX Andy Wemyss.

The net concluded at the direction of Red Cross Central with the understanding that sufficient commercial facilities being available.

## June Meeting, Kingston ARC

The regular June meeting of the Kingston Amateur Radio Club was held at the Kingston Marine Museum, on Ontario Street on June 7, starting at 7 p.m. The speaker was Gerry King VE3GK from Ottawa. His subject 'The Gain Game.' He told about some of his achievements (and some crashing failures) in the eternal search for a better signal through more efficient antennas and taller towers. Gerry spoke last fall at The Radio Society of Ontario Amateur Radio Convention at Dayton and Rochester.



Chuck VE3GO, in the middle, was the first radio Amateur in Kingston. The two young squirts with him are Bob VE3SV (left) and Jim VE3HZC (right).



# Field Day 1985

## FIELD DAY— OKANAGAN STYLE By Murray Brown VE7MAB

Members of the Kelowna B.C.-based Orchard City Amateur Radio Club decided to hold Field Day in style this year. A site for the event was selected in the mountains about 20 miles to the south-east of Kelowna. The site is known as McCulloch's Lake, a popular area for local anglers.

Four overnight cabins were obtained for Friday through Sunday, and a set-up crew consisting of Gordon Gilmour VE7CIG, Doug McIntyre VE7APS, Don Yule VE7AQA and Dick Baak VE7DON, all with their families, arrived on-site early Friday evening.

Bright and early Saturday morning the crew were hard at it stringing antennas in the trees and preparing the operating positions. Dipoles in some kind of Vee form were favoured mostly, but there was also a vertical installation. The use of a crossbow to get the lines well up in the trees was tried but proved to be too hazardous. Power to run the rigs was available at the site from the camp power generator system.

Quite a few of the club members arrived at the location during the day to visit and do a stint at one or more of the operating positions. 40 metres surprisingly came up with a good number of contacts until the band petered out. 80 metres was good during the late afternoon and evening, while 20 metres was difficult to work at any time. A number of contacts were also made on the VHF and UHF bands.

Late Sunday morning a weary but happy crew of Hams packed up gear and antennas and made their way back to Kelowna having made 423 contacts on all bands during the 1985 Field Day.

## THE OTTAWA VALLEY MOBILE RC'S EFFORT by Jim VE3JPC

If I could sum up Field Day participation for the O.V.M.R.C. in 25 words or less, it was a tremendous success!

Before I get into the dirty details of how well we did, I would like to take the opportunity to thank every member of the club who came out, either to operate or to encourage the operators to hang in there: and to those individuals and outside agencies who either gave of their time or equipment to help set up. What was really gratifying was the participation of some of our newest members who



*Orchard City ARC found to their dismay that the Ogopogo had chosen their site for field day! (His antenna visible in foreground.) The Ogopogo (Jerry VE7EJH) cooperated in true Amateur fashion, however.*

pitched in there with either their ideas, time or physical labour to help out. You people outdid many of our established members.

Finally, I must thank the XM-49'er Communications Squadron for the use of their trailer, and the Museum, especially Ernie DeCoste, the communications curator, J.G. Monette, the public relations officer, and Ron Tropea, the communications display officer, for the use and publicity of the train station. These two agencies were the foundation for our success and I sincerely hope that we can work again in Field Day 86.

Each of the three H.F. stations worked about 300 stations, mixed CW and phone, and when all the multipliers were calculated, each of those stations claimed about 700 to 750 points. The Oscar station worked 6 stations, mixed modes; the Packet had one QSO; and the natural power had made the required 5 QSO's. (Any volunteers who are into bicycling?? HI HI).

Our claimed bonus points were 300 for running non-commercial power, and 100 each for the satellite, packet and natural power stations, the message to the ARRL section manager VE3GT, copying the special ARRL Field Day message, and publicity. On that note, the O.V.M.R.C. Field Day

operation was featured as an item in the provincial CBC network on that Saturday evening's late night news. Yours truly is now a TV star! The total points claimed were a little over 3100.

## FREDERICTON ARC'S FIELD DAY By Murray VE1TE

This year, the Fredericton ARC decided to go to a local campground and invite the public to experience a field-day setup. We went for fun initially, but with the bands in good shape (i.e. 20, 15, and 10) the spirit of a true contest came through.

The crew consisted of Phil VE1CF, Les VE1ZC, Archie VE1BGX, Mike VE3NET, John VE1BF, Greg VE1BQJ, and Murray VE1TE. (Those calls starred were coordinators).

The club station operated as a 4A setup, with a 6 kW diesel generator, and the bands worked were 80-10 and 2m SSB.

The weather was great. The antennas worked fine and the generator never stopped. Even the propagation cooperated, with 20, 15 and even 10 open for some great contacts.

About 5 other Amateurs stopped by and lent a hand. The campers came round, helped, and watched as antennas and towers were erected

*Continued on next page ▶*



and as the contest got under way.

Our location was Heritage campground about 25 miles west of Fredericton.

All in all the Fredericton ARC had a great Field Day. We didn't get a high score, but we went out to have a good time, and that we did!

Our total claimed score was 1416, with the emergency power, publicity, and W1AW FD message bonuses.

### FIELD DAY— AGAIN

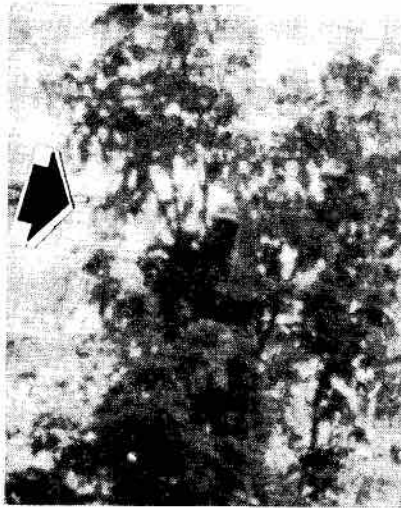
By Bob Morden VE3 EIM & Frank Salter VE3 MGY

Actually it all happened because of the flea markets. If we didn't drive down the 401 to the flea markets, we would never have noticed the abandoned farm site near Putnam, Ontario. The 50-foot high silo on the top of a hill looked so inviting, and the tall tree nearby with the bare branches just begged for antenna work. Procrastination is not unusual when one sees such a sight in January or February, but by May 11th our field day spirits had provoked us into going to the site and getting permission to use it. Permission was given and our Field Day '85 venture was under way.

Preparations began. The inevitable list of things that had to be taken along. Pray for good weather—sitting on top of a hill in a thunderstorm for a day not only can kill your Field Day spirit, it can also attract more electrical power than you'd need in a lifetime, and a short one at that. Get the Field Day packet from Ray VE3ZJ, get dupesheets, rules, plan publicity, and even make sure that the rigs work. Then check the list once again and make certain that nothing is missing. Then wait for June 22nd and pray once again for good weather.

At 0900 hrs. June 22nd the sun was shining and expectations were higher than the noon-day sun that never arrived. By 1100 hrs. it started to rain and rapidly turned into a summer squall. By this time all the antennas, tuners, transceivers, batteries and keys were packed and ready to go, but the rain would have turned the field that we had to traverse to get to the site into a vast sea of clay and mud.

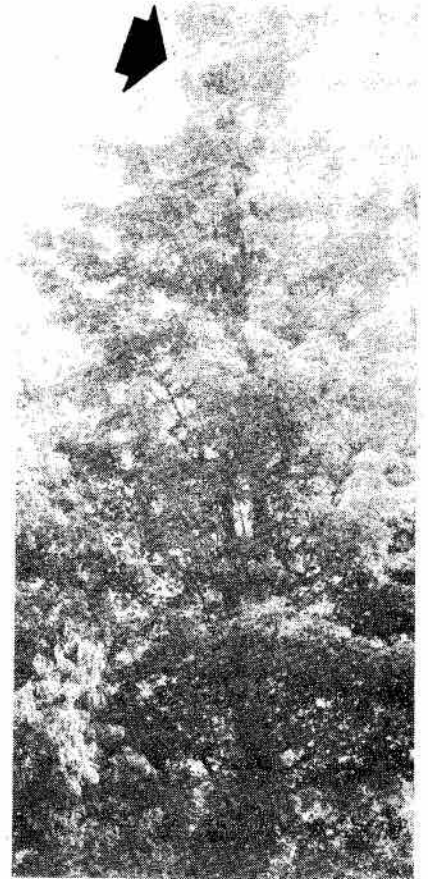
It was decision time. Bob proposed that we use the area of the site and run a mobile operation class IC. With three fully charged batteries, we could easily run the rig off the battery and not be left sitting (albeit high but not dry) out in the country with a dead battery. With some diligent downloading, the Field Day equipment was reduced to a Kenwood TS130, two tuners, three batteries, a mike, key (straight key, at that) and a modest supply of food and coffee. Through



Lord Greystoke being on safari, Archie VE1BGX took on raising the 80 m dipole.

the rain and wind we were off to the field day site.

We arrived at the site after seeing three storm-related accidents on the 401. The exact location of the site, of course, will remain undiscussed for the same reasons that a good fisherman never mentions the exact location where he pulled in a 42" northern, but suffice it to say that the muddy field and the driving rain prevented us from reaching the pinnacle of the hill and the shining heights of the 50-foot silo. We had to settle for a place about 70-feet lower, and this meant a loss of 120 feet of antenna height, something we did

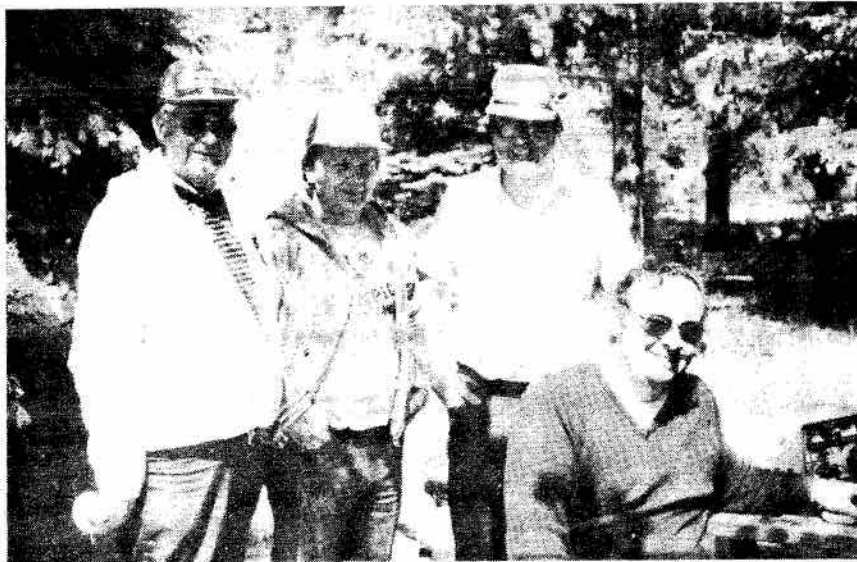


"These youngsters have no stamina!" says Harold VE7ESW, himself a pensioner. "They've only been up for 48 consecutive hours and complain of tiredness!"— Photo by VE7ESI.





Fredericton ARC's Field Day iron men. Left to right, back row: Lew VE1ZC, Mike VE3NET, Murray VE1TE, front row, Phil VE1CF, Archie VE1BGX, John VE1BF, Greg VE1BQJ.



The setup crew, McCulloch Lake. Left to right: Gordon VE7CIG, Dick VE7DON, Don VE7AQA, Doug VE7APS

with misgivings. However, we got the rig hooked up to the battery and tuned up, and by 1530 hrs. we were on the air. After a short (very short) stint on 80 metres, we got where the action was on 40 metres. Propagation on 40 metres on Field Day was almost perfect, and our location and a vertical antenna spelled instant success.

Every time one gets one problem solved, another problem arises, and on this outing, we were logging 'em in full force when, in an effort to get some writing room in the Nova, we locked the keys up in the trunk. Here we were, out in the boonies in a storm and no car keys! If Chaos was the sire of

Murphy's law, then Mother Nature must have been its dame.

The storm died down enough and we could walk around without getting drenched. Then we exercised one of the reserve tricks of the site, which, incidentally, was one of the reasons that we liked the site so much. With an Icom 2AT and rubber duck antenna, we could hit VE3TTT and VE3KSR repeaters. Bob VE3OEC responded to our call and was kind enough to call our XYL's to send out a search team and bring us a spare set of car keys.

We had assumed that the site was not easy to find, and it took over an hour for the XYL to finally deliver the keys. We unlocked the trunk, retrieved the keys and were thankful

that our XYL's still care for us. This interlude cost us a few contacts, but it spoke loudly for two metre repeaters and the convenience of modern communications. On the practical level, it saved us from a two-mile hike to the nearest telephone to call London, and when you have a few teenagers in the house, the wait for a clear telephone may be in the order of an hour to two days or so.

After regaining our keys and composure, it was back to the key and 40 metres. The day ended with 160 contacts and a nice QSO with Erwin G4LQI in Kent, formerly VE2FUQ of Montreal. 569 in Kent with a mobile was ample reward for the rain and anxiety. We packed it in at 0200 hrs. and went back to London for some rest.

At 0926 hrs. June 23 we were back on the air again, adding to the 160 contacts of the previous day. Propagation was still excellent, and we had worked stations in all the US areas... some of them twice, as our dupe sheet later indicated. There were, of course, some moments of mirth. Someone asked, "Why mobile?" "Because we're in a car," Bob shot back, and there were no further comments. We also had to try ten times to contact one station that was 20+ on our end (and probably 20 Hz on the filter, too). When we finally contacted him, someone editorialized a "hi" with which we heartily agreed.

Some interesting specimens appear on Field Day. One of our favourites is the person who spends a minute calling "CQ FD" and before you can complete a reply, you hear "CQ FD". One station must have missed 20 call-backs in less than five minutes... in fact, most of the time was spent calling "CQ FD" rather than listening. Another interesting phenomenon is the station calling CQ with the filter narrowed to the maximum. It was a case of "search for his notch" to get a contact. The ultimate, of course, is a combination of the two above. Entertaining as it may be to listen to this exercise in mutual futility on the part of both the caller and the responder, it's best to find another spot of the band and avoid the reactions.

