

**C
A**

The Canadian Amateur
Radio Magazine
La Revue des Radio
Amateurs Canadiens

MARCH 1986

\$2⁵⁰

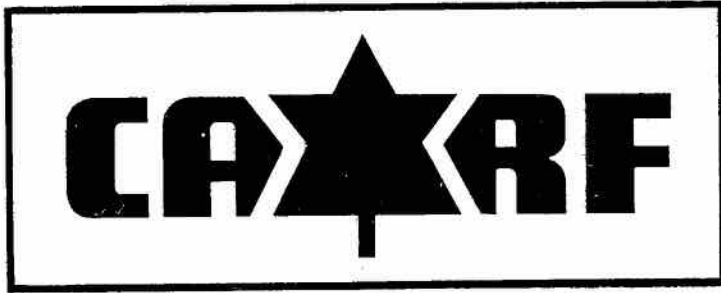
*Arrow Air
Disaster—
Amateurs serve.*

*Amateurs
respond to
DOC's proposals*

*How to use
a repeater*

*CARF member
Arthur VE1CJW
Gold Medallist.
Story Pg. 5*





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March 1986

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

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

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WHAT IS C.A.R.F. ?

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

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

EDITORIAL

Echoes from the West

QUA 

BY JIM VOIGHT VE7CWC

Had a phone call from Frank VE3DQB, our fine editor of *TCA* who has been doing such a fine job and even getting delivery on time. Well during the course of the conversation, he made the statement (I don't think that he asked,) "Jim, I would like you to write the editorial for *TCA*."

My first reaction was: "Me write an editorial? NO WAY." I am capable of being behind the controls of an aircraft on land, water or snow or going out on the West Coast and felling a spruce tree 14 feet across the stump, but write an editorial? That's another thing. Before the conversation had ended Frank had convinced me to try.

After the phone line had gone quiet and I had time to give it some thought, I said, "Hey! here's a way to meet all my fellow Radio Nuts and to let them know some of the things that I would like to see happen in Amateur Radio. But more important, I can tell them I need support from all of you, individuals and clubs. I need your ideas, so get your heads together and let's hear from you all. I am only as strong as the support that I get from all of you."

I would like to thank those who thought that I was capable of filling the job of the B.C. Director. I will try to make things happen out here in the West but I want to stress the fact that I need your help.

We have been hearing a lot lately about 'deregulation.' The question comes to my mind. Do we really need deregulation? Do the present regulations restrict or interfere with our service? If your answer is yes, then why don't you buy a 'CB' rig and get on the Chicken Band, we don't need you in Amateur Radio. I think that Amateurs have been doing a fine job of keeping the Bands clean and regulations help us to do that.

By the time this is printed we will all have had time to really look over the DOC restructuring plan. I think that a lot of thought went into the proposals, but I don't think we need a

lot of new operators on the 2 metre band that only work 'Simplex' (boy what a bedlam that would be). Let's add say 5 wpm to the Category 'A' and give them the use of the CW portions of the HF bands and also the use of the CW portions of the HF bands and also the use of the Repeaters. This would keep the VHF bands cleaner and also give the new Amateur a means of upgrading to a 'B' category. Give this a lot of thought before you write your letter to DOC with your thoughts on the change. Read the opinions of other CARF members in *TCA*, too.

Next let us have a quick look at the Membership of CARF. Let each and every one of us as members set a goal to recruit at least one new member. In 1984 there were roughly 23,000 Amateurs licensed in Canada, in November 1985 CARF had less than a quarter of that number. Let's make that at least 50%.

While on the subject of membership, there's a point that I would like to bring up at the next General Meeting: Representation on the Board of Directors.

I feel the time has come for directorships to be allotted in as close a proportion to the numbers of Amateurs as possible. Ontario has 46% of CARF members, BC comes next with 17.5%, Saskatchewan and Manitoba have 15.7%, Quebec has 7.6% and the Eastern provinces, 12.8%. We're getting to be a bigger organization now and these matters have to be thought through. Is there any reason why there can't be more representation from the West, say one from Sask. and Man. combined and another from B.C.?

Another thing that makes me think of what could happen to Amateur Radio is the noises from Ottawa about selling our Aircraft Company to the U.S. Let's NOT let this happen to our service. We must all get behind CARF as this is the way of being sure that the Canadian Amateur has a truly Canadian voice.

Hope to see you all down the log.

MEMBERS

YOU'RE WELCOME!

Thanks for the fast response to my phone request for two manuals for our additional students in our Red Deer Code and Theory Class.

73, G. Jacobs VE6CIA

GENTLEMAN'S AGREEMENTS VS. REGULATION

The idea sounded very nice. However, having listened to a Canadian station using 14.140 as a ragchew frequency and refusing to move to another frequency when asked, saying that it was only a gentleman's agreement that 140 be a calling frequency and that he would only move if the law required it, and then carrying on with ragchewing for an hour—literally—I regret to inform you that further reliance on gentleman's agreements is doomed.

73, Kent VE2FGG

ex VE3JKC, VE3JKC/6Y5, VS6KD

GLAD WE COULD HELP!

I wrote to you last spring regarding code tapes, etc. for study for the Amateur Radio exams, I am 2nd Eng. on the M/V Canadoc.

I wrote the exams and tried the code in October and passed, so maybe next year I'll chat with you through the Kingston Repeater on 2 m, when we are passing your area. My call is VE3OVT.

Thanks for the help. We could still use an instructor to set up a class in Collingwood, I'm sure there are lots of interested people in this area.

Don VE3OVT

Ten thousand people in Collingwood: surely there's one Amateur ready to help?—Editor

ANTICOSTI

It was indeed a pleasure to read in the December 1985 issue of TCA magazine the article on Anticosti Island.

I was the sole government commercial Radio Operator on Ellis Bay Radio Station, CFK, from the period May 1931 to November 1933.

The purpose of the Station was to maintain communications with the mainland. The main contacts were with Fame Point (VCG) and Father Point (VCF) and ships in the area.

Also it was in the year 1932 that I obtained my first Amateur Radio Station, VE2ED, while stationed on the Island. Needless to say your article brought back many memories of my stay on the Island.

73, Mel VE7EFG

QSL POSTAGE

This information will be of interest to your readers who prefer to QSL directly with DX countries. They're probably paying too much postage!

Although the normal airmail rate for an international letter under 20 grams is .68, there is a special rate classification that specifically mentions 'QSL cards—Amateur radio call cards' and will cost the sender only .51 for the same airmail service—a nice saving of .17 per card. There are two conditions: the envelope may not be sealed and the words 'AIR MAIL' must appear in the upper left-hand corner with the return address. The official name for this classification is 'small packets.' Full details can be found in the Canada Postal Guide, Part II, Chart 1(3).

73, Michael VE3FW/KH6KD

VE3CNE 1985 OPERATIONS

This letter is to thank you for your support and assistance of our Amateur radio operations at the 1985 Canadian National Exhibition. It was, we believe, a very successful year.

As you probably know, the theme for 1985 was 'a hobby for all ages.' The station was equipped with a low cost beginner's rig, through to a packet demonstration.

The parade communications themselves brought Amateur radio before at least 150,000 persons, according to newspaper accounts. From these activities alone, our service has gained much good public relations.

It is expected that VE3CNE will continue to acquaint the public with our service in 1986; and at the same time again give Amateurs the opportunity to 'meet and greet' their friends.

We hope that you will continue your co-operation. If you have any questions please contact us. At this time all of us wish you a Very Happy Holiday Season and a Healthy Happy 1986.

73, Evan VE3IND

Chairman, VE3CNE Committee
P.S. Please appoint your VE3CNE representative A.S.A.P.

NATIONAL CAPITAL REGION DIRECTORY

I am currently compiling the 1986 edition of the National Capital Region directory of Amateur Radio Club Members. This is a publication of the Ottawa Amateur Radio Club which lists about 500 to 700 area hams and related information.

As in previous years, we will be including information on local repeaters and nets. With your agreement, I would like to repeat the very comprehensive information which was published in the June and September, 1985 editions of the TCA as it relates to repeaters and nets in Ontario and Quebec. I would, of course, give an acknowledgement to CARF and TCA in the directory.

Could I please get your permission on this? A prompt reply would be very much appreciated, as we are planning to go to the printer by mid-January.

73 Mark Farey VE3OWL

Of course you can, Mark!—Editor

READ THIS TO A WHITE CANER

Ooops— we goofed! Bob Eldridge VE7BS has pointed out a significant error in our letter that appeared on page 17 of December, 1985, TCA, under the heading 'Read this to a Whitecaner.' In this we stated that a reduction in power of a transmitter to one-half would make a difference in received signal strength of one S unit. We were wrong. It is really one-half S unit.

Our argument in that letter is correct, except that we forgot that a reduction in power to one-half reduces the voltage not to one-half, but to one over the square root of 2, since voltage is proportional to the square root of power (from $P=E^2/R$). This means that a reduction of 3 dB in power, or to one-half, results in a reduction of 3 dB also in S meter voltage, or one-half S unit.

Hence, the arguments in our earlier letter are even stronger. The Argosy will produce a signal only one-half S unit lower than that of an HW12/32, or equivalent transceiver, not one S unit as previously stated. All the more reason to get on the band wagon and get an all-band Argosy rig through CNIB. To date (December, 1985), we have orders for 20 of them.

73, Bill Loucks VE3AR

Fred Roberts VE3AFA

READ THIS TO A BLIND OPERATOR

Upon my wall hangs a certificate and also a station licence: I am proud of them.

As far as Amateurs are concerned, it is my opinion that all Amateurs should be recognized as Amateurs.

I have a white cane and neither the Federal Department of Communications or any other government official has ever suggested to me that I have to have a licence to carry it.

Therefore, recognize us as Amateurs. We may be blind, but if we

were not recognized as Amateurs, then I ask you the question, "Why did we receive an Amateur certificate and a station licence?"

I would like to hear from more blind operators, not white caners.

Sincerely,
Herb Bradley VE1ADA

Well, sightless Amateurs, what's your preference, whitecaner or blind operator?— Ed.

NEW NET

The Guelph Amateur Radio Club has recently started a mininet on VE3ZMG, the Guelph Club's 2 metre Repeater. The net is held every Monday evening, starting at 7:30 p.m. local time. This idea, while not new, is one way of creating some interest among the Club Members.

Like a lot of other clubs, attendance at meetings, getting volunteers for office, or code and theory classes has been sadly lacking and the net result is that we have had few if any new members.

With the advent of the new proposed licencing set-up, we may

have a chance to get some new and younger members. Today's young people are computer oriented and the tedious job of learning the code has been one of the major setbacks in getting young people interested in Amateur radio. However, once they have achieved their first licence, without the code, many will want to continue. It is worth a try on our part to get them interested.

Perhaps one way to get them interested is to get listings from the DOC of any one getting their first licence in your area, invite these people to your club meetings. Don't just invite them, welcome them. Who knows you might get them interested.

73, R.J. Seyler VE3MTD

PARTICIPATION

During the weekend Dec 7 & 8th I had the pleasure of attending the only World Class Cross Country Ski race to take place in Canada in 1985. It was held at the Menihok Nordic Ski club at Labrador City, where approx 200 skiers, coaches, etc. from 14 Countries took part. The Hams of

Western Labrador (HOWL) provided communications for each race keeping constant contact between the ski patrol and various other officials of the race committee.

The Hams who took part were Clarence VO1DJ/VO2, Yours truly VO1RW, Matt VO2AE, Don VO2AG and Ben VO2CZ.

The HOWL members are to be congratulated on a project very well executed.

73, Roy VO1RW

DELIVERY BOUQUET

I have criticized you when I got poor delivery of TCA magazine in the past, but would like to take this opportunity to say thank you for the excellent delivery which I have had since last August. The January 86 issue arrived in the third week in December 85. Thank you again, and a happy New Year to you and all at TCA.

W.F. Hopkins VE7FLR

The contents of this magazine may be reproduced by Amateur organizations with credit to TCA— The Canadian Amateur.

ARTHUR VE1CJW, GOLD MEDALLIST

Canadians have reason to be proud of Arthur Marshall of Middle Musquodoboit, N.S. At 17, he's won a gold medal.

Arthur wrote a satellite tracking program, mainly so that he could track Amateur satellites more easily, and entered it, with an Amateur radio exhibit, at the Dartmouth regional science fair. It placed third and won Arthur an International Business Machine Award, permitting it to be entered into the Canada-wide science fair. Here it received an honourable mention.

However, when the program was entered in the Bulgarian young inventors' exhibition, the display earned Arthur a gold medal.

The picture shows Ray Whitman, of Middle Musquodoboit Rural High School, presenting Arthur with an award of recognition at the school on Dec. 4 last year.

"I am immensely happy and pleased for Arthur, but I am not surprised," said Mr. Whitman. "Arthur is an exceptional young man."

CARF, on behalf of Canadian Amateurs, says: Congratulations, Arthur, on your success!

HELP

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

Name and last known address
L. Muise VE2ECA, 10 St. Joseph St. Ap. 4, Ste Anne De Bellevue, H7X 1A3
Robert Gordon VESBDE, 431-423 Pendencygrasse Rd., Saskatoon, Sask. S7M 4Z2

Debbie's address is CARF Office, Box 356, Kingston, Ont. K7L 4W2.

GET HIM ON TAPE

Is there an old old old-timer at your club? Then next time he comes, hustle him into a corner, make him an offer he can't refuse, and don't let him escape until you have got his reminiscences on tape. Don't wait till he is a silent key and then say: "I wuz gonna..."

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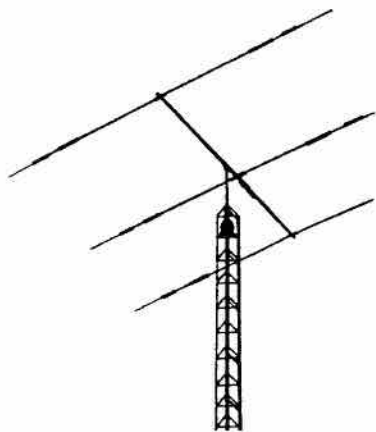
Please note the next TCA deadline is March 14 for May issue.



As reported last month in TCA, the Radio Advisory Board of Canada held a meeting. During the meeting the Amateurs present posed for a picture: here it is.

Left to right: Ernie VE3HD, Art VE3ZS, Lloyd VE3ERQ, Ray VE3FN, Ray VE3WI, Barc VE3TT, Garry VE3GIM, and Wayne VE3QO.