At 1400 hrs. June 23 and 240 contacts we sighed "CL" and packed it in for the day. We looked at the silo (by now the weather was exquisite, of course) and resolved to come back for Field Day next year and do our thing. Next year we're going to try out all those things and test all the antenna systems and break records— unless, of course, Murphy and his mother Nature team up again and put a sea of mud out there. It makes you wonder... isn't there some law that discombobulates Murphy? It's a thought!!!

△



# LDE\*

By Doug Burrill VE3CDC

**F**orty years ago this month was a big date for Canadian Amateurs. They were back on the air after six years of a wartime ban on Amateur operations but unhappily there were many silent keys among the ranks of those who had enlisted. Amateurs had initially helped to fill the gap between the demand of the expanding three services for communicators and the original small pre-war permanent force of signallers.

As soon as the Pacific war was over, those who returned and those who had not for various reasons been on active service, were all asking the question, "When do we get back on the air?"

The cover of the August-September 1945 issue of one of TCA's predecessors, 'XTAL MAGAZINE,' highlighted the question. Unbelievable today but if you look close at the illustration you can see part of the one-cent stamp it took in those days to mail it!

Back in January 1939, with war in the air, 'XTAL' promoted the 'Canadian Amateur Radio Co-operation Corps,' which brought Amateur operators together with the reserve forces and familiarized them with military communications. Nets were established for emergency operations and Amateur stations were installed in some of the armories.

The blow fell in September, 1939 and that issue of 'XTAL' noted that the regulating body of the day, the Department of Transport, had notified all Amateurs to "completely dismantle and render inoperative" all Amateur stations. This task was relatively simple to carry out as in those days nearly all ham transmitters were home-built. All radio wiring had to be removed from RF line-ups, all speech equipment and power supplies disconnected and all transmitting antennas taken down.

That was the end until 1945... and it was the end of 'XTAL' too, for the duration, as it reported in the same issue, the "absence of the Amateur... market will curtail advertising to a degree which make impossible the continued publication of 'XTAL.' It was not until almost six years later in July, 1945, that it re-appeared in bigger and better format. **Δ**

\*LDE' stands for Long Delayed Echo (a radio phenomenon not yet fully understood).

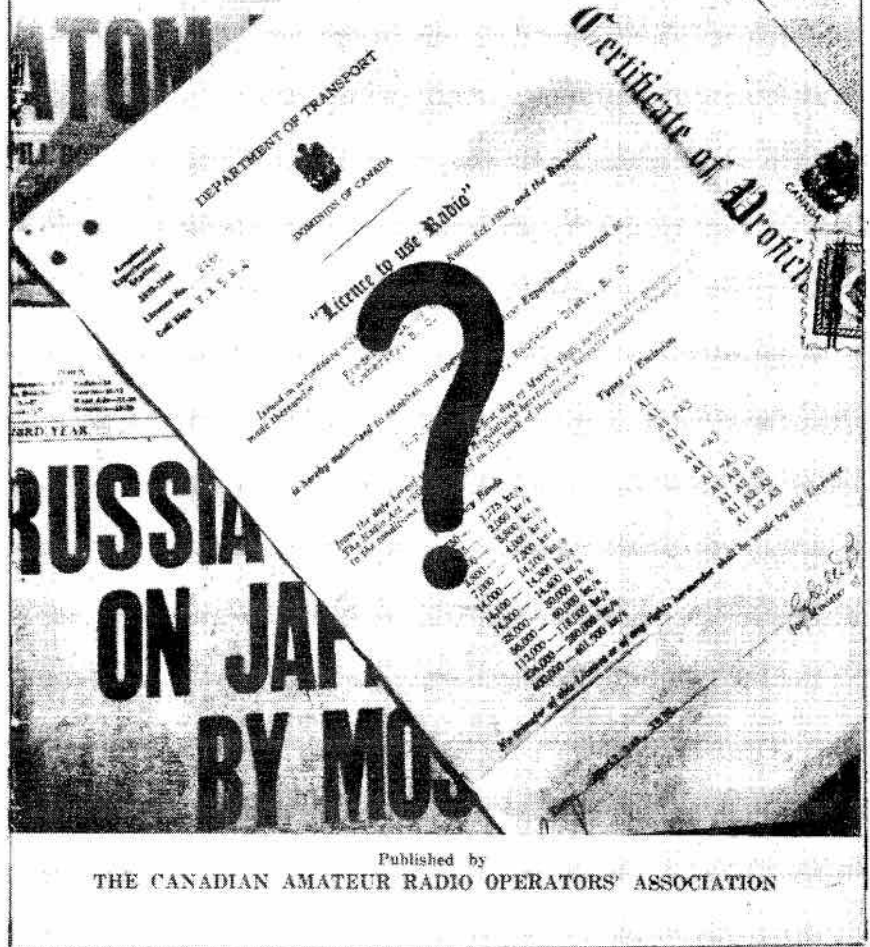
Vol. VI.

Aug.-Sept.

10 Cents

No. 2

# XTAL



## 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.



# On QSLs

By Norm VE6VW

**Y**ou have discovered the world of DX? You have had the thrill of working your first foreign stations? Naturally you are anxious to get QSLs to confirm these QSOs, and you have asked the DX stations to QSL direct to your home QTH, but in just about every case he has responded with "sure QSL via the bureau." You have tried to get your full QTH across to the DX stations, for a direct QSL, but he was not really interested.

Why does he insist on this 'QSL via bureau' thing? You must remember that stations outside of Canada can work us with the greatest of ease and can put literally thousands of VE stations in their logs in a short time. An active DX station would find the financial burden of QSLing direct to his VE QSOs very great indeed, and in addition he might not have a recent Callbook. So, he sends his QSLs to your bureau, either direct or via his own national Amateur organization. Okay, so what is a QSL bureau, how do you get your cards from it and how soon can you get your cards?

Where are the bureaus? Member organizations of the International Amateur Radio Union (IARU) operate a world-wide network of QSL Bureaus. The Canadian Radio Relay League (CRRL) as the Canadian member organization of the IARU operates the

CRRL Incoming QSL Bureaus in each call area. In Canada, the Central Bureau acts as the focal point to which IARU member societies forward the QSL cards of their members. Also, the QSLs reach the bureaus in various other ways. Some come direct from individual DX stations; others are sent by the bureaus in foreign countries.

How your bureau is run depends upon how the bureau manager wishes to run the particular bureau. You might envision a large pigeon hole-filled room with a large, well-paid, full-time staff, cheerfully stuffing QSL cards into the pigeon-holes. Not so; the bureaus are usually operated by a manager with the assistance of a few local hams (or non-hams) plus up to 50 more helpers.

This is where you come in. The first thing you need to do is find out how your bureau works, since they do not all operate in exactly the same way. Don't depend on word-of-mouth information on the bureaus. This kind of information may be inaccurate or out-of-date. Write to your bureau for the latest information— and please enclose a self-addressed stamped envelope (SASE), not a postcard. Many of the bureau managers prefer not to transact bureau business over the telephone. Over half of the

bureaus prefer a system by which you can pay for mailing credits, which will be explained on the information card you get from the bureau, but some bureaus will accept SASE's.

Don't be too optimistic! Cards come through slowly, as you will learn. After you have sent either funds or SASE's, sit back and wait—patiently. But why do I have to be so patient? After all the DX station said he would QSL right away. Shouldn't I get his card in a few weeks, even through the bureau? If you have followed the sequence of events described, it should be clear that the cards cannot come through quickly. Cards seldom arrive in less than six months, and may take up to two years or more to make their way to you via the bureaus. Regretfully, we must tell you some DX stations will never QSL, even though they have faithfully promised to do so. Most DX stations will eventually answer, however.

Most of the bureaus will indicate on the envelopes they send you the number of mailing credits or SASE's left, or will at least show when you are receiving your last envelope. When you run out of mailing credits or SASE's you should immediately send more— DON'T WAIT! DO IT AT ONCE. △

## Le service QSL de FRAC

**L**e but de cette note est d'expliquer la procédure pour l'utilisation du service QSL international de FRAC. Veuillez consulter le Manuel de l'opérateur pour l'utilisation du service QSL en général. Voir le chapitre sur la façon de faire parvenir vos cartes QSL.

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

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

- 1 Classer les cartes (DX) alphabétiquement par préfixe.
- 2 Classer les cartes canadiennes par ordre numérique de préfixe.
- 3 Veuillez placer les petites quantités de cartes dans des enveloppes en papier épais et bien scellées. Envelopper les grosses quantités de cartes avec précaution de préférence dans du carton. N'utilisez pas de brocheuse!

4 Veuillez adresser vos envois comme suit:

5. **NE PAS RECOMMANDER** les envois de cartes. Cette pratique est plus dispendieuse et occasionne souvent des retards et par conséquent, n'est pas réellement nécessaire.

6. Si vous désirez recevoir une preuve que FRAC a reçu votre envoi de carte QSL, veuillez inclure une enveloppe pré-adressée au une carte postale

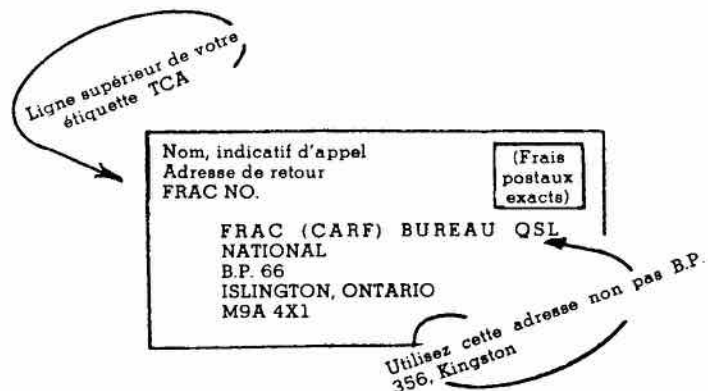
avec timbre avec le mot "RECEIPT" imprimé.

7. Si un colis était endommagé sur réception (très rare), FRAC vous fera parvenir une liste des cartes reçues de sorte que vous pourrez vérifier s'il y en a eu de perdues dans le courrier. Jean Evans VE3 DGG

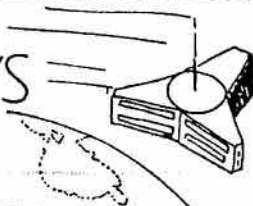
Contribution de:

Terry VE6DBQ, Peter VE7BBQ, Ken VE3CRL

Traduction de: Jack VE2SF △



# AMSAT NEWS



By Gordon Wightman VE5XU  
3637 Victoria Ave.  
Regina, Sask. S4T 1M4

**D**ue to declining propagation on 15metres, Net Manager W8GQW has announced the discontinuation of service on this band during the Sunday International Net. Service does continue on  $\pm 14282$  however at 1900 UTC. The South-West Pacific Net switched to 15 M from 10 some time ago. They can be found on 21280 Saturday at 2200 UTC with W7FF as control.

## Bulletins

Bulletin service has increased on Oscar 10 with WA2LQQ on 145.962 weekly. In addition, W0CA and W8GQW plan to provide further service during mid-week periods the near future service will begin on Mode L.

## Award

On May 5 WA2LQQ began a special form of test transmissions in order for all stations to evaluate the

sensitivity of their 2 M downlink systems. In memory of Kaz K2ZRO the KRO Memorial Technical Achievement Award is available for those successful in copying. In all, seven levels were transmitted, the first being at the beacon level. These were reduced in 3 dB steps until at the last level the signal was attenuated to -18 dB. Each group, starting at 0, contains a 5 figure group indicating the step level followed by a group of 5 figures i.e. 00000-57248, 11111-30496, etc. A handsome certificate has the basic award in your call sign together with space for all endorsements for higher levels of achievement. Cost of the certificate is \$3.50 U.S. for members. Logs should indicate the date and time of copy. It is intended to go beyond the -18 dB level in future tests. A great way to judge just how well the 2 M downlink is performing.

## Co-ordinators

In a previous column we

mentioned various AMSAT Canadian Area Co-ordinators. Should you wish to contact one, our last listing indicates VE7XQ, VE6AK, VE5XU, VE3HCR, VE2ASL and VE1KG.

## Mail

In the mail, letters were received from VE3KLW and VE7EFF. VE3KLW points out that he also holds Mode A WAC, his certificate dated Sept. 6/84. Congratulations to you Barry— we know it is no easy achievement. Sorry for the omission. Perhaps I missed some others— please let me know. VE7EFF enquired about the satellite Canadaward. It requires cards from all 10 Provinces plus the NWT and Yukon. You already have one of the hardest, Ken, with VY1AU, so good luck with the rest. It's a real handsome certificate.

## RS

RS5 is still operating well, not expiring as soon as had been expected. At present it and RS8 are in continuous transponder mode with RS7 in robot mode. This situation is expected to remain until June. Check the nets for updates for the current status of transponders on these satellites and Oscar 10.  $\Delta$

# MICROWAVES

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



**O**n the West Coast, Peter Talbot VE7CVJ has been busy building his own microwave dishes. He first makes a plywood form in the shape of half a parabolic curve and rotates the form in a circle over wet cement, creating a mold. The mold is then coated with fiberglass which, once hard, is removed, then lined with aluminum foil. The addition of a lip at the edge of the form results in a rim on the finished dish, adding strength and rigidity. He bolts the dish to a 10 inch square board and mounts a pipe flange to the center allowing a plastic fitting to hold the waveguide feed. The waveguide can then be adjusted for best focus and will allow polarity rotation.

The dish is fed with a small horn looking into a subreflector in front of the new two-foot dish. Peter tests the accuracy of the dish by focusing on the sun and burning a hole in a block of wood. He notes that a  $1\frac{1}{2}$ " black spot appears within 10-20 seconds. Gain is estimated at about 34 dB with a beamwidth of 5 degrees at 10 GHz. F/D ratio is .55.

He has also constructed a smaller

12-inch dish using the same method, which will be fed with a new microwave head built into a 4-inch piece of waveguide with a small horn at the end. A unique mounting plate allows rotation of the dish in three dimensions.

Peter has been active within Vancouver and with the Nanaimo microwave group and reports having made contact with VE7AII by bouncing off Grouse Mountain. Signals were there but unreadable. (Try CW Editor)

Bob Morton VE3BFM writes with a description of his 10 GHz station. The heart of the system is a modified radar unit, putting out 120 mW into a 30-inch dish. That's QRO on 10 GHz! A circulator feeds a 30 MHz receive preamp into a mixer where it is combined with a 40.7 MHz local oscillator to produce a 10.7 MHz signal. This is followed by a 10.7 MHz crystal filter and IF amplifier before being routed down coaxial cable to the FM receiver in the shack.

For transmit, an audio oscillator provides the tone for modulated CW and a single transistor microphone

amplifier provides the modulation for FM transmission and deviation is adjustable  $\pm 75$ -100 kHz. The modulated power supply is connected to the Gunn oscillator through coaxial cable.

Bob has made contact with VE3WY who was using a 15 mW Gunnplexer with 17 dB horn rear-mounted on the transceiver case. The unit contains Hamtronics boards and is one of the two built by VE3CRU and VE3ABG a few years ago.

VE2KW was the second to receive my beacon from Mount Royal. Using only a 17 dB horn, the beacon was weak but copyable. He noted that the direction the horn was pointing for maximum signal did not correspond to the visual direction expected. This may have been due to reflections or diffraction off intervening downtown buildings. This finding was confirmed with my two-foot dish from the same location.

I have been busy bouncing colour video around the house using the WBSMAP modulator described in a previous article. The quality of the picture is truly unbelievable. I am assembling yet another dish for a motion detector to attempt further contacts on video.

Sorry to have missed operating in the UHF contest in early August due to the arrival of our first harmonic. Would appreciate any reports of microwave activity in this annual event (UHF contest, that is).  $\Delta$





# Compu-stuff

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

If anyone would like to have programs put into this column please forward them. Any listings published will be presented 'AS IS' so be extra careful that they are error free.

Here is the first of a series of articles that will deal with digital electronics and a tour through a full computer system, each section being the topic of one column. At the end of the series my subject matter will be determined by you, the reader, so feel free to write to me care of TCA.

## Our example computer

Figure 1 details in block form an example computer system. This system is based on very straightforward technology and could be built and gotten going without much trouble.

There are a couple of important concepts to grasp here and once understood this can be seen to be a very simple system.

1) Software operates Hardware— all activity in any computer is controlled by the system's programming and this is reflected on nearly every pin on each chip in the system.

2) Bus Structure— A 'Buss' is nothing more exotic than a collection of foil traces carrying signals from chip to chip much as a city bus carries people around town.

3) Communication— In a computer (especially a micro-computer) all communication is between the CPU and ONE other chip or address. If more than two devices come on the Buss at one time the whole thing is confused and goes away into 'Binary never never land'.

4) Map Generation— The function of a map generation is to control communication and ensure the correct chip is selected from the address presented.

With these points in mind, a computer can be easily compared to our much-loved telephone system. When you dial your phone you generate the ADDRESS of ONE other phone. When your party answers, the line becomes DATA BUSS and you can exchange INFORMATION. The phone company sorts out the location of the party you are calling by MAP GENERATION, and inside the exchange a switching system says 'this line' and makes the connection.

In our computer the same things happen, totally under control of software, the real smarts of the system.

Figure 2 shows in ladder form what the map generation in our example does. As shown each block of

memory and I/O is assigned a special function and each device responds to a numerical address. Using our phone analogy again we can now see just who we are calling, like looking

up a number in a phone book. (Note: all numerical references in base 16).

Next month we'll examine the CPU and its role in the system.

Fig. 1: Computer system block diagram.

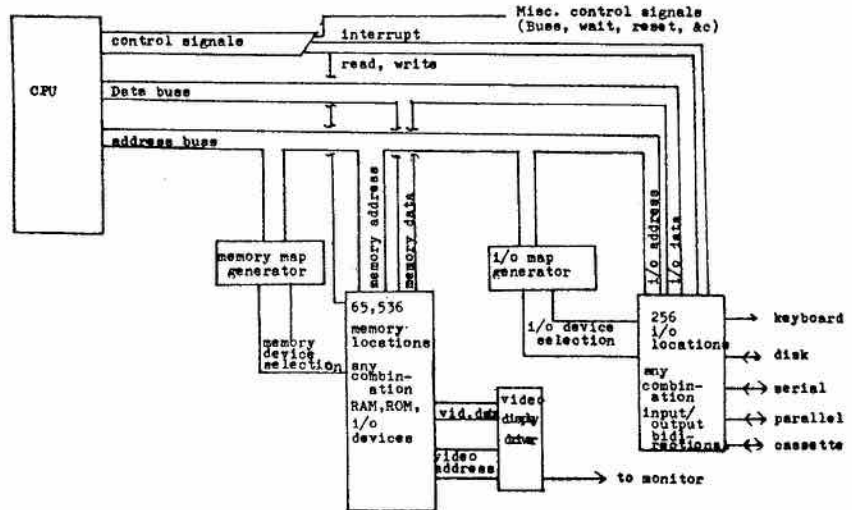
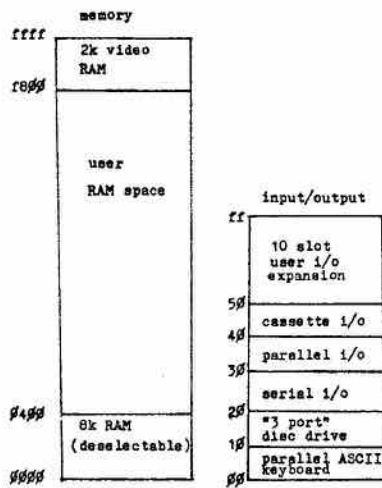


Fig. 2: Maps



## TCA NEEDS A DRAFTSMAN!

If anyone with drafting skills would care to take over the preparation of the circuit diagrams in our Technical Section, please get in touch with the Editor at Box 855, Hawkesbury, Ontario, K6A 3C9.

## MANITOBA AMATEURS—

Remember special prefix CH has been authorized for you between Oct. 16 and Nov. 16 to commemorate the 100th anniversary of Louis Riel.

## Where do they come from?

FCC PRB Chief John B. Johnston W3BE has analyzed a graph depicting the ages of those obtaining ham licences during April. He notes that there are three distinct age groups applying for ham tickets, as shown by the plot on the chart. Of the 2,129 people who passed their tests, 93.75% entered through the Novice ranks. The mean average age for the entire group was 36.6 years, with the youngest applicant being 7 years old and the oldest having reached 82. Johnston says that the results of this survey show that the first group entering ham radio are school children centered around age 14. This is followed by a major drop off or 'dip' at age 20, peaking again at 30 to 35. The last major group entering the service are in the 60 to 65 age bracket. The middle-aged group (30-35) accounts for the greatest number of new hams, making up roughly two-thirds of the total.

--from WESTLINK Report.

TCA pays competitive rates for technical articles.



# VHF/UHF

By Bob Morton VE3BFM  
8 Thornbay Dr., RR 2  
Stouffville, Ont. L0H 1L0

## The Smith Chart

**F**or those of you who may never have seen this chart before, don't be scared off by its complex appearance. It is a very powerful chart once you understand its basics.

The Smith Chart is simply a means of presenting impedance ( $R \pm jX$ ) or admittance ( $G \pm jY$ ). My preference has always been impedance, so we will use this here.

VSWR can also be determined easily once a resistance and reactance have been measured.

Impedance is made up of resistance (R) and reactance ( $\pm jX$ ). Reactance can be inductive ( $+jX$ ) or capacitive ( $-jX$ ). If a point is in the upper half of the chart, the reactance is inductive; if the point is in the lower half the reactance is capacitive. If a point falls on the centre line, the reactance is 0.

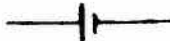
Reactance is measured along the centre line. A point at the far left-hand edge represents 0 ohms or a short circuit; a point at the far right-hand edge represents infinite impedance or an open circuit. The point in the centre represents the impedance being worked with. e.g. 75 ohms for TV, 50 ohms for Amateur use, etc. I'll use 50 ohms since it is the most common to Amateur radio use.

A VSWR of 1.0:1 exists when the impedance point is in the centre of the chart.

If a VSWR of 2:1 exists, then the impedance can be anywhere on the 2:1 VSWR circle. Examples of 2:1 VSWR impedances are 25 ohms, 100 ohms or 50 ohms resistive plus 46 ohms reactance (L or C).

This is all for this part of the article but I'm including several references which, if you have access to, you may want to refer to.

Ron Walsh VE3IDW, president of CARE, met Tom Atkins VE3CDM, president of CRRL, in August. "We had a most enjoyable chat," said Ron. More next month.



The very difficulty of a problem evokes abilities or talents which would otherwise, in happy times, never emerge to shine.

Next month, I'll cover quarter-wave transformers plus a couple of other coax type transformations which are quite effective yet very simple.

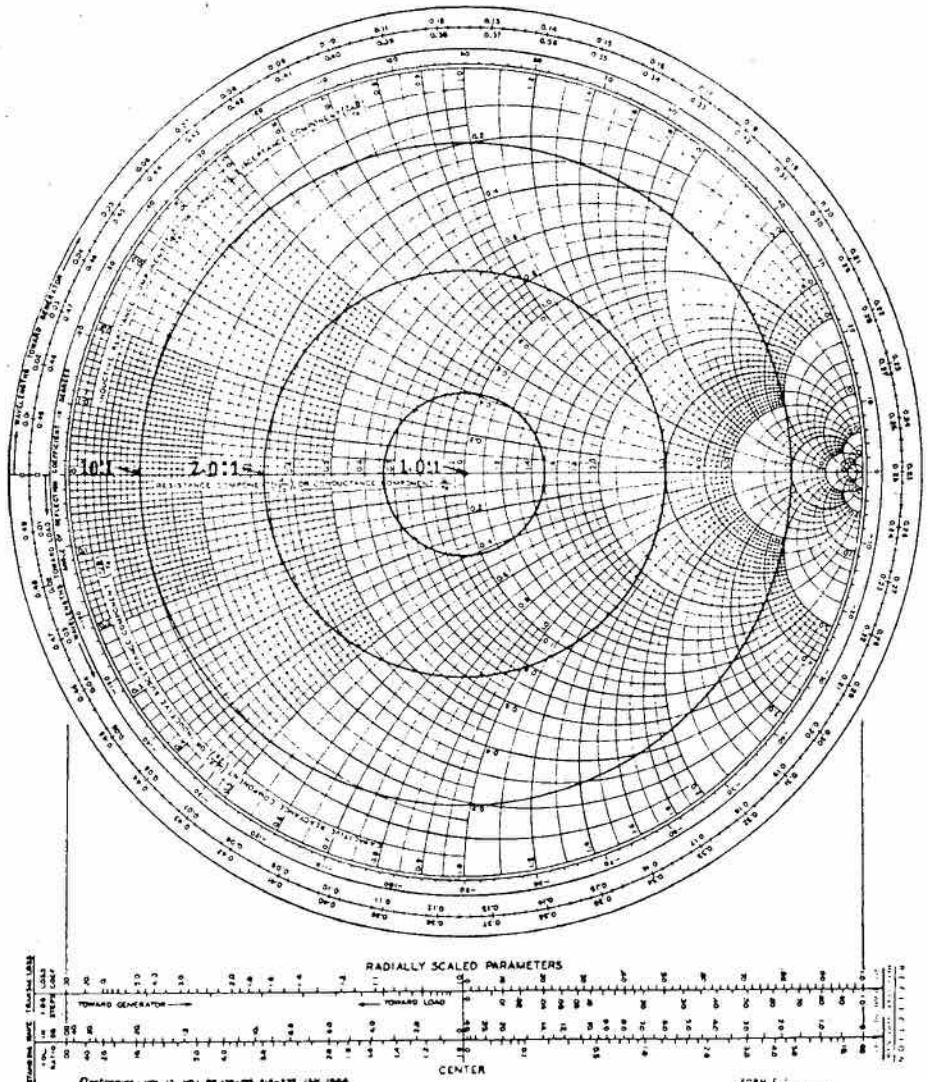
**Reference:**  
How to use the Smith Chart, *Ham Radio Magazine*, March 1978, Page 92-101

More the Smith Chart, *Radio Communications*, December 1977, Page 934-939  
Reference Data for Radio Engineers, Pages 22-19 to 22-21  
Radio Handbook, 22nd Edition, Pages 26.2 to 26.5 and 34.27 to 34.32  
Electronic Applications of the Smith Chart, by Phillip H. Smith, Published by McGraw-Hill.