HF Multiband Verticals

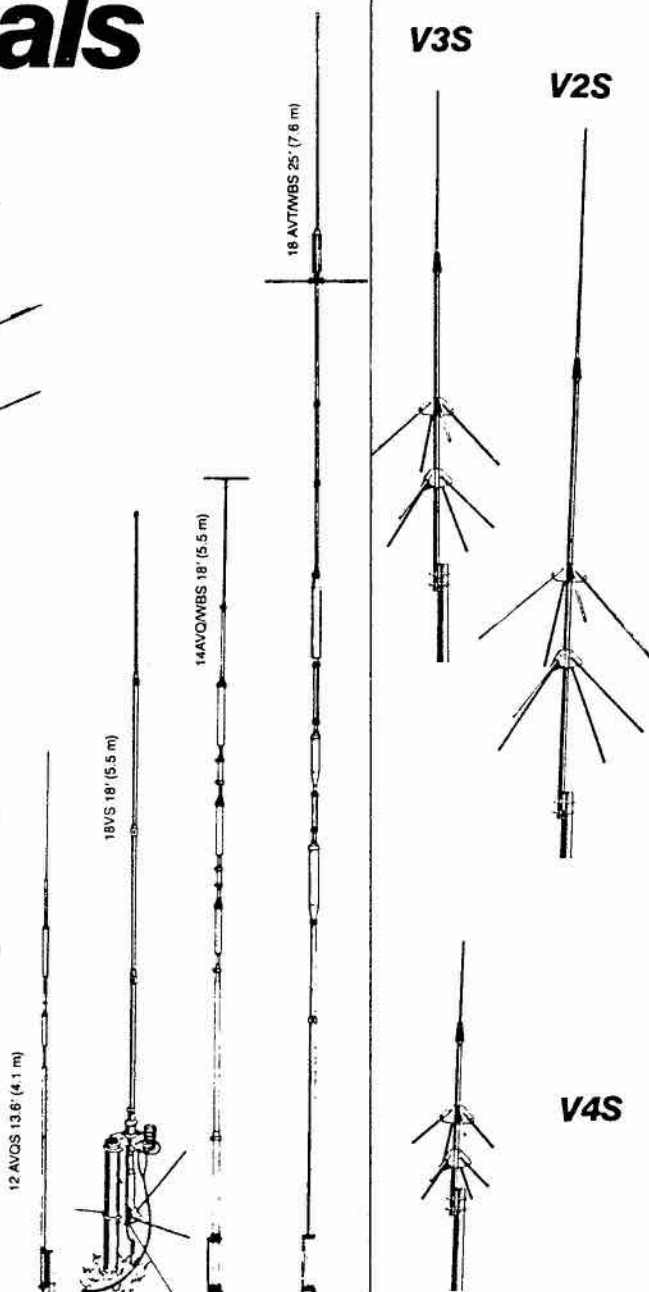


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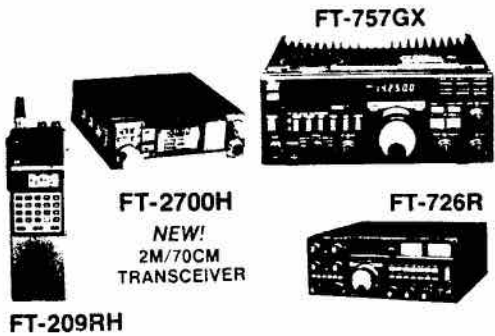
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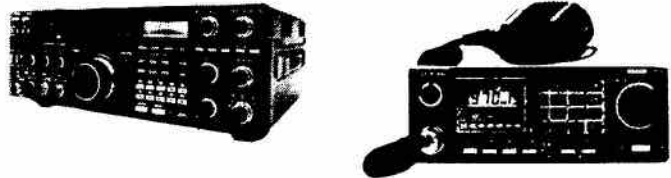
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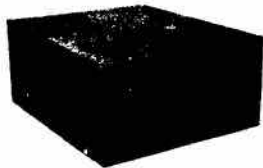
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DOC News

Correspondence

THE RESTRUCTURING PAPER —
Mr. Ronald E. Walsh VE3IDW
President, CARF.

Dear Mr. Walsh:

Thank you for your letter of October 28, 1985, in which you thoughtfully sent us address labels for your affiliated clubs and the Executive of the Federation. These labels will, indeed, help to ensure that we receive the most comprehensive amount of input possible on the restructuring paper.

Your interest and participation is most appreciated.

Yours truly,
73, Maurice
M.K. Nunas,
Manager,
Spectrum Management
Operations Division.

VE3QRM

Mr. Ron Walsh, VE3IDW
President, CARF

Dear Ron:

This letter is further to our recent conversations concerning call sign suffixes.

It was brought to our attention that we are approaching the 'Q' block of suffixes used for the formation of call signs. Furthermore, we became aware that the ITU has regulations which suggest that administrations should not allow three letter call sign suffixes which begin with the letter 'Q' or those letters which could be confused with distress, urgency or safety signals. As a consequence, we have informed our regions that they should not issue the Q block, and certain other call suffixes which are designated as distress, urgency or safety signals.

However, this leaves us with some licences with 'Q' suffixes which were issued previously. It is the intention of the Department to approach those amateurs or amateur clubs who hold a three letter suffix beginning with the letter 'Q' and offer them a new suffix. If the party concerned refuses to accept the proposed new suffix, he will be notified that if any problems or complaints are received from the ITU, or any of its signatories, or in this administration, the suffix will be withdrawn and a new one issued. It is felt that this approach would be fair to

all concerned and not create any additional work in exhaustive studies of the matter.

It should be noted that the 'Q' code was designed to transcend language barriers and we feel that it would be to the benefit of all amateurs to maintain the integrity of the 'Q' signals.

We hope that this will not create any difficulties. However, if you have any questions please contact Gerry Wintermeyer at (613) 990-4746.

Yours truly,
73
M.K. Nunas,
Manager,
Spectrum Management
Operations Division.

RAVENSCROFT CASE

R. Jones
Director, Operations Branch.

Dear Mr. Jones:

Last July 1985, a radio station duly licensed by the Department of Communications under the provisions of the Radio Act was closed down by a county court ruling. This closure of a federally approved and authorized station was effectively brought about by a lower court interim injunction under a county court ruling of the provisions of the Nuisance Act, in spite of the fact that the station was shown to be established and operated within the terms of the Radio Act.

The case is now being contested by the owner/operator of the station and is expected to come to trial in the near future. It will be recognized that should the case be lost by the defence (owner), an extremely serious precedence could be set, permitting any type or class of radio to be closed down by a lower court under the provisions of an act which takes no cognizance of, or bearing on, the technical limitations of current day capabilities of electronic equipment. It could result in the closing down of essential communications to safety services such as fire and police services, air traffic control, marine distress and rescue services, to say nothing of dispatch communications for ambulance, road, rail and maritime transport, broadcasting, and television, etc. Every form of radio transmission from heart pacers to

satellites and research and development laboratories could and would be affected.

Such closure of stations could result, not from faulty transmitting equipment, but from inadequately shielded receivers or other electronic equipment not intended for the reception of radio signals, such as household appliances, i.e., furnace controls, alarm systems, microwave ovens and heaters, electronic organs, etc.

It is known that your officers are providing their usual expert technical services in the case. However, it was disappointing, to say the least, that no officer of the Department of Communications was present at the hearing resulting in the present interim injunction. It is hoped that the Department of Communications will fully recognize the importance of this case and continue to provide their expertise and knowledge. It is, however, believed that the Department's concern should be more visible. To accomplish this visible show of concern it is requested that the Department provide 'expert witnesses' and legal support and to have, as a minimum, one officer present as an observer at all court hearings.

The case currently under discussion is that where Mr. J. Ravenscroft of Kanata has had his Amateur Radio Station, VE3SR, effectively closed following a complaint from a neighbour.

It is not known when the case will be heard as a date has not yet been set. We shall advise you when notice has been given of the place and time. It is requested that the Department ensure it has due representation at the hearing and be prepared to act as expert witness as necessary for the defence.

Yours truly,
Ronald Walsh VE3IDW
President.

Dear Mr. Walsh:

Thank you for your letter of October 29th in which you request that our Department take a more active role in a civil suit (Houghtby vs. Ravenscroft, District Court of Ontario, court file 1559/85) between an amateur radio operator and his neighbour in Kanata, Ontario.

The Department's customary policy in respect of private litigation is

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This month we continue our look at microwave ovens.

Two types of oven are available: those offering conventional microwave cooking and those combining microwave with convection. In the latter case convection produces browning of meats, etc.

Generally ovens operate on 2450 MHz using magnetrons, which deliver considerable power. Since many ovens are fused for 10-15 amps, you get an idea of input power involved. An examination of several oven circuits shows a certain amount of commonality. The microprocessor controller is variously called 'Control Assembly' or 'Digital Programmer.'

Power output from more expensive convection microwave ovens is in the 700-800 watt range. I wonder what enterprising Amateur will harness this RF energy to drive a high level mixer or multiply it to some experimental band? It should be quite easy.

At least one top-of-the-line oven, Panasonic 'Genius,' Model 9930C uses a surge absorber, surge resistor combination from the hot side of the line to ground to limit common mode surges. A varistor is used in the same oven across the power transformer primary, to limit differential spikes or surges. These are excellent protective devices for microprocessor controlled appliances. They prevent conducted spikes from falsely triggering sensitive circuits.

Designers have even incorporated an RC network across the heater fan motor to prevent EMI!

If you've ever wondered why your microwave oven emits a low grunt when going through its cycle it's because high voltage is applied to the magnetron in one of two ways. In one

case the micro pulses a relay 'ON' for 4 seconds and off for 18 seconds (during combination cooking). If this on/off ratio did not occur a fuse would blow.

In the second case AC is applied through a Triac directly through the high voltage transformer primary. Here is where we come to an 'if' situation. If we have any type of microprocessor problem that would command the relay to close (type 1) in a lockup situation, we would blow a fuse. In type 2 either a microprocessor problem or a line transient to the Triac could cause a similar problem. A leaky Triac would be susceptible to a line transient.

If we assume several volts of conducted RF arrive at the input to the AC line to the oven, there are advantages in feeding AC only to the control board. AC transformers are lossy devices and chances are good most of this RF will disappear due to the low impedance AC windings. The advantages of relay control of power vs. Triac control are obvious. Unless the RF effects the micro the relay is immune to RF. Not so with the Triac—it may or may not misbehave. Chances are it will if no effort has been made to suppress it.

It is wise not to tamper with ovens while powered and before the more venturesome remove the rear panel—bear in mind extreme caution is necessary. My advice is don't attempt it! The HV transformer secondary voltage averages 2.0-2.8 Kv at 500 to 700 ma.—Hands off!

To give you some idea of percentage power output as a function of setting on the oven indicator this is shown based on 22 seconds representing one complete 'ON' and 'OFF' cycle of the relay

controlling high voltage (when in straight cooking cycle.)