## VSWR Circles

| NAME                   | TITLE                                      | DWG. NO. |
|------------------------|--------------------------------------------|----------|
| SMITH CHART Form 756-N | SINCLAIR RADIO LABS. LTD. TORONTO, ONTARIO | DATE     |

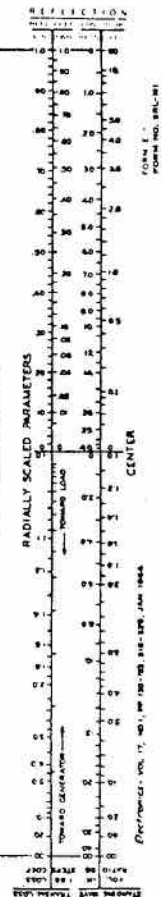
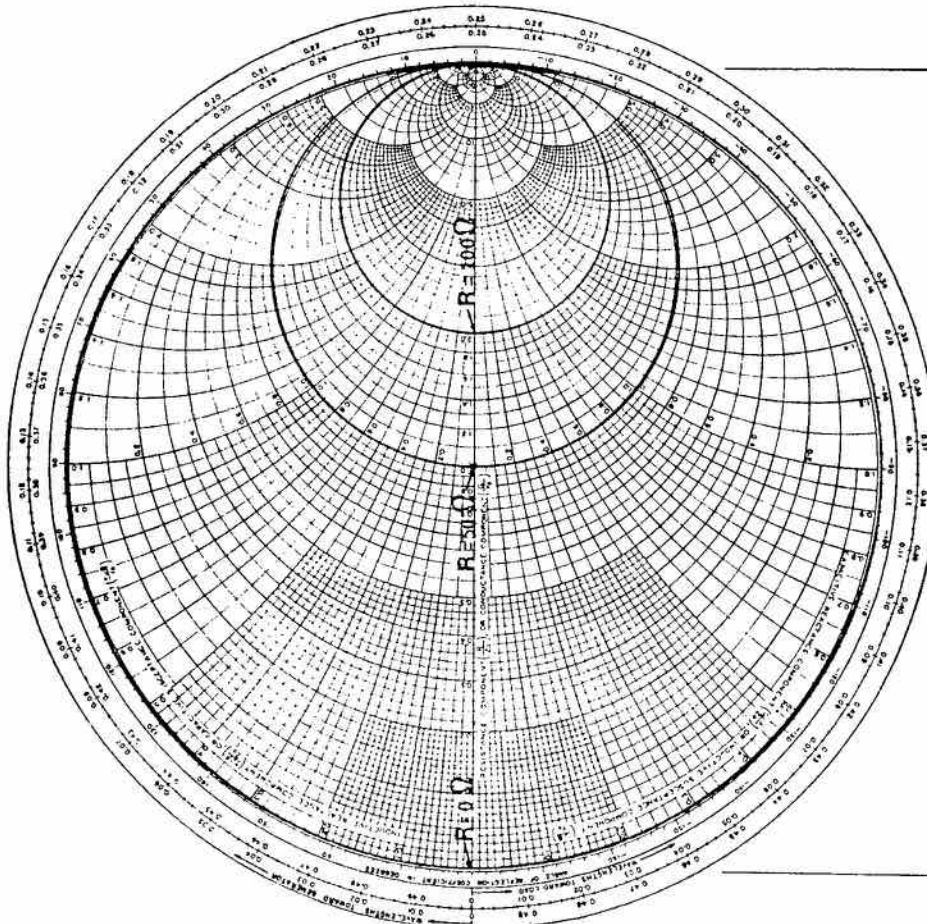
IMPEDANCE OR ADMITTANCE COORDINATES



# Resistance Circles

|                        |                                           |          |
|------------------------|-------------------------------------------|----------|
| NAME                   | TITLE                                     | DWG. NO. |
| SMITH CHART Form 754-N | SHCLAIR RADIO LABS. LTD. TORONTO, ONTARIO | DATE     |

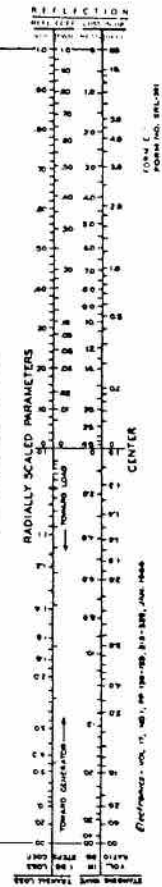
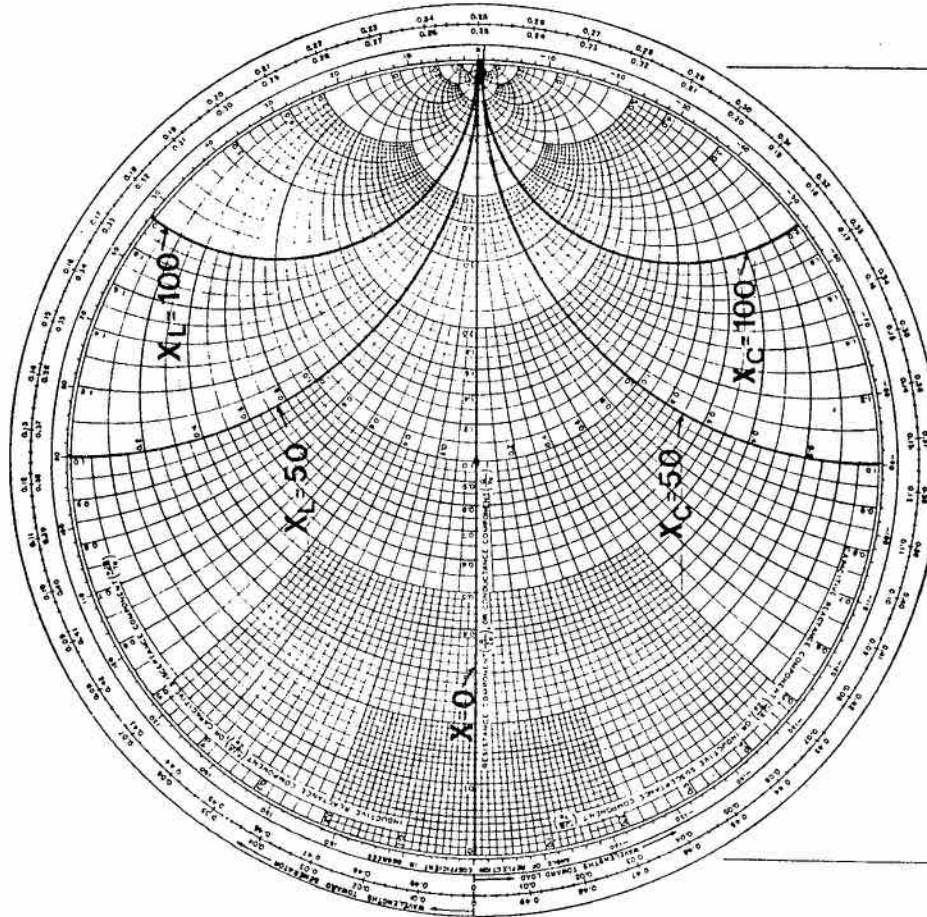
IMPEDANCE OR ADMITTANCE COORDINATES



# Reactance Circles

|                        |                                           |          |
|------------------------|-------------------------------------------|----------|
| NAME                   | TITLE                                     | DWG. NO. |
| SMITH CHART Form 754-N | SHCLAIR RADIO LABS. LTD. TORONTO, ONTARIO | DATE     |

IMPEDANCE OR ADMITTANCE COORDINATES



# CONTEST SCENE



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

Oct 26/27— CQ WW DX Phone Contest  
Nov 2/3— ARRL SS CW  
16/17— ARRL SS PHONE  
23/24— CQ WW DX CW CONTEST

**W**ell, it should be a very short time until the 1985 version of the CQ WW DX Phone Contest, unless the post office has routed your copy of TCA via Timbuktu. Conditions for this fall's contest season certainly won't be what they were only a few short years ago. But lack of sunspots just doesn't seem to be able to stop the CQ Contests. There will still be plenty of exotic DX available to be worked, it will just be a little tougher.

If you really don't feel up to joining the battle on 20M or 40M, how about just leaving the receiver on ten or 15, and wandering in and out of the shack over the weekend. The openings are there even during the bottom part of the sunspot cycle, but they are of short duration and occur at odd times. This is particularly true on ten metres. (At least, that's what I'm told. During the last sunspot minimum, I was using an HR10B. Not the greatest ten metre receiver ever made.)

Of course, in marginal conditions, the mode of choice is CW. Over the next couple of years, CW contesting is likely to be a source of much less grief and frustration than phone.

The CQ CW Contest is held on the last full weekend of November, which falls this year on Nov. 23rd and 24th. Whether you go all out or just work for an hour or two, be sure to show your support by sending in your log. You might be pleasantly surprised and find you have won a certificate for your efforts.

For your reference, a list of the current Canadian records appears below.

## Sweepstakes

November is a busy month on the contesters' calendar. If DX Contests are not your cup of tea, then perhaps the ARRL Sweepstakes would appeal to you. This contest features competition among operators located in Canada and the United States. The exchange consists of a slightly modified NTS message preamble. Details were given in this column one year ago, or you can refer to any October issue of QST. This contest is lots of fun, and has the added advantage that it is only 24 hours long.

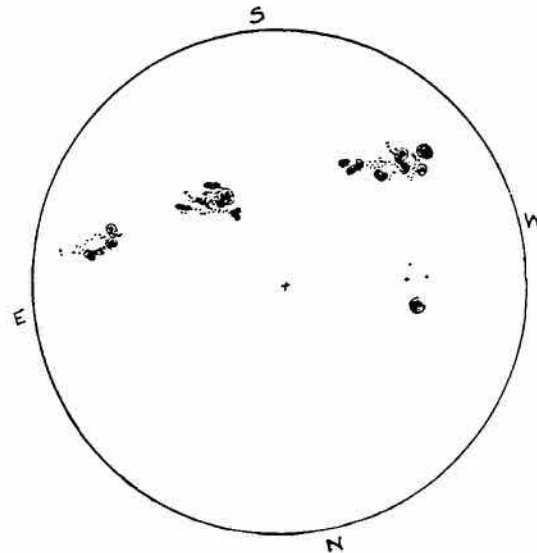
## ARRL 10M Contest

The results from the 1984 running of the ARRL 10M Contest appeared in

July QST, and are reproduced below. Twenty-one Canadians sent in logs. Taking home the honours as the top mixed mode entry in Canada was VE3CWE, with 6k points. The top CW score went to VE3DZV who totalled 15k points, while VE3CVX came up with 600 QSOs and 86k for the

number one slot on phone. Top multi operator in Canada went to VE3SAU with 14000 points.

Well, that pretty well empties my IN basket for this month. See you again next month, and hope to work you in the CQ Contest. △



W6RQ  
1981  
17 Oct 1720 UT  
SF = 305 k = 3

Telescope:  
3½ in Questar  
Full-Aperture Sun Filter

"The Good Old Days"

## 1984 ARRL 10M CONTEST CANADIAN RESULTS

| MODE   | CALL     | SCORE  | QSOs   | MULTS |    |
|--------|----------|--------|--------|-------|----|
| MIXED  | VE3CWE   | 5,916  | 76     | 29    |    |
|        | VOLAW    | 5,562  | 206    | 27    |    |
|        | VE3FEA   | 1,404  | 34     | 18    |    |
|        | VE5XU    | 1,230  | 82     | 15    |    |
|        | VE6CPP   | 740    | 21     | 10    |    |
|        | VE6CCL   | 96     | 7      | 4     |    |
| CW     | VE3DZV   | 15,540 | 110    | 35    |    |
|        | VE3LUG   | 13,992 | 106    | 33    |    |
|        | VE2AEJ/3 | 11,532 | 91     | 31    |    |
|        | VE3ONU   | 2,720  | 34     | 20    |    |
|        | VE7DVV   | 288    | 12     | 6     |    |
|        | PHONE    | VE3CVX | 85,680 | 612   | 70 |
| VE1RNN |          | 77,376 | 496    | 78    |    |
| VE3CYX |          | 48,360 | 372    | 65    |    |
| VE3FWQ |          | 46,332 | 429    | 54    |    |
| VE3AXY |          | 6,592  | 103    | 32    |    |
| VE2DTI |          | 3,348  | 62     | 27    |    |
| VE3OHG |          | 1,620  | 54     | 15    |    |
| VE2QP  |          | 594    | 27     | 11    |    |
| MULTI  |          | VE3SAU | 13,860 | 154   | 42 |
|        |          | VE7ZZZ | 100    | 10    | 5  |

## CQ WW DX CW CONTEST CANADIAN RECORDS

| CATEGORY | CALL    | SCORE     | YEAR |
|----------|---------|-----------|------|
| All Band | VE3IY   | 2,607,795 | 1981 |
| 28 MHz   | VE3BMV  | 504,063   | 1980 |
| 21 MHz   | VE3BMV  | 653,856   | 1981 |
| 14 MHz   | VE3BLV  | 662,454   | 1982 |
| 7 MHz    | VE3BMV  | 361,845   | 1983 |
|          | *XN3BMV | 436,100   | 1984 |
| 3.5 MHz  | CY3BLV  | 102,828   | 1977 |
| 1.8 MHz  | VE3BMV  | 30,258    | 1976 |
| HS       | VE3PCA  | 3,711,956 | 1981 |
| MM       | VE3PCA  | 2,493,424 | 1983 |
|          | *XN3EVD | 2,996,269 | 1984 |

\*claimed scores



# Social Events

## 9th Annual Newmarket Fleamarket

The York Region ARC is proud to announce that the ninth edition of the 'Newmarket Fleamarket' will be held Sat., Nov. 9 85, from 0800 to 1400. The location this year is Huron Heights Secondary School, Newmarket, Ontario.

General admission is \$3.00 per person; this includes a draw ticket for various door prizes. Children under 15 years of age accompanied by parents will be admitted free of charge. Refreshments will be available at the site.

Vendors will be charged general admission plus a rental charge of \$3.00 per six feet of table space. Doors will be open at 0630 for vendors only.

The local school board does not permit smoking inside any school. Smokers are warned in advance that they will have to smoke outdoors.

As tables have to be brought into the site, it is imperative that tables for vendors be reserved in advance. For reservations or further information please contact Geoffrey Smith VE3KCE, 7 Johnson Road, Aurora, Ont. L4G 2A3. Telephone (416) 727-6672 evenings.

Talk-in to the fleamarket via VE3YRA which will be working 146.52 MHz simplex and through the local repeater VE3YRC, 147.825 input/147.225 MHz output.


### MOSQUITO RACER

Don McVicar

At the end of World War Two, McVicar set up World Wide Aviation in Montreal and successfully entered the fiercely competitive business of ferrying both new and patched-up aircraft around the world, mostly for the newly emerging national airlines in Europe. Then, while a spectator at the U.S. National Air Races in 1947, an idea was born. Surely a de Havilland Mosquito would have a chance? The author's entertaining and exciting account of how he sought, bought and entered a Mosquito for the Bendix race in 1948 is skilfully interwoven with the story of his ferrying business which reached 15 countries on 4 continents.

Don McVicar is the author of several very successful books, including *Ferry Command* and *North Atlantic Cat*, and *Mosquito Racer* is in the same entertaining style.

225 x 140mm, 224 pages, 0 906393 58 2,  
Case Bound, Photographs and  
Line Drawings  
\$27.50



OH NO...  
BILL'S USING THE  
KILOWATT AGAIN.

No argument is needed to show what transforming power the mind can exert. The energy set free by the magic agencies of hope, courage, desperation, fanaticism, or by the enthusiasm for a great cause, may reveal the possession of a force undreamed of, or so husband the resources of the body as to keep the flame of life burning for a time when the oil seems exhausted.

### CALENDAR

Oct 16: DOC licence examination.

Oct 19: Kingston ARC's First Annual Radio & Electronic Flea Market. Details this page.

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.

1986

Nov. 9: York Region ARC Newmarket Fleamarket. Details Oct. TCA.

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.

Let TCA know about your events three months in advance to list them in the Calendar.

### HELP STAMP OUT RFI

At the outset of the VE3SR case, CARF got in touch with the Canadian Standards Association. CSA is now taking RFI most seriously, and has asked CARF to request any Amateur to forward to them details of cases of RFI.

The type and model number of the equipment affected, its serial number and certification authority would be useful, as would the type of signal it intercepts— modulation, power, and frequency. Send data attention Salerno Guido, CSA, 173 Rexdale Boulevard, Toronto M9W 1R3.

If the affected device bears the Canadian Gas Association logo, let Mr. Turnbull know. He's manager, CGA laboratory, 55 Scarsdale Road, Don Mills, Ont. M3B 2R3.

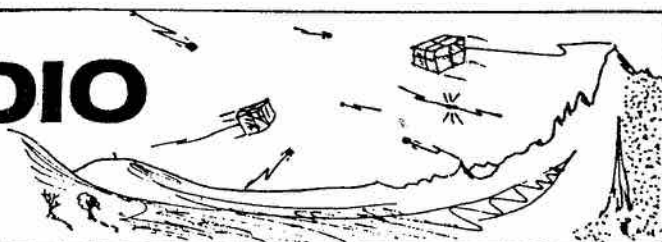
### KINGSTON FLEA MARKET

The Kingston ARC's first annual Radio and Electronics Flea Market will be held on Saturday, Oct. 19, St. Margaret's Church, 690 Sir John A. Macdonald Boulevard, 9 a.m.-3 p.m. Adult admission \$1.00



# PACKET RADIO

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



## Please leave your message at the beep...

One of the characteristics of packet radio that distinguishes it from our other communications using voice, CW and TV is how easily packet radio integrates non real-time communication. What is non real-time communication and how can you use a Packet Bulletin Board System (PBBS) to save you time and frustration?

When you speak into your handheld transceiver or pound out morse on your key you are communicating in real-time. The person or group on the other end must receive your transmission as it occurs— in real-time. This is the type of communication we are all completely familiar with from our daily lives. Queries are made and responses received in rapid succession. The conversation can be steered in any direction depending on responses to earlier questions.

Frequently we don't need interactive communications or don't require a response immediately. Consider a few situations where Amateurs communicate in real-time merely because of the limitations of our communication systems. How many times have you wanted to be elsewhere at the time the regular net was on, or didn't really want to listen to all the check-ins or usual drivel, but did so anyway so you didn't miss an announcement of interest? Have you ever tried for hours or days to meet up with someone on the air, just to deliver a message? Try delivering a message to a friend on the telephone at 0300!

The PBBS eliminates time-dependency of communications. An operator who has a bulletin, general request for information, a listing for an item for sale or a message for someone who cannot be reached at the time simply establishes a connection to the PBBS and 'posts' his item. Subsequently, any station can connect to the PBBS and read as many or few of the posted messages or bulletins as time or interest permits. If appropriate, a response to any message can be left. The response can be read at the convenience of the addressee.

A PBBS organizes related

```
cad$connect ve3fx1 via ve3pak
cad$*** CONNECTED to VE3FX1
```

```
VE3JLG logged on system at 22:23:17 on 22/08/85
Last on at 02:23:52 on 21/08/85, Highest message then was 660
Old MacDonald had an agricultural real estate tax abatement.
```

```
WELCOME to PBBS VE3FX1, D. Bruce Ottawa, Ontario (613-225-9920)
Type X <return> for verbose prompt. Type H or ? <return> for more help.
Lightning season has been forcing me to turn off the BBS from time
to time, sorry for inconvenience.
```

```
The following messages are for you - 662
There are 61 Messages numbered from 51 to 665
```

```
Commands are Help, List, Read, Send, Kill, Files,
Chat, Upload, Download, Topic, Bye, Xpart.
22:23:43 Command>
read 662
```

```
Message number: 662 Date: 22/08/85 Time: 00:17:28
To: VE3JLG
From: VE3KVM
```

```
Subject: TAPR
Last Read: 22/08/85 19:17:48
Hi Brett—yes, I did get through to
TAPR, at about 1215 today. The orders
were up to 519; much longer and I would
have been DL. I hope they deliver on
time.
```

```
Too bad about Bayshore...refresh my
memory on what the third location was.
Will call on the turtlephone but you
must be busy tonight...Catch U later.
```

```
21:24:21 Command>
list 663
```

```
msg# date read To At From Subject
665 22/08/85 22/08/85 ALL VE3PAZ Sept BYTE Computer
```

```
22:25:06 Command>
topic
```

Selectable TOPICS are-

|        |           |         |            |
|--------|-----------|---------|------------|
| ASR    | BANDPLANS | C       | CARFNEWS   |
| EIES   | GATEWAY   | GENERAL | GROUNDWAVE |
| KERMIT | PACSAT    | PATHS   | PBBS.SRC   |
| PR     | TAPR      | TNC     | UNIX       |
| UOS    | WORLI.SRC |         |            |

```
22:25:32 Command>
topic carfnews; files
```

Current Downloadable files for Selected TOPIC are-

| Name         | Last modified | bytecount |
|--------------|---------------|-----------|
| april.14.85  | 85/04/20 1602 | 3112      |
| april.28.85  | 85/04/30 2052 | 2905      |
| feb.21.85    | 85/03/04 2028 | 2822      |
| header       | 85/03/04 2024 | 164       |
| june.26.85   | 85/06/30 0134 | 4885      |
| march.3.85   | 85/03/04 2027 | 2982      |
| may.26.85    | 85/05/27 2149 | 3274      |
| ve3ar_update | 85/06/29 2308 | 1553      |

```
22:26:23 Command>
download june.26.85
```

HERE IS CARF NEWS SERVICE RADIO BULLETIN NUMBER 9/85, BROUGHT TO YOU BY YOUR NATIONAL AMATEUR RADIO SOCIETY, THE CANADIAN AMATEUR RADIO FEDERATION INCORPORATED.

1. The May issue of the DOC semi-annual "Agenda" of proposed changes to the regs had nothing new of interest to Amateurs. It contained a re-hash of the last Agenda and still carried the changes proposed for the Amateur Service three years ago.

2. In the U.S. the ARRL executive has approved expansion of the Novice class

(abridged)

```
22:28:00 Command>
bye
$$$ DISCONNECTED
cad$
```



information into groups to make retrieval easier. Messages may be left for a specific user, and the PBBS may inform the user that messages have been posted for him when he establishes a connection to it. A command is usually provided for listing brief summaries of messages addressed to all users or just personal messages. Bulletins and announcements of general interest can be filed with other information on the same topic. A typical PBBS may contain greater than two million characters of messages and other bulletins at any time.

A number of PBBSs throughout the EASTNET packet network are based on the WORLI design. This implementation allows a user to leave a message on his local PBBS addressed to a user at a different, geographically remote PBBS. In the early hours of the morning the PBBS will automatically attempt to connect to the remote PBBS and post the message to it, or will move the message to a PBBS closer to the destination, which will in turn repeat the procedure. If a connection to the next PBBS cannot be established, then the PBBS will retry some time later. The packet protocol assures error-free transfer of the message from the originator to the addressee in all cases.

Why doesn't the originator of the message just connect to the remote PBBS himself and leave the message there? The inter-city links are already congested, especially during 'prime time,' with numerous operators chatting in real-time and accessing their local PBBS. Moving traffic in off-peak hours helps keep the network free for real-time communication, and makes use of the network when it would otherwise be unused.

As the new Amateur satellites with storage capability, such as PACSAT, come into operation, these techniques will be reapplied; it will be necessary to wait until the satellite is in range of a ground station in order to send or receive messages. The new 'flying mailbox' satellites will carry traffic between distant cities throughout the world, enhancing today's packet networks' time-saving non real-time communications.

On page 44 is a typical session on a Packet Bulletin Board System (PBBS). The commands issued by the operator are shown in italics. **△**

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



There are no whole truths; all truths are half truths. It is in trying to treat them as whole truths wherein lies the problem.

# SWAP SHOP

**FOR SALE:** Robot 800 Communication Terminal Unit for RTTY and CW. Excellent condition. Like new, \$350.

**FOR SALE:** YAESU FT-101ZD Tranceiver. Excellent condition \$450.00. Spiro Hazaras VE3KTV 143 Rosslyn Ave. North, Hamilton, Ontario, Canada L8L 7P5, Tel. (416) 547 8615.

**FOR SALE:** Drake R7 Receiver with DR7 Digital Readout/General Coverage Board. Covers .01 to 30 MHz continuous in AM/CW/RTTY/SSB modes. NB7A Noise Blanker and extra crystal filters installed. Approx. cost \$2200 new. Estate sale \$880 in mint condition. One of the best general coverage receivers available. Kenneth J. Smith VE3GQV, 22 Ballantyne Ct., Inlington, Ontario M9A 1W9, (416) 233-8018.

**FOR SALE:** VE2XB QSL 250— \$23, 500- \$40 includes sales tax and postage. Send money order along with CALL, NAME, QTH, to: Michael Shaer VE2XB, 2340 Gold Street, Apt. 304, St. Laurent, P.Q. H4M 1S4

**FOR SALE:** Heathkit Apache Transmitter and Mohawk Receiver in working condition, complete with books. \$100.00. "Rico" VE3LGL, Box 16, Milford, Ont. K0K 2P0. Phone: (613) 476-7688.

**FOR SALE:** 50' Vertical Antenna, Hy-Gain 18HTS. Assembled but never erected. \$500. Will deliver within 500 kilometers of Ottawa. Kingsley Beattie, 1344 Kilborn, Ottawa. K1H 6L4. 613-523-6604.

**FOR SALE:** Complete Kenwood Station. TS-180S, PS-30 power supply, SP-80 speaker and MC-50 microphone— \$950 plus shipping. John MacMillan VE4AHT, Box 573, Pinawa, MB ROE 1L0. (204) 753-8847.

**FOR SALE:** ICOM HM-10 search microphone \$35. VE1BNN, Box 29 Armdale, N.S. B3L 4J7.

**FOR SALE:** S/B 101, P.S. new speaker, four extra new 6146's, 400 cycle filter, Electro Voice dynamic desk mic model 638. Asking \$300.00. Fred Roberts VE3AFA, 241 Finch Ave. East, Willowdale, Ont. M2N 4S1. 416-221-9252. Call P.M.

**WANTED:** SB220 or L4B, 572 and 813 Tubes, 4-1000 Tube and Socket, cheap FT101 for parts. Bill Richardson, Site 20, Comp 63, RR #1, Whitehorse, Yukon, Y1A 4Z6.

**FOR SALE:** Homebrew 160-80-40 Sloper Two traps 56 feet VE1BNN P.O. Box 29, Armdale N.S. B3L 4J7.

**BUILD** your own 8K-32K VIC20 expansion and CW/RTTY interface

under \$20 each. FREE programs on your tape or disk. Send SASE for more info. VE6BLY Moe Lynn, 10644-146 Street, Edmonton, AB. T5N 3A7.

**FOR SALE:** Complete Hustler Mobile system for 80-40-20-10 metre bands. Bumper mount, mast, resonators. All excellent condition. \$175. Kenwood DM-81 dip meter \$50. MFJ-202 Noise bridge \$50. John Benson VE3JH, 234 Third St. N., Kenora, Ont. P9N 2L7.

Send your 'Swap Shop' notices to the TCA Swap Shop, Box 356, Kingston, Ont. K7L 4W2. Single insertion is \$1.00 minimum (10 words) and \$1.00 for each additional 10 words. To renew, send copy and payment again. Please print or type, and put your membership number and call (not counted) at the end of your ad.



"You are old, father Louie," the young man said,  
 "Yet you pass every runner in sight.  
 And now you persistently stand on your head,  
 Do you think, at your age, it is right?"  
 "In my youth," said the Sage, "I practiced at Morse  
 Till I boasted an excellent fist.  
 And the exercise gave me the powerful force  
 That resides to this day in my wrist."

Yes, that's Lou VE4AEM, 81 years old and counting. Lou ran ten miles to celebrate his 80th birthday. And if you want to work DX during the next sunspot cycle, keeping fit like Lou will help!



# TECHNICAL SECTION

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



## Mark makes the FOXX Transceiver

**M**ark Space was almost crying as he entered the shack. "I—I've broken your drill."

"You didn't borrow my drill. Do you mean the bit?"

"Yes. In the second hole."

Well, that's better than one drill, one hole. "So you'll get me another when you can, then, eh?"

"Yes." (sniff). "But now I can't finish the PCB."

"No drill, no PCB?"

"Of course."

"Does Tricia have any broken sewing needles?"

Meretricia Space makes her own clothes, so that's a fairly accurate guess. It was proved true when Mark came back with a small selection filched from her workbasket. I picked one out that looked about the right size and found my hone. As Mark watched closely, I first ground the fat end flat and perpendicular to the needle.