HIGH	22/22 (100%)
M. HIGH	20/22 (91%)
MED.	15/22 (68%)
M. LOW	11/22 (50%)
LOW	6/22 (27%)
WARM	2/22 (10%)

This means for Medium power the magnetron oscillates for 15 seconds and is off for 7 seconds. (15 + 7 = 22 seconds.)

It is interesting to note that microwave ovens pass a stringent CSA test for fire and electrical safety. Part of the test for fire safety involves placing a container of popping corn saturated in cooking oil in the oven and applying full microwave power for two hours. The outside of the oven which is wrapped in cheesecloth, can show no signs of scorching after this test.

It appears extremely unlikely that much RF could ever penetrate the electronics of the oven because of the extensive shielding.

As further proof simple EMI suppression techniques do work. Frank Hughes VE3DQB, Editor of TCA, writes: "The CARF telephone answering machine is a RAD210 from Radio Shack. It was recently moved nearer the VE3DQB transmitter, and is now some 15 feet below the Garant all-band aerial. Running the transmitter on 80M triggered the machine, which ran through its spiel every time the rig was operated."

"Two turns of the input line from the telephone round the core of an 88 mH toroid from which the original turns had been stripped, set as close as possible to the machine, cured the trouble."

DOC NEWS

to refrain from any involvement that might influence the outcome in one party's favour. This particular case is, however, of great interest to our Department and we have been closely following it. A representative of the Department was present at the hearing on May 3, 1985 but was not present at the July 25th hearing because the defendant advised our staff in the Ottawa District Office that this latter hearing would be "closed".

In addition, our staff from the Ottawa District Office recently conducted tests over a period of four days to determine the extent and severity of the interference experienced at the plaintiff's

residence. These tests were conducted at the request of the defendant's solicitor and with the consent of the plaintiff and with the permission of the Court (the temporary injunction was lifted for the test transmissions). These test results have been forwarded to the Court and will be distributed as the court directs. Any future involvement by the Department, as expert witnesses, will depend on whether the plaintiffs or defendants request it.

The defendant, Mr. Ralph Cameron (Chairman of the EMI committee of the Canadian Amateur Radio Federation), and Mr. Raymond Perrin (a director of the Canadian Radio Relay League) have been in

contact with the manager of the Department's Ottawa District Office, Hubert Pambrun, and/or the Department's Director of Ontario Region, Mr. W.D. Lyon over this matter and seem satisfied with our Department's involvement.

Please be assured of our continued close interest in this case. If you wish further information on this case and our Department's involvement, may I suggest that you contact Mr. Lyon (416-973-6280) or Mr. Pambrun (613-998-4115).

Yours truly,
R.W. Jones,
Director General
Radio Regulatory Branch



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Canada

Santé et Bien-être social
Canada

Health Protection
Branch

Direction générale de la
protection de la santé

Tunney's Pasture
OTTAWA, Ontario
K1A 0L2


December 13, 1985

Mr. Ralph Cameron
Chairman, EMI Committee
Canadian Amateur Radio Federation Inc.
30 St. Remy Drive
NEPEAN, Ontario
K2J 1A3

Dear Mr. Cameron:

This is to acknowledge your letter of December 10, 1985 reporting the malfunction of intravenous pump due to the presence of radio frequency. We shall investigate this matter and take corrective action so that similar situations don't give rise to patient risks. We shall inform you of our findings in due course. I thank you for bringing this to our attention.

Yours truly,


A.K. DasGupta, Ph.D.
Director
Bureau of Medical Devices

AKDG/ss

The reply to VE3BBM's letter, published in Crosswaves, TCA February. Fast action!

Australia Clamps Down

Australia is clamping down on RFI-prone consumer items. DOC—the Australian version, that is—requires TV sets, VCRs, stereo units, electronic organs and intercoms to comply with immunity standards. It will be an offence to supply, possess or use equipment which does not meet the standard.

The Standards Association of Australia has issued Australian Standard 2772: 'Maximum Exposure Levels - Radio Frequency Radiation 300 kHz to 300 GHz.'

Typical maximum levels for continuous radiation are 2mW/sq cm at 30 MHz dropping to 0.2 mW/sq cm at 30 MHz and above. These represent a considerable tightening up of the protection required.

— *Amateur Radio*, Journal of the Wireless Institute of Australia

NEED A SPEAKER?

Clubs within driving distance of Newmarket Aurora: If you need a speaker for a meeting, a CARF presentation on Printed Circuit Boards, give CARF a call!

More JSRD Fund Contributors

ANDRE LEMELIN (S.W.L.—THEFTORD MINES QUE.)	636KY-	VE7BS
CHAMPLAIN REGIONAL REPEATER ASSN. (ONT)	N61TL	VE7EFA
CLUB DE RADIO SHERHAM INC. (SHERBROOKE QUE.)	VE2AAV	VE7EGD
CLUB RADIO AMATEUR DE QUEBEC INC.	VE2AAV	VE7ESU
DR. SIDNEY BOLDTEN (PRINCE RUPERT B.C.)	VE2DME	VE7ELR
FUNDY A.R.C. (DIGBY N.S.)	VE2EC	VE7FE
GEORGE TUCKER (S.W.L.)	VE2EET	VE7FM
HAT HORIZONS RADIO OPERATORS, WILD ROSE LODGE MEDICINE HAT ALTA.	VE2GB	VE7MK
INTERNATIONAL REPEATER GROUP (FREDERICTON N.B.)	VE2GRD	VE7WP
KAMLOOPS A.R.C. (B.C.)	VE2SWE	W6TVZ
METRO A.R.C. (TORONTO)	VE2GXS	W8JA
NORTHERN ALBERTA RADIO CLUB	VE2RD	W8RV
NORTH OKANAGAN RADIO AMATEUR CLUB (VERNON B.C.)	VE3GP	
OAKVILLE A.R.C. (ONT.)	VE3JFB	
OXFORD COUNTY A.R.C. (WOODBSTOCK ONT.)	VE3KES	
QUINTE A.R.C. (BELLEVILLE ONT.)	VE3KST	
SUDBURY A.R.C. (ONT)	VE3LDU	
UNION METROPOLITAINE des SANS-FILISTES (MONTREAL)	VE3NG	
VICTORIA AMATEUR REPEATER ASSN. (B.C.)	VE5DC	
W.G. DELAHAY (HALIFAX N.S.)	VE6ADM	
WINNIPES A.R.C.	VE6AUV	
YELLOWHEAD A.R.C. (EDSON ALTA.)	VE6QK	
	VE7BAJ	

This list, with those previously published, completes the record of those who have contributed to the Jack Ravenscroft Defence Fund, as known at press time. Further lists will be published as needed.

THE RAVENSCROFT CASE

The Ravenscroft case was heard January 14-16. The judge requested counsel to submit written arguments, and said he would give a verdict in February.

CONGRATULATIONS

Congratulations to South Pickering ARC. They placed **FIRST** in the Field Day, 1985, 7 A category!

VE3SPC 3410 B 33 9754

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Executive Meeting

November 23, 1985
Kingston

— Meeting called to order at 10:06 a.m.

— MOTION: Don Slater
"50 TCA per month (from the over-run) be sent to Non-Members from the DOC List (to try to increase CARF numbers)"
SECONDED: Bill Carew
CARRIED.

— Request to try for a contra-deal advertisement with RAQI for an ad in the journals for new members.

— Decided to develop a 'Letter' (bilingual) to be sent to 'NEW' Licensees.

— MOTION: Don Slater
"Art Blick's Planning Committee AGM Report be accepted with particular attention to numbers 2 and 4."

SECONDED: Mailes Dier
CARRIED.

— Ron Walsh is charged with setting up the Planning Committee, involving Regional Assistants.

— MOTION: Ron Walsh
"We adjust the mandate of the TRC-24 Committee"

- new guidelines: multiple choice questions

- Committee purpose shall be to generate questions for examinations only.

- new chairman be put forward with a fresh approach.

SECONDED: Mike Masella
CARRIED.

— MOTION: Ron Walsh
"Consideration be given to the possibility of raising membership dues in June 1986"

SECONDED: John Iliffe
TABLED: to March Executive meeting subject to input from the Planning Committee, General Manager, and Treasurer, for further discussion at the June AGM.

— MOTION: Ron Walsh
"A video tape/slide presentation be prepared with information pertaining to CARF."

SECONDED: Don Slater

CARRIED.

— MOTION: Ron Walsh
"We discuss the R.S.O. Magazine"
- Ron given the authority to investigate further the possibility of 'handling' TOA mailings for the RSO.
SECONDED: Mailes Dier
CARRIED.