I put the needle in a pin vise and made a mark where the short side of the flat was, on the handle. Then I pointed the handle over my shoulder and ground a facet on the flat. A look through the magnifier showed me I was doing well, so I turned the handle exactly 180 by the mark and ground a matching facet on the other side.

I handed the ground end to Mark, and offered him the magnifier. But his young eyes are not in need of such assistance, he could see two flats, each at 30 degrees and 60 degrees to perpendicular, meeting in the middle of the needle.

"That's a Woolwich bit, not so fancy as a twist bit, but it'll bore you holes well enough, Mark. Moreover, as you see, it's much cheaper. Go and try it, but be more careful."

An hour later he was back, with the two inch square PCB.

"Can I borrow your soldering iron?"

I was more cautious this time. I'd already lost a drill bit, so I suggested:

"Does Tricia still do wood burning?"

She had gone into decorating scraps of wood with an electric tool.

Cleaned up, it would serve Mark.

"She hasn't, for months."

"Then go and get it."

"She's not at home, I'll have to wait to ask her."

"Mark, it is much more sensible to ask forgiveness than permission. Go fetch."

He did so, and we filed the crud off the end of it. I showed him the wire solder, and cut off the end sharp so that he could see the three cores of rosin flux through the middle. He had to use the magnifier this time.

"Plug the iron in, and wait a minute." He did so. "Now touch the solder to the end of the iron, and coat the tip on all four sides with solder. That's called tinning the bit. Don't try and work without a bright, clean, tinned bit. Put the iron down now **NO, ON THE STAND, DON'T SET THE BENCH AFIRE.** Find out where a resistor goes, bend the wire ends to fit the holes, and put it through. The resistor goes on the bare side of the PCB, so that you can solder the leads to the copper easily. It fits? Good, Lay it on the bench so that the resistor stays put, and touch the lead and the copper of the PCB simultaneously with the iron and the solder. That's enough! Let it cool, and examine the joint. Nip off the excess wire.

"Watch the solder as it cools. It is bright and shiny at first, when it's liquid. Then it suddenly dulls. This is because the lead suddenly crystallizes, while the tin stays liquid. The German word 'Blick' is sometimes used for this. Then the blob goes a light shiny grey, when the whole of the solder is solid.

"Now sort out the leads to a transistor, and make sure you get them through the correct holes. This is a bit trickier than soldering a passive component, for it's wise to heat-sink the lead as you solder it. You have to hold the lead with the long nosed pliers on one side of the board as you solder it on the other. The pliers stop the heat from travelling up the lead and ruining the transistor."

This he did under supervision once, so I left him to sort out

components, fit them into the PCB, and solder them in. It took him an hour or so, and he brought the result to me and showed it proudly. Once again I took up the magnifier, and examined each joint. "One there not too good."

I put the hot iron to the suspect joint and the solder ran away from the wire. "Dry-soldered joint. The solder did not alloy properly with the wire. Scrape the wire end bare with the knife, Mark and do it again. Dry-soldered joints are the usual cause of trouble.

"We always used to scrape the wire ends bright before soldering, but nowadays they are well-prepared by the manufacturers, so we don't usually bother. It's a good thing, though, to examine each lead before you put it into place, and clean it if you are in any doubt about it. Now check the board. Are you sure that every component is in its right place?"

Mark took the PCB and the circuit diagrams, and flipped the board over and over until I got tired of watching him.

"Take the little mirror, Mark. Prop it up against the absorption meter, and hold the board in front of it. Set the light carefully to illuminate both sides, and you can see both sides of the board at once. Makes the job much easier."

It did, in five minutes he had found his error— he had put a capacitor in a resistor's place, and vice versa— so we had some fun getting them out and in again.

"Do this as little as possible, Mark. The copper is likely to come off the board if it is overheated. The ideal is to make no mistakes at all. Nobody, though, not even me, can do that."

The last joint cooled. "Finished!" he cried joyfully.

"Finished? Nowhere near. Now you've got to mount the board and the other bits, the capacitor and the other controls, the power leads, the crystal socket, the phone jack and the key jack. Go find yourself a case to mount all these things on."

Next month, we'll follow Mark as he gets it all together. △





# Secondary Frequency Standard

By Bill de Carle VE3OBE

The essence of coherent signaling is accurate timing. The standard described here may be used as the heart of a CCW station, or when you want the last word in those arguments about whose rig is off-frequency. For CCW, we like to know our frequency to within 1 Hertz. Commercial oscillators are available to meet this need, but prices around \$1500 put them beyond reach. Even the exotic crystals they use cost hundreds of dollars apiece.

For the most part, the frequency at which a crystal oscillator runs is determined by three things: 1) the gradual aging of the crystal and other circuit components, 2) the supply voltage, and 3) the temperature. We can't do much about 1) except specify a crystal with a low aging rate and recalibrate often. Item (2) can be exploited as a fine-tuning mechanism. Item (3) is the real sticker. Almost any crystal oscillator makes a neat thermometer—if you vary the room temperature a few degrees, the frequency will shift noticeably. So how can we take an inexpensive crystal and turn it into a high-stability timebase? The solution is to use an oven (and not just for the crystal). Our approach: put EVERYTHING that can possibly influence the frequency INSIDE the oven, and hold the temperature constant.

Most crystals are 'AT-cut' types. Fig. 1 shows how the frequency of such a crystal is affected by temperature. Notice that there are two turnover points on the curve. These are the points at which, for a given change in temperature, the change in frequency is minimal. As it is impossible to hold the temperature absolutely constant, the trick is to select an operating point where the variations which do occur will have the least effect on frequency. It is advantageous to run the oven just above ambient (not too hot), so we can use commercial-grade components and reduce the energy needed for heating. If we chose an 'AT' crystal cut at an angle of 35 degrees, 2 minutes, the upper turnover point will be around 48 C. A simple calculation shows that at this point on the curve a temperature change of one degree Celsius will result in a frequency shift of less than 1 part in 100 million. Most Canadian suppliers can provide

these crystals at a very reasonable price.

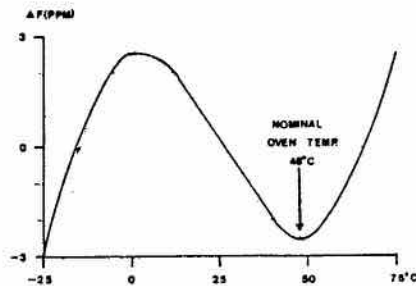


Figure 1: Variation with temperature of the frequency of an AT cut crystal.

Now let's see how we are going to keep the oven temperature constant. To make a proportional controller we need two things: 1) a means to measure the oven temperature electronically, and 2) a reference voltage which remains constant come Hell or High Water. Fortunately, two new IC's from National Semiconductor make the job a cinch. The LM335H temperature (plus 10 mV per degree Kelvin). Its long-term stability is excellent, within 0.2 degree after one thousand hours. The LM329 is an integrated 'super Zener' voltage reference chip with a stability of about 20 ppm. In this application, ordinary Zeners won't do, even in an oven, because they have a hysteresis effect—if you turn the power off and on, the Zener voltage is not the same as it was before. The LM329 has a subsurface Zener—the junction is buried below the surface of the silicon, and this cures the hysteresis problem.

Our standard consists of a box within a box, the space between them being filled with insulation. I used a large tobacco tin for the outside box, but any suitably-sized metal container will do fine. The inner box (oven) is a small plastic case (the kind Bradsol throat lozenges come in)—and the insulation is cotton batting. The whole thing runs off 12 V DC, available in most shacks. The circuit inside the oven goes on a double-sided PC board. The copper on the bottom is left substantially intact in order to distribute the heat evenly. The 'heater' consists of a dozen 1K resistors in close contact with this copper foil, controlled by a VMOS

power FET. Both the heating element (resistors) and the pass transistor are INSIDE the oven, resulting in a linear relationship between the control voltage and rate of heat production. The LM329 voltage reference chip is also inside the oven, so we don't have to worry about its temperature coefficient.

For the oscillator, a 74HCU04 (unbuffered CMOS hex inverter) is used. One gate forms an inverting amplifier around the 8 MHz crystal, and two others are used to buffer the oscillator output to prevent loading. The rest of the gates are unused, but their inputs must be grounded. Coarse frequency adjustment is via C1, a 5-60 pF trimmer. Fine adjustment ( $\pm 25$  Hz) is accomplished by varying the supply voltage to the 74HCU04, stabilized by the output of the LM329 reference IC.

A 50  $\mu$ -amp panel meter reads out the oven temperature directly in degrees C, but this is a luxury, as it can be monitored with any external voltmeter. BNC connectors are used to bring out two buffered signals, the 8 MHz oscillator output, and a 1 MHz squarewave, which provides accurate timing for all the station CCW equipment.

This signal, rich in harmonics, may also be used as a marker to check the calibration of your transceiver. Two small (100 mA) regulators are used to obtain 8 V and 5 V from the 12 volt supply. Everything in the oven with the exception of the heater is powered from the 8 V regulator; the heater runs directly off 12 volts. A 5 V regulator powers only the final output stages, ensuring well-isolated 0-5 volt logic level outputs with constant amplitude, regardless of the voltage on the oscillator.

## Oven Details

In a high-stability timebase, mechanical considerations are more important than the electronics. A plastic box is called for. Use a plastic box for the oven. You might think that a metal box would make a better oven. The problem is that if any large metal surface is close to the oscillator, the stray capacitance will cause an instability that's just too hard to control. If you want stability, use a non-conducting box for the oven (and

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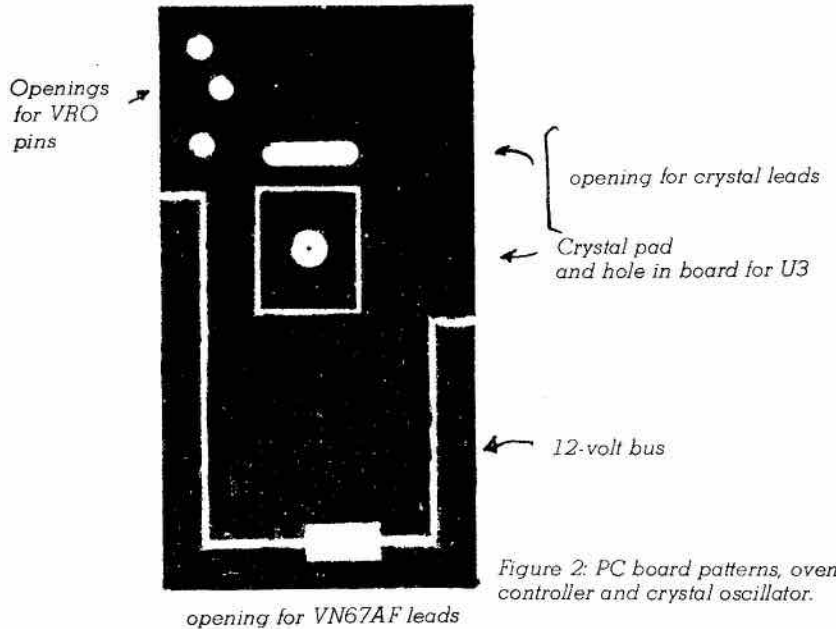
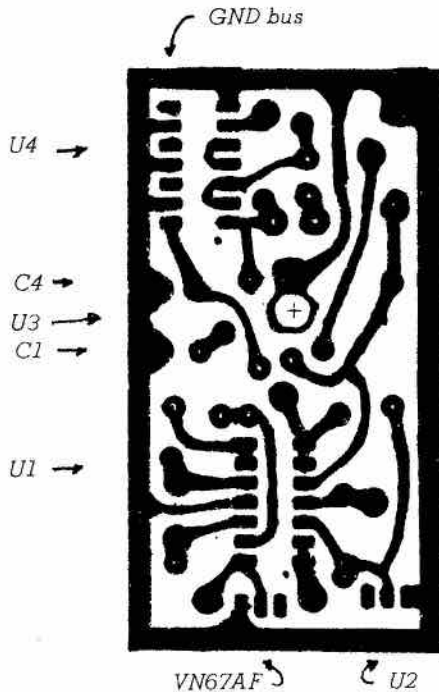


Figure 2: PC board patterns, oven controller and crystal oscillator.

don't wrap it with aluminum foil!). The oven should be located in the middle of the outer container, equidistant from all sides. About 1.5 to 2 inches of packed cotton insulation all around works well.

Cotton is no great insulator, but it is easy to remove when you want to get at the inside. The crystal is placed flat against the copper foil on the **UNDERSIDE** of the PC board, its leads coming up through the board to the circuit traces on top. The crystal can is in contact with the metal-cased LM335H temperature-sense chip, ensuring that the crystal temperature is measured accurately.

The LM335H is mounted upside-down from the top of the board, passing through a hole in the PCB to contact the crystal can. Solder the LM335H case to the copper foil on the bottom side, and use thermal grease between the crystal and its copper pad. The VMOS power FET mounts from the bottom of the board. Its leads go up through the board to mate with traces on top.

Note that the drain lead is not connected to anything on top of the board. Instead, we bend the FET over flat against the bottom of the PCB (with its front facing the board) and solder its tab (electrically connected to its drain internally) to the large expanse of copper heatsink on the bottom side of the board. Use long-nose pliers to form the tab so it will lie flat against the board.

Fig. 2 shows a recommended layout for the oven PC board. The illustration on the right shows the underside of the board. Notice the

isolated border strip at the bottom which also runs partway up each side of the board. This is the 12-volt heater supply rail. The rest of the board area (except for the small rectangular part in the middle) is connected electrically to the drain of the FET.

The rectangle in the centre (with the hole in it) is where the crystal goes. If you solder the LM335H in place (you may have to snip off the tab on its case to get it to fit through the hole)—this small rectangle will be at ground potential (via the LM335H case). Position the crystal can snugly against this rectangle, being careful it doesn't short out against the surrounding copper, which is at FET drain potential.