— MOTION: Ron Walsh
"In consideration of a specific budgeted amount per issue for editing of TCA, we consider \$125.00 for Editing."

SECONDED: Don Slater
CARRIED.

— MOTION: Ron Walsh
"Expense account forms with attached documentation and receipts; motion forms; meeting schedules and timetables, be included as a part of the Administrative Directives."

SECONDED: Mailes Dier
CARRIED.

— MOTION: Ron Walsh
"TCA advertise for people to act as a Technical Editor and if competent people apply, that a suitable candidate be selected."

SECONDED: Mailes Dier
CARRIED.

— MOTION: Ron Walsh
"CARF consider participating in the RSO Convention next year."

— MOTION TO TABLE: Ron Walsh
SECONDED: Don Slater
CARRIED. Motion tabled to next executive meeting.

— MOTION: Don Slater
"The Directors consider offering CARF Members an Insurance Package (subject to approval of John Iliffe, who is in the business)."

SECONDED: Ron Walsh
AMENDMENT: Ron Walsh
"We consider offering the package if we are certain it covers the concerns and needs expressed. (i.e. RFI interference)"

SECONDED: John Iliffe
CARRIED.

— MOTION: Don Slater
"At the Executive meeting, by

unanimous motion: send a letter from the President on behalf of CARF thanking Doug Burrill."

- something should be done for him in the future.

SECONDED: Ron Walsh
CARRIED.

— Mailes Dier was appointed an Assistant Regional Director by John Iliffe, Ontario Director.

— MOTION: Lorna Hill
"The individual be officially approached to accept the position of Treasurer for CARF, effectively moving the treasurer closer to the working office and banking institutions."

SECONDED: Ron Walsh
AMENDMENT: Ron Walsh
"A financial update with accounts payable and receivable be prepared monthly and sent out to all directors. A full financial report will be prepared for every executive meeting."

SECONDED: John Iliffe
CARRIED.

— Request for approval from the Executive for the continuation of TCA printing with Steve Campbell. No objections from the Executive.

— Letter to be sent to Committee Chairmen, requesting QUARTERLY reports.

— Standing Committee Chairman: to be INVITED to Executive Meetings if presence is determined necessary, but they are otherwise not part of the Executive Meeting attendees.

— Bill Carew has now been appointed as Vice President of co-ordinating policy on the Restructuring Paper.

— Bill Carew requested to become the Office Advisor for the current Apple Computer System. No objections.

— Publications Committee: noted that three reference sections are out of date. The Certificate Study Guide is out of stock.

— Bill Carew needs and requests input for the DOC restructuring paper.

— Introduction of Nancy Bradley, the Graphic Artist for TCA.

— MOTION: Don Slater
'Adjournment'

SECONDED: John Iliffe
CARRIED.

— Meeting adjourned at 5 p.m.

ANNOUNCING:

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The DOC Proposal— Amateurs Respond

Mayhem on the 2 Metre Band

Reference the new proposed 'A,' 'B' and 'C' Amateur Certificates.

I can appreciate the fact or the need to attract more Amateurs to our ranks, but feel that your present suggestion for a 'Code free' class A certificate is not the route to go. As proposed, I foresee utter mayhem on the 2 metre band. It would likely turn this band into the same kind of shambles that we presently have on the CB bands.

A much better route to go, would be for the 'A' licence to go a somewhat similar route to the U.S. Novice Band. I would suggest that we maintain a code requirement of five words a minute and also allow the 'A' licence holders CW privileges on the HF bands. Anyone seriously interested in an Amateur licence, should not find a 5 wpm requirement that difficult.

I suggest this in the knowledge of just how very difficult I found the 10 and 15 wpm requirements to be for my Amateur and Advanced Amateur licences. There were many times I had serious doubts that I would ever master the Code, but time and perseverance did win out. While I do not operate much CW today, I do value it and am very glad that I was 'forced' to do the Code as part of the requirements.

One only gets out of something, just what one puts into it. Making the 'A' licence Code-free, would make the licence just too easy and I fear that those obtaining the licence would not value it in the same way we do now, and would have a great deal more temptation to abuse their privileges. For example, for the most part, most Amateurs today are pretty good at self-policing the bands and are quick to point out to others any abuses they see, whereas there is none of this feeling whatsoever on the CB bands, and abuses abound!

I would also like to commend DOC for the emphasis they seem to be putting on the knowledge to be

required for all three proposed classes. In the past there has been far too much emphasis on Radio and Electronic theory, and not enough on the practical aspects of the hobby.

I suspect that most Amateurs today do very little 'building' and many Amateurs have never even seen under the cover of their commercial transceivers. Therefore with the addition of a slow speed CW requirement, I can find little fault with your other proposed requirements for the 'A' licence, or your 'B' and 'C' proposals.

In summary, to answer your specific questions, I would say the following:

1. Are there significant factors that DOC has not considered that might affect the proposed structure?

ANSWER: Yes, as previously outlined, too easy and a code free entry into the Amateur service can only lead to too many abuses and a downgrading of all that Amateur Radio has stood for.

2. If you were an aspiring Amateur, would the proposed structure encourage you?

ANSWER: Yes it would make entry into Amateur radio considerably easier, yet a slow speed code requirement would separate the casual interest from the serious interest in obtaining a licence.

3. If you are an Amateur, does the proposed structure realistically reflect the way you operate?

ANSWER: Yes it does, particularly the emphasis on the practical side of Amateur Radio as opposed to the Technical and Theoretical side.

4. How will the proposed structure affect the future of Canadian Amateur Radio?

ANSWER: With the addition of a slow speed CW requirement, a modest but steady growth of mature, responsible Amateurs should be assured.

5. Does the structure adequately accommodate special interest groups? and is there still a need for the Digital Certificate?

ANSWER: Yes, I think that all groups can be accommodated within the proposed framework. As to continuing the Digital Certificate, I

see no point in it whatsoever, and if I understand correctly, there have been comparatively few of the Digital Certificates issued since they were introduced, and if this is true, there is no advantage to keeping them in the system.

6. Would Canadian Amateur Radio benefit from a Novice-type licence similar to what is available in the U.S.? If so how would it be incorporated into the proposed structure?

ANSWER: I see no point in an additional Novice licence in addition to the proposed 'A' 'B' and 'C' licences... with the incorporation of a slow speed CW requirement to the 'A' licence and CW privileges on the HF bands, we achieve that result.

Yours very truly,
Ernest W. Harding VE7GPX

I am NOT in favour of the no- code proposal

After a very long and hard look at the new Amateur radio proposals, here are my opinions and recommendations.

I am NOT in favour of the no code proposal, but do agree that more and especially young people have to be attracted to Amateur radio and that it should be somewhat easier to get an Amateur ticket, yet retain a gentlemanly and courteous environment on the Amateur radio bands.

I am 35 years old and relatively new at Amateur radio myself, only having been licensed for three years. I have been president of our local Amateur radio club, co-ordinator of an Amateur radio course and instructor. At present I am president of the International Repeater Group and the District Officer for the Emergency Measures Communications Group for this area.

When help is needed for a project, course, and emergency communica-

tions it seems the same few radio operators volunteer, a small number of the local Hams. Also, I get very upset with the ungentlemanly conduct by some on the ham bands, although they who act disrespectfully on the air are a minority, but it does happen. The cat calls, deliberate loading up on busy frequencies, holding on solid carriers, whistles and, yes, even foul language at times and the lack of respect which seems to be growing.

One other thing we all have to be careful of is if the demand for new equipment comes too fast, then some fly by night electronics companies will try to cash in on this increased market by making poor equipment, cheap in price, increasing interference problems for all Amateurs and the rest of the public, resulting in a lot of government time and manpower being spent on public complaints. We have all seen some of the poorly made equipment used on the CB band, I rest my case.

For these reasons I feel regulation and proper instruction for the prospective operators is very important. Also, anything worth having has to be worked for to be appreciated, if gained too easily loses value and worth. By having different levels to achieve one will work harder and when each level is achieved gains respect for all others who have also done the same and themselves. Making them better Amateur radio operators and more respectful of all other Amateurs on the air.

If the frequencies are opened up too easily what has happened to the CB band WILL definitely happen to the Amateur bands. As the DCO (District Communication Officer) I feel the two metre band is our most important for emergency communications and in an emergency situation it will require good and disciplined operators. If the frequencies are opened up to become another CB type environment this vital tool could be lost and unretrievable, and the public would be the ultimate loser.