The small oval opening just above the rectangle allows the crystal leads to go up through the board to mate with the corresponding pads on the

top side. The three openings at the top LHS are to allow the pins of the (optional) 10K LM335H temperature calibration pot to pass through without shorting against the bottom foil.

This pot, if it is installed, mounts from the bottom side of the board, for mechanical strength. Once the VN67AF FET, the crystal and the (optional) 10K pot have been positioned on the underside of the board, there will still be lots of room to install the dozen 1K ohm heater resistors. Space these resistors evenly around the bottom end of the board.

One end of each resistor is soldered to the 12-volt heater supply rail, the other end to the main heatsink foil, which is connected to the FET's drain. The result is 12 resistors in parallel electrically but physically spaced around the board.

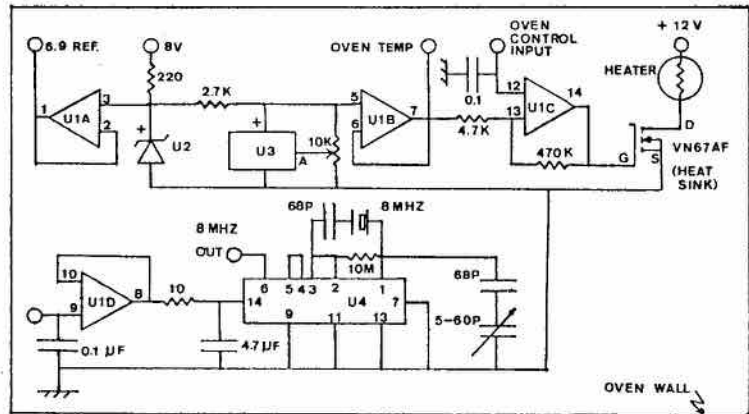


Fig. 3: Circuit of the oscillator and controller.



Most of the heat will be produced at the end of the board furthest away from the sensitive capacitors which form part of the oscillator circuit, with the crystal (and the LM335H temperature sensor) in the middle.

The illustration on the left in Fig. 2 shows the etch pattern on the topside of the board. A somewhat unusual technique is used to connect the components. First, we don't have to do much drilling. I find it difficult to drill those very fine holes in the centers of each IC terminal pad anyway.

Instead, I use long-nose pliers to form the IC leads into little 'feet' which rest on their corresponding pads. The components are then soldered to the PCB right on top of the traces. You will have to drill only the one large hole in the middle for the LM335H temperature sensor to pass through the board and contact the crystal, and a few others.

At least 2 leads of the VN67AF FET (the source and gate) will have to come up through the board from below. You will also have to drill out holes in the center of the crystal lead pads, again to pass the leads up from below. And the 3 pins for the (optional) 10K calibration pot.

The leads of all other components may be soldered directly to the foil traces on top of the board, with the advantage that the pins do not protrude through the board and risk shorting against the bottom foil.

Cut a small slot in the plastic box to allow the connecting wires to enter. (Not too big, we don't want the heat to get out!) I used a small piece of non-conductive foam to press the crystal snugly against the bottom of the PCB when the plastic box is closed. You might want to drill a small hole in the plastic box for access to the C1 coarse frequency adjustment, but be sure to tape it up later.

### The Circuit

Referring to the oven board schematic (Fig. 3), R1 provides bias current for the LM329 reference IC, about 3.5 mA. The voltage at the positive terminal of this IC is nominally 6.9 V. Don't worry if it isn't exact, the stability is what's important. R2 provides bias current (1.5 mA) for the LM335 temperature sense chip. At zero degrees C, the voltage will be 2.73 V, and at 25 C it will be 2.982 V.

The board has room for a 10 K trimpot to calibrate the LM335H exactly, but even without installing the pot, the calibration is close enough. The 6.9 V reference and the temperature sense voltage are buffered by high-Z voltage followers U1A, U1B respectively. The offset voltage TC's on these amps is not a problem because the LM324 quad amp is operated at a constant temperature. The non-inverting input

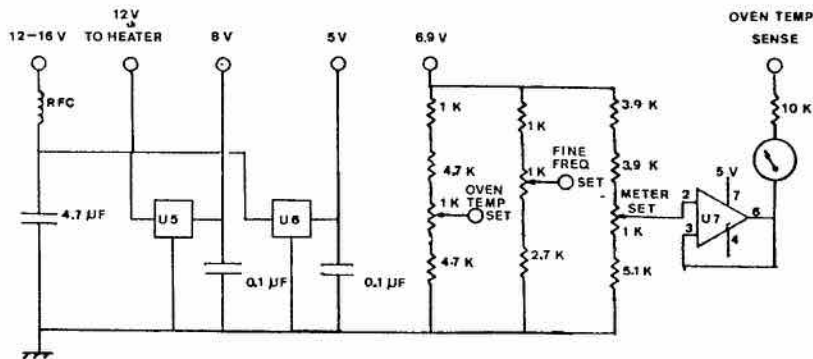
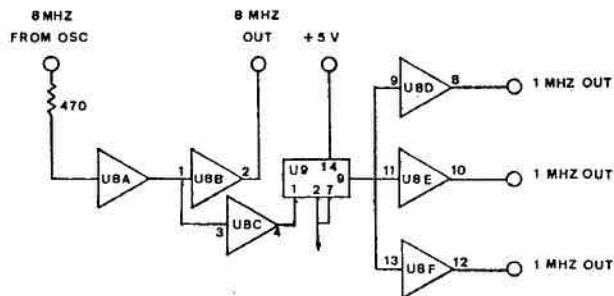


Fig. 4A: Power supply circuit and 4B: logic for square wave 1 MHz outputs. U8, 74HC04 buffered hex inverter. U9, 74HC4024 7 stage binary counter, used as ÷8. Both run at 5V logic level.



of U1C receives the oven set point voltage (2.8-3.45 V).

This amplifier is configured for an inverting gain of 100. If the crystal temperature drops slightly, causing the output of the LM335H to decrease, the output of U1C will rise, turning on the VN67AF FET harder, calling for more heat production. U1D provides operating voltage to the oscillator circuit. Normal range is 4.0 to 5.5 volts.

The oven is connected to the outside world with a short length of ribbon cable. The thin wires minimize heat conduction away from the oven. Use larger wires for the ground and 12-volt leads. Circuitry outside the oven (Fig. 4) is non-critical. No layout is given, as perf-board construction is fine. The small regulators, (78L08, 78L05) may be placed outside the main box in a separate supply to improve air circulation and eliminate heat conduction towards the oscillator, but should be OK inside the box as well, as long as they are not near the oven.

If you are running this standard off the same 12-volt supply used to power a transceiver, the 100 µ-henry RF choke in the 12-volt line is recommended. Three 20-turn trimpots are used to derive internal control voltages from the 6.9-volt reference. If you can find some with low temp. coeffs, so much the better. You will have to punch holes in the outer container to allow access to these pots. VR1 sets the oven

temperature. The range is 2.84 V (11C) to 3.45 V (72C).

VR2 sets the oscillator voltage (frequency trim). Set it up initially for 4.75 V (mid-range). VR3 is the zero-adjust for the (optional) oven temperature meter output. Set it for exactly 2.73 V (while oven is hot), corresponding to zero degrees C. The 10 K resistor in series with the meter converts 10 mV/degree to 1 µA per degree.

The digital divide-by-eight circuit is straightforward. We provide three independent 1 MHz outputs for connection to various pieces of CCW gear in the shack. Make sure the outer box is grounded and tight, or you will get RFI.

### Calibration

A burn-in period of 3-5 days is recommended before you start any serious calibrating. The frequency will drift around quite a bit in the first few days, but then settles down nicely. Since it takes at least half an hour for the oven to reach operating temperature, leave the standard running all the time. Once the final temperature is reached, operating current is very low.

You can use a frequency counter for initial set-up, to put the coarse adjustment in the ballpark. However, with good insulation, the oven should stay within 0.1 degree, and the stability of our standard will approach a few parts per billion,

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which is much better than the timebase in an ordinary counter, so a more precise method of calibration is needed.

One approach is to build yourself a receiver for WWVB's 60 KHz transmission from Fort Collins, Co. This can be received anywhere in North America. Another possibility is to use the Omega Navigation signal (N. Dakota) on 10.2 KHz. You might even try the U.S. Navy's submarine transmitters (24 KHz, Cutler, Me., 24.8 KHz, Seattle, Wa.)— these stations run a LOT of power (Cutler runs more than a megawatt)— so are very easy to receive. But they use 200 baud MSK, a kind of frequency-modulation that's awkward to remove.

All of these VLF carriers are derived from atomic clocks, and may be considered absolute for our purposes. If you're lucky and happen to live near a Loran-C transmitter (as we do in Toronto), that's the easiest of all. Loran-C uses pulses of RF at 100 KHz. Each station sends out a string of 8 or 9 pulses, shuts up for a while, then does it all over again. The repetition interval is very precisely timed.

For example, the station in Seneca, N.Y., (800 kW) repeats every 89,700 microseconds. If you divide down your 1 MHz output properly, you can make a sync pulse every 89.7 msec to trigger the trace on an oscilloscope. Once you get a picture of a single Loran-C pulse on the scope, if your standard is accurate, the next pulse (which comes along 89.7 msec later) will appear at exactly the same place on the screen.

By expanding the display, we can concentrate on, say, the third zero-crossing of the RF waveform after the pulse starts. Now, if your oscillator is running a little fast, the scope will trigger earlier than it should, and the whole picture will slowly move to the right. To put it another way, given two oscillators, any slight frequency offset will result in a phase-shift between the signals that gets worse with time.

We know there are 3,600,000,000 microseconds in an hour. So if, after one hour has elapsed, your Loran pulse has moved to the right on the screen a distance equivalent to say, 36 microseconds, your standard is running fast by one part in one-hundred million. With longer observation periods, we can measure the oscillator frequency as precisely as we wish.

Note that groundwave gives the shortest path from the Loran-C transmitter to your station. There is also skywave propagation, but it takes the signal longer to reach you by that route, as it has to travel further. By concentrating on part of the pulse envelope near the beginning (the third zero-crossing of the RF wave-

form), you won't be bothered by skywave contamination, since the signal coming in via skywave will not yet have reached your station while you are seeing the beginning of the groundwave pulse.

While all VLF stations operate 24 hours a day, it is best to avoid using them around local sunrise and sunset.

You can, of course, use the HF transmissions from WWV (e.g. 20 MHz) for short-term, low-accuracy calibration. Keep in mind that these signals (at your site) are not phase-coherent over the long run due to unpredictable path variations, so if you want accuracy, go down to pulsed VLF. To use the HF WWV transmission, arrange to receive a marker signal from your frequency standard and the WWV station at the same time. If the signals are comparable in strength, a sinusoidal beat envelope can be seen on the scope, or even heard. Adjust your local oscillator to eliminate the beat, and that's it.

Once your frequency standard is up and running and properly calibrated, you'll find many uses for it. If you happen to own a frequency counter with a 10 MHz timebase, you might want to start out with a 10 MHz crystal in the standard and divide it by ten instead of eight. (Divide by 5 first, then by 2 to get perfect square-waves out.) Using the oven-stabilized timebase in place of the one in your counter will improve its accuracy by at least an order of magnitude. You might also consider bringing out the 6.9 volt buffered reference. While the oven is at operating temperature, it can be used as a calibration check for your digital voltmeter (20 ppm long term stability).

#### Parts List— Oven board

U1 LM324 Quad OP Amp  
 U2 LM329 Precision 6.9 volt reference (plastic)  
 U3 LM335H Precision temperature sensor (metal)  
 U4 74HC04 hi-speed CMOS hex inverter (unbuffered)  
 VN67AF VMOS Power FET  
 X1 Crystal, high-stability, 8.0 MHz fundamental  
 Cm: 5 mpf AT-cut 35°2'.  
 Rs: 15 ohms Welded or ultrasound seal  
 Co: 3 pf Upper turnover: 48 C.  
 HC-18/U (wire leads)  
 C1 5-60 pF trimmer (Radio Shack 272-1340)  
 C2, C3 68 pF monolithic  
 C4 4.7  $\mu$ F (tantalum)  
 VRO 10K trimpot (opt) for precise temp cal.  
 R1 220 ohms  
 R2 2.7 K  
 R3 4.7 K  
 R4 470 K  
 R5 10 Megohms  
 R6 10 ohms  
 heater— 12x1K 1/4 watt.

#### INPUTS:

+12 volts (heater only)  
 +8 volts (regulated)  
 oven temperature setpoint  
 oscillator voltage setpoint (freq. trim)

#### OUTPUTS:

8 MHz from main oscillator  
 6.9 volt buffered temp-stabilized reference voltage  
 Oven Temperature readout voltage

#### Parts List, Miscellaneous

U5 78L08 8-volt regulator (100 mA)  
 U6 78L05 5-volt regulator (100 mA)  
 VR1,2,3 1K ohm 20-turn trimpot  
 M1 meter (0-50 microamp) (optional)  
 BNC connectors (4)  
 U8 74HC04 hi-speed CMOS hex inverter  
 U9 74HC4024— 7-bit binary counter  
 U7 TL091 op-amp (only if meter installed)  
 RFC 100 microhenry power line choke  
 C4 4.7  $\mu$ F tantalum  
 C6,7 0.1  $\mu$ F ceramic  
 R7,10 1 K  
 R8,9 4.7 K  
 R11 2.7 K  
 R12,13 3.9 K  
 R14 5.1 K  
 R15 10 K  
 All resistors 1/8 W except for heater (1/4 W).  $\Delta$

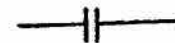
## Believe it or Not!

"A cable TV company is holding a contest with prizes awarded to hams who locate signal leaks for them.

"John Moore NJ7E reports through Joe Moell KOOV that Times-Mirror Cable Television of Phoenix, Arizona has gone out of its way to cooperate with the Amateur community there. The company is requesting hams to help locate leaks from its system.