Therefore, what follows are my proposals for restructuring the licensing for Amateur radio operators and examinations and restrictions and privileges.

CLASS 'A' (Novice Amateur Class)

1) Certifying an individual to operate a basic, commercially built, modern Amateur station designed to operate on the Amateur radio frequencies. Receiver and transmitter, from the microphone or keying input of the transmitter to the final output, would have to be commercially built and marketed. All other components of the station, filters,

antennas, etc. could be home built.

2) Telephony above 30 MHz and telegraphy (CW only) below 30 MHz. Limited to the following frequencies: 1.800-1.825, 3.675-3.725, 7.100-7.150, 10.100-10.150, 21.050-21.150, 28.000-28.200. No 20 Metres operations allowed, NO telephony emissions below 30 MHz., NO computer interfacing (RTTY or CW), NO video transmissions, allowed on any frequencies.

3) Stations would be limited to a maximum power input of 250 watts DC, not to exceed 100 watts output to the antenna.

4) Licensees would be allowed to operate through authorized, licensed repeaters, but would not be allowed to be the licensee of a repeater.

CLASS 'B' (Operators Amateur Class)

1) Certifying an individual to

To say code is obsolete is like saying we may forget about first aid because we have well-equipped hospitals now.

operate a commercially or home built Amateur station, the same at present.

2) Telephony above 30 MHz and telegraphy (CW) on all Amateur frequencies, as is allowed at present. Telephony on 1.800-2.000 MHz and 28.100-29.700 MHz would be allowed. Computer interfacing would be allowed for RTTY and CW operations. NO video transmissions.

3) Stations would be allowed a maximum power of 500 watts DC input power to the final stage.

CLASS 'C' (Advanced Amateur Class)

1) Certifying an individual to operate an Amateur station as is at present for advanced ticket holders.

2) Telephony privileges allowed as is at present, video transmissions allowed.

3) Stations would be allowed maximum power of 1000 watts DC input.

4) Licensees would be allowed to hold the licence of a repeater or their non-standard station.

EXAMINATION TO CERTIFY — CLASS 'A'

1) International morse code sending and receiving at 5 wpm (100%).

2) Theory exam: stressing operating procedures, installation

and operation of modern Amateur stations; including proper interpretation of meter readings such as ALC and SWR and the adjustments necessary to prevent interference; proper grounding techniques; and correct installation practices from transceiver to antenna, including auxiliary devices such as low-pass filters and antenna tuners; basic electronic theory, safety practices when working with simple circuits; tracing and correcting interference problems such as audio rectification and receiver front-end overload; antenna and propagation theory, including types of antennas, feedlines and characteristics of propagation phenomena (pass mark 70%);

3) International and domestic regulations applicable to the Amateur service (pass mark 70%).

CLASS 'B'

1) International Morse Code sending and receiving at 10 wpm (100%).

2) Theory exam. Based on the same material that is required at present for operators ticket (pass 70%).

3) Regulation exam, questions harder than for the class A (pass 70%).

CLASS 'C'

1) International Morse code sending and receiving at 15 wpm (pass 100%).

2) Theory exam; as at the present knowledge requirements for advanced ticket (pass 70%).

3) Regulation exam as at present knowledge of requirement (pass 70%).

NOTE Both theory and regulation examinations would be multiple choice type questions each having 25 questions.

Present Digital ticket holders would be allowed to retain their present licence, but no more would be issued. If the Digital ticket holder wished to obtain further privileges they would be required to write the code exams only.

To advance to the next class ticket one would have to pass the previous licence examination, however all three examinations could be written at the first sitting if the individual so decided and applied to do so. To make it work easier on all government and to make the Amateurs more responsible for what happens, the Amateur community would assume the task of supervising the examinations. To be done by a committee made up of three advanced licensees (Class 'C' ticket holders). These three would administer the examinations and mark same, on a given date set down by the Department of Communications.

page 16

The three member volunteers committee would hold the examinations at an appropriate location (Amateur radio club house or EMO room) in the evening or Saturday at a preset time. Examinations and code tapes would have to come from the department to the committee chairman about a week before the exam date. Upon completion of the exams the committee would mark the papers and forward the examinations and their results to the department, in the return envelope supplied by the department along with the code tapes, etc. The department then would notify the applicant of their marks and forward any certificates of proficiency to those who passed.

I myself would volunteer to serve as a committee member and so would other Amateurs.

These changes would make Amateurs more responsible for the proper teaching of newcomers and self-policing and public relations. It would make things easier for anyone wishing to get into Amateur radio, because the novice ticket would get them on the air where they will learn more rapidly from fellow Amateurs, theory and the code and learn to enjoy the hobby with a minimum of classroom instruction. Yet keeping a technical environment with a gentlemen's agreement, as is currently enjoyed by Amateurs all over the world.

Brian Upton VE1CGV

The proposals would be beneficial

In response to your request for input regarding the restructuring of the Amateur Radio Service.

With a background of Army Signal experience I received my Amateur Radio Certificate 40 years ago this month. During some of the ensuing years I was not active but I have a considerable background of Amateur Radio activity as President etc. of various Amateur Radio Clubs. I have also spent a large part of my life instructing in various subjects including radio and code. At one time I was Chief Ground School Instructor for one of the largest flying schools in Canada.

My principal comment has to do with the present examination system with its very high rate of failure. I have always looked first at the instructor and then at the system when this occurs. With such a diversity of instruction throughout the country but with the common factor of a high

failure rate I must assume, in this case, that the system is at fault. One could hardly expect that all the instructors in the country were inefficient and all the students stupid. While I am fully in favour of the Amateur being qualified, it is possible that you are asking too much from people in the way of technical knowledge.

The proposals of the three classes of Amateur Certificates appear reasonable although I must admit to some reluctance in dropping the CW requirement for any class. Unfortunately, we have a situation now where we have a class I think of as '2 metre CB.' Amateurs who obtain their basic qualification and thenceforth operate nothing but 2 metres. Given our permissive society and the lack of pride in our hobby, partly justified by the very loose standards we see in other countries, this is probably inevitable.

In reply to specific points:

1. The most significant factor I can see in the proposal is the question of the examinations themselves as mentioned above.

2. If I were an aspiring Amateur I think the proposals would be of interest, especially the no code entry. This again would depend on the examinations.

3. As a licensed Amateur I cannot see where the proposals would effect my present operating practice. I prefer CW and computerized RTTY and apparently would still be qualified under the 'Grandfather' clause.

4. I believe that the proposals would increase the number of Amateurs because of the easier entry on the no code level. Again this revolves on the question of the type of examinations.

5. The question of whether the proposals would accommodate the present special interest groups would depend to a large extent on the 'fine print.' I see no point in the additional Digital Certificate. I believe that the number of entries through this grade indicates either a lack of interest or too high a standard of examination. It is suggested that the examination is virtually on the engineering level. As long as this service is restricted to the UHF frequencies and doesn't conflict with other services I see no reason it could not be included in the 'A' class Certificate. This might encourage more experimentation on this class.

6. I believe that a Novice Certificate would be redundant given the suggested classes of certificate. Depending on the code speed requirement for the 'B' certificate this might be similar to the Novice class in other countries. I do not feel the restrictions in frequencies of the

Novice class in other countries is good since it virtually makes this Class a second class citizen who can only talk to his own kind instead of mixing with more experienced operators who generally avoid the 'Novice' frequencies.

Again all the above would depend on the 'fine print,' that is, the exact condition of each class. The proposals as given are rather broad but, given agreeable specifics, I believe that in general the proposals would be beneficial to Amateur Radio in Canada.

Yours very truly,
Arthur E.M. Spence VE7DKY

NEW CARF NEWS SERVICE EDITOR

The new year is now upon us and the CARF News Service will be there to inform you of every newsworthy article pertaining to every Canadian Amateur.

It is with great enthusiasm that I wish to thank the Canadian Amateur Radio Federation for allowing me to offer my services as the new CARF news editor. I have held my licence for the past eight years. During this time I have been active on HF, VHF and UHF, concentrating my activities mostly in the area of public service.

I will try my best to supply you with the most precise and latest information with every newsletter I write. However, it is sometimes hard to please everyone. If there is anything you'd like to suggest please let me know. Also, I can't stress enough the need for feedback from your club or organization. In order for me to write anything I need a wide variety of info to choose from. Thank you, in advance for your cooperation and I wish you a very prosperous new year.