"To encourage participation, Times-Mirror Cable is sponsoring a contest with a first prize of \$1500 worth of Amateur gear. This public relations effort is an extension of the attempt by Times-Mirror to eliminate any and all system leaks.

"Two years ago, hams in some parts of Phoenix were unable to hear their local 145.25 MHz repeater because the leakage from the cable system was so bad. Thanks to cooperation between Times-Mirror and local hams, the situation has improved immensely."



Anyone interested in a FOXX Transceiver Parts Kit, please let Frank VE3DQB (Box 855, Hawkesbury K6A 3C9) know.



# The Antenna Laboratory

By VE3DQB

Continued from July/August

## The Transmitter Antenna

The transmitter antenna is a 330 mm length of bus wire cut in the middle and soldered to a tag strip, Figure 33. A three-foot length of speaker wire is soldered to the antenna at the tag strip. The other end of this feedline is soldered to a hairpin of bus wire a couple of inches long, and thumb-tacked to a block of wood so that it can be adjusted to critical coupling with the transmitter tank.

The receiver is another 330 mm length of bus wire cut in the middle and supported on a piece of tag strip. The cut is bridged by a signal diode, and RF chokes—20 turns of fine wire round a high-value 1/4 watt resistor—are inserted into each lead at the tag strip. A length of flexible speaker wire—or other handy twinlead—runs from the receiver to the transmitter position, and is connected there to a multimeter on its lowest current range. (Figure 34.)

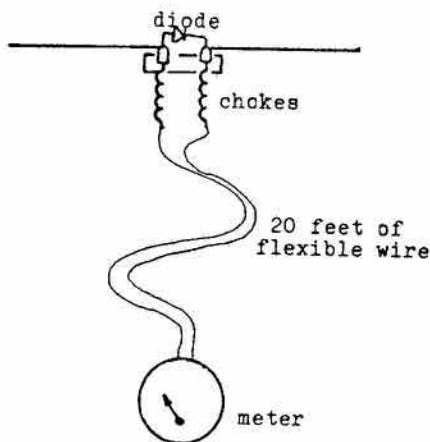


Figure 34: The receiver, with a long line to the transmitter position.

The dummy load is a 1/8 watt resistor soldered to a hairpin of bus wire, 3 inches long or so. Any value between 50 and 100 ohms will do. It is coupled critically to the tank transmitter tank 'hairpin' during adjustments.

## Operating the Antenna

The transmitter is energized, and the dummy load brought up to the tank coil. This causes a drop in grid (gate) current, or a rise in plate (collector) current. As the load is moved, the meter will reach a low, and then rise again. The low meter reading shows where the load draws most power, and is called critical coupling. Note this meter reading.

Assured that the transmitter is working, bring up the Lecher line wavemeter. Remove the dummy load, and couple the wavemeter to the tank. Move the bridge along the wavemeter, and note the distance between two points where the meter dips. Cut back the coupling to the tank until the dip is only just perceptible—this is to minimize the 'pulling' effect of the wavemeter on the transmitter.

Measure the distance between two dips accurately. If it is not 330 mm, adjust the transmitter tuning until it is. The tolerance here is 5 mm: the dips should be between 325 and 335 mm apart to be sure the transmitter is in-band.

With the transmitter on-frequency, bring up the transmitting antenna to the tank circuit until the meter reading is the same as with the dummy load. Key the transmitter with your call to identify the carrier, as the law requires.

It is convenient to make a stand of wood, with a clothes pin

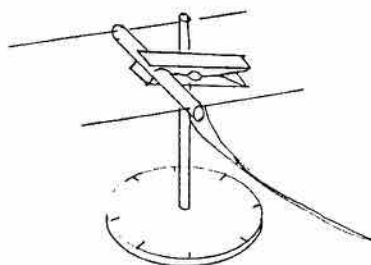


Fig. 35: An antenna mount. A scale at the base gives the angle the antenna makes with the line from it to the receiver.

at the top to hold different antennas, Figure 35. Run the feedline down the stand at least a quarter wavelength. The bottom of the stand is marked every ten degrees all round the circle.

The receiver is set at least 10 wavelengths (20 feet) away from the transmitter, with the meter in easy reading distance from the experimenter's position. The dipole should be horizontal, and perpendicular to the line between it and the transmitting antenna. See Figure 36

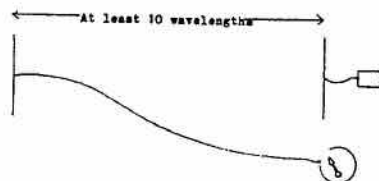


Fig. 36: Setting up the transmitter and receiver.

With the transmitter switched on, and the transmitting dipole horizontal and parallel to the receiver, the transmitter output is varied until a convenient reading is noted on the meter. Write down the reading, and rotate the transmitting antenna ten degrees. Note the new reading. Do this every ten degrees round a complete circle.

If the results are plotted on polar graph paper, a figure-8 pattern is seen. The signal received is a maximum when the two antennas, transmitting and receiving, are parallel, and minimum when they are at right angles to each other.

Turning the two antennas upright, and then rotating the transmitting antenna so that it remains upright, gives a plot of a circle—the signal strength does not change at all. (Figure 37).

Putting these two patterns together, we see that the total pattern in space is that of a doughnut with a very small hole, through which the antenna stands.

Continued on next page ▶



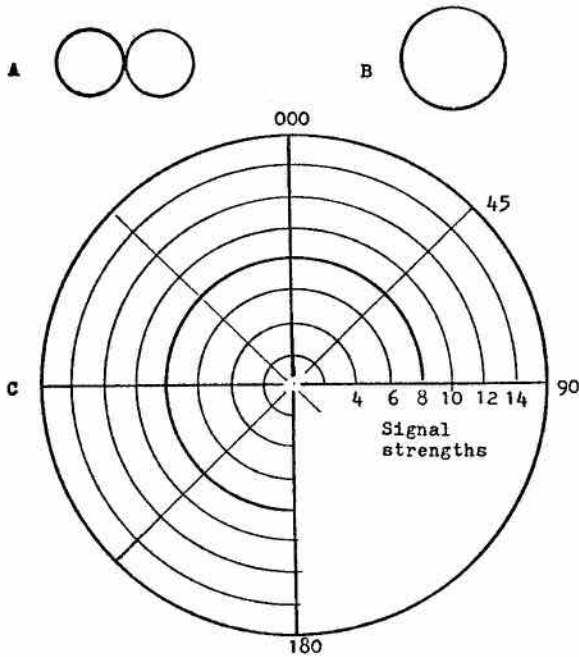


Fig. 37: A, pattern found when one of the antennas is rotated, both being horizontal. B, pattern found when one antenna is rotated, both being vertical. C, Polar graph paper, useful for plotting figures like A and B.

These patterns are only true for antennas far from other bodies. If the experimenter has access to the roofs of two high-rise buildings, the patterns found by transmitting from one to the other will probably be accurate. If the experiments are done indoors, the electric wiring, gas and water piping, and steel framing, may distort the pattern.

### Polarization

With both antennas parallel and horizontal, note the receiver current. Then turn the transmitting antenna ten degrees from the horizontal, and note the current again. Continue doing this until the transmitting antenna is vertical. The receiver current will go from a maximum to a minimum. (See Figure 38).

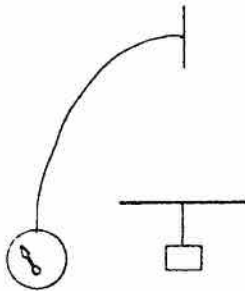
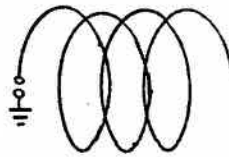


Fig. 38: One antenna horizontal, the other vertical— no signal. The antennas are oppositely polarized.

A horizontal antenna radiates horizontally polarized waves. These are received well by a horizontal antenna. However, if the two antennas are at right angles to each other, no signal is received. The angle the antenna makes with the horizon is its angle of polarization. In ground-wave communication, it is necessary that both antennas be similarly polarized.

Antennas can be built so that the angle of polarization changes



Helical antenna is a coil of wire like an open spring.



To be continued

A distant electron goes in a circle when the helical antenna transmits.

Fig. 39: Helical antenna. This causes distant electrons to rotate, rather than just swing back and forth in a line.

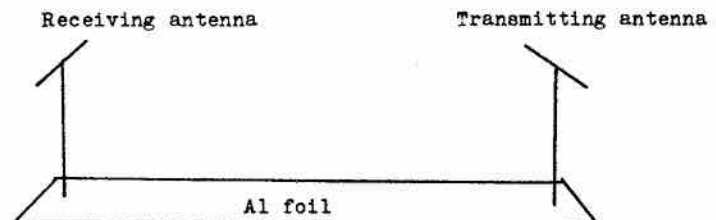


Fig. 40: If the two antennas are placed on a ground of aluminum foil, the signal strength found depends on the height of the antennas above the foil.

continuously. This is called **ELLIPTICAL** polarization. The rotation can be clockwise or counter-clockwise. The receiving antenna can be a dipole at any angle, or a circularly polarized antenna itself, of the correct handedness to match the transmitting antenna. See 'Helical antennas,' Chapter 8.

This configuration is sometimes used in satellite work. (See Figure 39). The polarization of the antenna on a turning satellite changes continuously. The ionosphere rotates the up-going and down-coming beams at a rate that changes as the satellite moves across the sky. The antenna system used must allow for these changes, and a circularly polarized antenna does this.

### Reflection of Radio Waves

To show reflection we can use a flat sheet of metal (household aluminum foil will do) on the floor between the two antennas— transmitter and receiver. Fix the receiving antenna half a wavelength above one end of the foil, and set the transmitting antenna close to the foil. (Both antennas parallel to give maximum signal). Note the receiver reading, then lift the transmitting antenna  $1/8$  wavelength. Note the receiver reading, lift the transmitting antenna another  $1/8$  wavelength. Continue this until the transmitting antenna is a full wave above the foil. (Figure 40).



# More on P.C. Boards

By Rob Bareham VE7CFK  
3 Howard Ave.  
Burnaby, B.C. V5B 3P3

Last month we discussed the repair of P.C. boards, this month we have some interesting tips from Moe VE6BLY on an inexpensive method of replacing or adding foils to the boards. Moe writes:

While on the subject of PCBs, have you tried copper foil tape from your local stained glass hobby shop? This is not the same place you buy the #50 to #80 drill bits, at least not in Edmonton.

The copper foil tape comes in various widths and can be cut with scissors, Exacto knife or razor blade. The adhesive will withstand the heat of a soldering iron and like the copper-clad boards will lift if heated too often. When using it for crossovers, a piece of insulating tape or paper is a good idea rather than relying on the adhesive as an insulator. Use solder at any branch connections.

My Stained Glass Gallery and Supplies shop had 5/32 inch as the narrowest width, .001 inch thick at \$2.80 per 36 yard roll. Even when cut down the middle the circular mil area should still be more than adequate for most solid state circuits. The above price compares with an electronic supply house stock of .125 inch width and .002 thick at \$3.20 for a two yard roll.

Send me your SASE for a one yard sample of 5/32x.001 if you want to make a simple board. Additional lengths of full roll also available at the above prices and your SASE. (That's \$2.80 divided by 36 of course.) Wonder what it would be like for winding coils with such a low distributed capacitance between turns?

(36 yards = 11m, 5/32' = 0.39cm, .001 inch = .025mm)

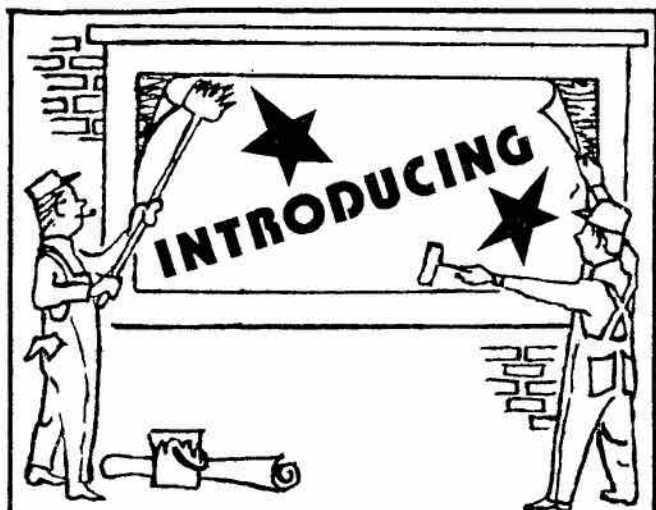
Thanks Moe.

We are always on the lookout for interesting technical tips, for a suggestion we could use a few paragraphs on installing type N connectors. We are running into these types more often as we use the higher frequency bands. Another suggestion would be a few paragraphs on what modifications you may have done for your rig. This is the place for those of you who have an interesting tip to tell but not enough for a full article. If you are having a problem with your equipment then let us know, I am sure we can obtain some helpful suggestions from our readers.

Our promised article on Mobile Installations will be delayed until next month.

73 Rob

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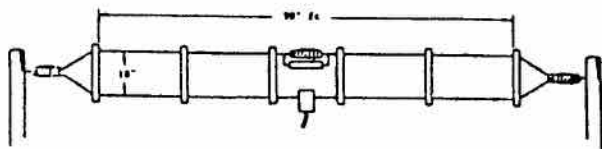
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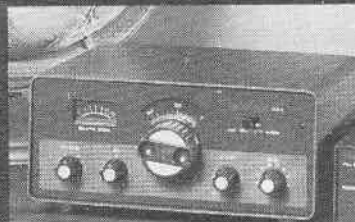
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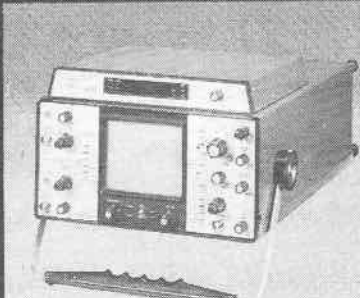
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