Dino Moriello VE2FSA
Box 241, Pierrefonds Stn.
Pierrefonds, Que. H9H 4K9

PRIZEWINNERS

R & S Electronics of Dartmouth, N.S. sent a questionnaire out at the VE1 convention. They held a draw at the shop for those who responded. The lucky winners were: VE1AOY, VE1CYD, VO1RV, VE1IH and an SWL. The prizes they won were, in order: a 5/8 Larsen magnetic mount 2 metre antenna, a Daveco multimeter, a Vibroplex T-shirt, a gift certificate and another Daveco multimeter.



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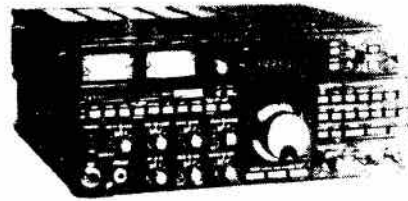


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Social Events

VO1KG RECEIVES BOB LEWIS VO1BL AWARD

The Society of Newfoundland Radio Amateurs has recently announced the awarding of the Bob Lewis trophy to Howard Baker of Gander. This award is given to Newfoundland Amateurs who are considered to have contributed significantly to the development of Amateur radio over the past year.

Howard, of course, is well-known in both professional radio circles—where he worked for over 35 years—and as an active member of the Amateur Radio Club of Central Newfoundland (ARCON).

Howard is a long-time resident of Gander having come to work with the Newfoundland commission of government as a radio operator in early 1940. When the Department of Transport took over after Confederation Howard transferred to the Technical Division and worked as a specialist at the transmitter section of Gander Aeradio.

For the past ten years or so since his retirement Howard has experimented with VHF Amateur Radio Communications and was in large part responsible for building and maintaining the two-metre station that has served the area for almost a decade.

Over the past two years or so he has been actively promoting the expansion of the regional radio club (ARCON) and is treasurer of the Central Amateur Seniors group, a New Horizons group, and it is through this association that he has helped to build a new solid state Amateur radio facility. It serves all members within an 80-mile radius of Gander, as well as those visiting or passing through this part of the province.

Radio Hams all over the island and particularly members of ARCON and CARF offer Howard their congratulations and best wishes for many more years of enjoyment in Amateur radio activity.

PENTICTON FLEA MARKET

The Pentiction, B.C. Amateur Radio Club will be holding its annual flea market and auction sale on Sunday, March 23. Location: Club Headquarters—251 Dawson Ave., Pentiction. Time: 10 a.m.-3 p.m. P.S.T. Free admission. Refreshments and lunch will be available. Bring any electronic-related items. Talk-in

frequencies are 146.55 (Simplex) and/or 146.34/94. Everyone welcome!

PACIFIC NORTH WEST RADIO AMATEUR SECOND ANNUAL BANQUET BUFFET

Live entertainment, games, draws. Saturday, March 8, 1986 Town and Country Inn, Delta, British Columbia. Information and tickets—Janis VE7FJW 738-5642, Dennis K7GGP 671-6261 or Walter KD7YV 676-8128, Washington, or most Amateur Radio Clubs on the lower mainland.

BANNED COUNTRIES LIST

The following countries have notified the International Telecommunications Union that they forbid radiocommunications with Amateur stations under their jurisdiction: Democratic Kampuchea, Iraq (Republic of), Libya (Socialist People's Libyan Arab Jamajiriya), Somali Democratic Republic, Turkey, Viet Nam (Socialist Republic of), Yemen (People's Democratic Republic of), Zaire (Republic of).

CALENDAR

March 8: Pacific North West Buffet. Details this issue.

March 19: Applications for DOC licence examination.

March 23: Pentiction ARC Flea Market and Auction Sale. Details this issue.

April 16: DOC licence examination.

May 21: Applications for DOC licence examination.

June 18: DOC licence examination.

July 12-13: Ex-Whitehorse RCAF Communications reunion.

Sept. 17: Applications for DOC licence examination.

Oct. 15: DOC licence examination.

Oct. 19-20: Jamboree on the Air, Scouts Canada.

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.

OLD BOOKS

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



Nate V01NP presents the V01KG award to Bob. Bob's thorough work on the Central Amateur Seniors' group's repeater was given the final test in December; it was used for 48 hours straight handling the Arrow Air disaster traffic. (see page 27) (Photograph: The Packet, Clareville.)



Hugh Finally Retires—

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Now that Hugh is on Old Age Pension, he's passing the mantle to Stan Stefanik of Com-West Radio Systems in Vancouver. Stan spent 13 years as Yaesu Product Manager for Russ Mack and Armaco, and with this move, we feel Stan has the experience to carry on supplying Canadian Hams and selected product lines, including the exciting new SOMMER HF BEAMS from West Germany and the complete ICOM line.

Ron Kaye VE7XR will be backing up Stan, especially in the DX equipment market.

Stan and Ron are looking forward to providing you with an expanding line of Ham equipment. Watch this space for exciting new products to be introduced into Canada by Com-West Radio Systems.

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Pacific Region News

BY J.F. HOPWOOD VE7AHB

British Columbia Amateurs are hoping to welcome the world during three important civic celebrations: EXPO 86, ALRT (Advance Light Rapid Transit), Vancouver City Centennial.

As of the time of writing (Dec. 1985), the Amateur group attempting to organize an EXPO 86 on-site station has met with little success. Their spokesman reports that EXPO 86 management have sidestepped attempts to allow Amateur radio to set up an on-site station. It is now almost too late to do so. EXPO begins May 1986. There was one offer to allow a ham presence at the closest EXPO 86 ALRT station, but it would be off-site and in a poor QTH for good reception and transmission.

The Vancouver Amateur Radio Club is, however, heavily involved and dedicated to the celebration of the City of Vancouver Centennial. The VARC has been around for 50 of those 100 years. They are sponsoring a project entitled 'Vancouver Communicates with the World' which is officially endorsed by the Vancouver Centennial Commission. The project will coincide with the ARRL's 1986 field day with a station, complete with a special call sign, operating from Queen Elizabeth Park. The plan is to keep the station operative for several more days after field day so that as many hams as possible will receive birthday greetings from Vancouver. QSL cards bearing the centennial logo will be sent confirming all QSO's. This looms as an exciting project. Local hams who wish to participate should

contact Rod Hourston VE7FHO at 261-0540.

The Chilliwack Amateur Radio Club hopes to replace their two-metre repeater, VE7ELK, with some brand spanking new equipment shortly. It seems the emergency activities section has captured the ear of a major donor to help find the planned replacements and enhancements to the station.

VE7EXPO

Bob Smits VE7EMD, reports that the B.C. Transit Corporation has offered to assist the Greater Vancouver Amateur radio clubs by providing a site for an EXPO 86 Amateur radio station. Unfortunately, EXPO officials would not accommodate an onsite station. Thanks to the Hon. Grace McCarthy, Minister responsible for the exciting new light rapid transit system 'Skyway,' the group co-ordinated by Bob VE7EMD have been provided with a site across the street from the main EXPO gate. The call sign of the special event station will either be VE7XPO or VE7EXPO.

While planning is still in the formative stages, the presence of ham radio ensures that EXPO 86, Skyway and the City of Vancouver Centennial will be well supported and advertised with Amateur radio at this world class exhibition which features 'communication and transportation' as its theme. Negotiations are underway for the major Japanese manufacturers of ham radio to supply equipment for HF, VHF and UHF stations.

The B.C. Provincial Government has printed 20,000 EXPO QSL cards to be distributed by the Surrey

Amateur Radio Club to B.C. Amateurs. The government is using the ham community to invite Amateurs around the world to this international event whose theme focuses on 'Modern Communications and Transportation.'

CARF has offered to assist the station organizers through free QSL Bureau service assistance and, if approved by the co-ordinating group, to include VE7EXPO as a special bonus point station during the July 1st 1986 Canada Day Contest. Local Amateurs will be asked to volunteer as station operators throughout the duration of the big event from May 2 to Oct. 13.

NORTH OKANAGAN NEWS

NORAC, the North Okanagan Radio Amateur Club at Vernon, reports that the Fly Hills repeater (146.16/146.76) is now in operation. The club is looking for donations to purchase an autopatch. The club has also ordered 1500 EXPO 86/Skytrain QSL cards to celebrate the B.C. EXPO 86 and Skytrain light rapid transit event worldwide. The Surrey ARC is co-ordinating the distribution of the special event QSL's to B.C. Amateurs.

The Chilliwack ARC provided 2 metre communications for the local Santa Claus Parade Dec. 18 through VE7ELK (146.40/147.00).

A reminder that the British Columbia FM Association holds on-air meetings every Thursday at 8PM on VE7RPT at 146.94 MHz minus 600 kHz. The latest addition to protect the VE7RPT investment is an alarm system to help the resident sentry Rupert guard the hill-top equipment. If you hear 'Intruder Alert' over RPT, please phone Ed VE7EWS at 592-7727 or Bob VE7CYB at 689-9563.

NANAIMO NOTES

The Nanaimo Amateur Radio Association is showing serious interest in the DOC proposal to restructure Amateur radio service in Canada by featuring it as a major discussion item at the December meeting.

Frank VE7BUQ is trying to locate some tubes for a medical missionary ship undergoing a re-fit in Victoria. TCA readers willing to contribute 5894's, 6146's, 6BQ5's and 3-500Z's can contact VE7BUQ.

Late News

ON-SITE STATION AT B.C. EXPO

An agreement was reached on Feb. 6 to put an Amateur station in B.C. Expo. The station will be set up in the Canadian pavilion. The antennas will be erected under the canvas 'sails' which form the roof.

All bands between 3.5 MHz and 1.2 GHz will be available, using all modes— CW, SSB, Slow-scan and Fast-scan TV, Packet and RTTY.

The call VE7EXPO will probably be authorized by DOC.

Manufacturers are being canvassed for donations of equipment. Amateurs are studying the space allotted and the antenna locations.

CARF's Bob VE7EMD, Tony VE7XQ, Larry VE7LR and others can take credit for this achievement. The DOC deserves particular thanks for their help.

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How to use a Repeater

And still keep your friends (and licence)

DOUG BURRILL VE3DC

With scores of rigs now capable of hitting our two metre repeater, there are bound to be many operators who are not familiar with good repeater operating practice. Poor repeater procedure can lead to embarrassment for the newcomer or careless old hand and is frustrating and annoying to those who have already caught on to and practice the tricks of the trade. If you have 'graduated' from the low bands, leave your low band procedures behind, too. The technical advantages and drawbacks of FM repeater operation demand different techniques. A number of them are listed here. If you use them you will keep your air pals happy and make it pleasant for yourself.

- **PAUSE** before you xmit in answer to another station. Remember this repeater is a huge party line and one of the other 200 stations may have a priority message. Give the other operator a 'break'.

- If you have traffic or want to join the QSO use the pause to break in by giving your call and the station you want.

- A local rag chew frequency is 146.76. The DT-23B has two channels. If you want to rag chew, buy a second crystal and use VE2CRA as a calling frequency. If you must rag-chew on the repeater, do it when it is not busy. (0100-0600 is suggested—EDST.)

- **DON'T 'HOG' THE FREQUENCY!** The monopolization of the repeater for hours on end seven days a week by the compulsive talkers in our midst means that many erstwhile monitors have been 'Turned off' themselves and then turned off their rigs. This defeats an important purpose of this repeater— consistent and extensive monitoring— which means that assistance to mobiles in an emergency or for their telephone traffic may not be available when needed.

- **GIVE MOBILES PRIORITY.** Mobile traffic can be urgent and of an emergency nature. The repeater is primarily aimed at fostering and serving mobile units by extending their range.

- **THE TIMER** on this repeater has been designed deliberately to choke off the long-winded, thus giving others a chance to break in. The timed interval allows plenty of time for most messages or words of wisdom.

- **KEEP YOUR TRANSMISSIONS SHORT! SHORT! SHORT! AT PEAK TIMES.**

- Short transmissions on road and traffic conditions are helpful and appreciated. Vivid and long descriptions of the sods you encounter, a street-by-street account of your progress and the narrow escapes which you have had are not of much use or interest to others on the frequency. They all encounter the same nuts behind the wheel as you do. Besides, in Ottawa what's new about lousy drivers or close calls?

- **UNNECESSARY IDENTIFICATION—** is poor procedure. The repeater automatically identifies itself with a low level MCW signal. That eliminates the necessity of your naming VE2CRA in every transmission. On FM it is easy to recognize voices, hence voices or names usually are sufficient identification for working on a repeater; so THAT eliminates repetitious and unnecessary identification of YOUR station. If you are making a series of transmissions you need only identify your own station at the end of the last one, or at least every half hour, to satisfy the DOC regulations for station identification.

- **OFFER HELP IN THE REPEATER MAINTENANCE AND CONSTRUCTION PROJECTS.** All kinds of help is needed on occasion. Leave your name with the Repeater Committee Chairman, Lyle Ward VE3CEZ. Use can be found for anything from strong backs to electronic wizards.

- **DON'T BE A FREQUENCY FREELoader!** VE2CRA is sponsored by the Ottawa Amateur Radio Club, assisted by the Ottawa Valley Mobile Radio Club, whose Ed Morgan VE3GK conducts the Capital City Net's popular 'Swap Net' and whose Doreen Morgan VE3CGO most efficiently handles the repeater's monitoring and telephone traffic service. Support the repeater by joining one of these clubs (or BOTH,

as do a number of local Amateurs).

- **DON'T JAM THE FREQUENCY WITH TESTING!** It is NOT like HF! It's a different ball game technically as well as operationally. If you are tuning a rig crystallized for the repeater **FIRST GET YOUR RECEIVER WORKING** or have a separate receiver tuned to the repeater output because VE2CRA is sensitive enough to pick up radiation from the coax to a dummy antenna, if the length is right, or even, under certain conditions, it can pick up a grid dip meter. With a receiver working you can tell if you are triggering the repeater or if you are cutting up conversations in progress. Identify your station if you do trip the repeater. If you are inexperienced enough that you can't tell by the repeater tail that you are triggering it (that sshh-ker-chunk after you stop transmitting), there are no doubt others who will inform you rather quickly that you are!

- Use your full call when identifying. It is an infraction to use 3XX for VE3XX.

- The proper operation of the station is the responsibility of the custodian and his delegated assistants. Infraction of the DOC regulations jeopardizes not only your own licence but that of the custodian and the club. The club's monitoring committee will report offenders to the DOC in order to protect the club licence.

- If VE2CRA users abide by these practical and courteous procedures we will continue to have the good repeater we have had to date. Continual and wide-spread poor operating can only lead to certain remedies being applied.

- To summarize:

FM operations are very different from HF SSB. Learn the ground rules and abide by them.

-PAUSE before answering: DON'T use the 'snappy comeback.'

-DON'T RAG-CHEW— Deliberate timer re-cycling won't make you loved (wanted, maybe, but not loved). Keep the irrelevant garbage content low.

-DON'T IDENTIFY UNNECESSARILY. DO IT PROPERLY.

-PAY YOUR WAY— Join the club— help when asked.

-Remember the golden rule— like the jailbird's philosophy— think break; and like his haircut— keep it short.

From Ottawa ARC
Groundwave 1972

Countries List

Q	U	A	PH	CW	COUNTRY	PH	CW	Q	U	A	PH	CW	COUNTRY	PH	CW	Q	U	A	PH	CW	COUNTRY	PH	CW			
A2	PH	FX			Botswana			HR					Honduras			T32	E Kirib				YS			El Slvdr		
A3					Tonga			HS					S Marino			T7	Turkey				YU			Yugslvia		
A4					Oman			HV					Iceland			TA	G'iemala				YV			Venez'la		
A5					Bhutan			HZ					Costa Rc			TF	Cocos I				YV0			Aves I		
A6					Un Ar Em			I					Cameroon			TG	C Af Rep				Z2			Zimbabwe		
A7					Qatar			IS					Congo			TI	Gabon				ZA			Albania		
A9					Bahrain			I2					Chad			TI9	Iv Coast				ZB			Gibralt		
AP					Pakistan			I2/A					Benin			TJ	Mali				ZC			Br Cyp		
BV					Taiwan			I3					Ukraine			TL	Eu USSR				ZD7			St Helna		
BY					China			I3					Fr Jos L			TN	Khngdrsk				ZD8			Ascnsion		
C2					Nauru			I6					As USSR			TR	Wh USSR				ZD9			T d Cnha		
C3					Andorra			I7					Azrb'ian			TT	Georgia				ZF			Cavman I		
C5					Gambia			I8					Armenia			TU	Turkoman				ZK1			S Cook I		
C6					Bahamas			IA					Turkman			TY	Uzbek				ZK1			N Cook I		
C9					Mozambiq			JD					UzbeK			TZ	Kazakh				ZK2			Niue		
CE					Chile			JD					Tadzhik			UA	Kirghiz				ZL			N'Z'land		
KC4					Antarcrc			JT					Kazakh			UA1	Turkoman				ZL			Auckland		
CE0A					Easter I			IW					Ukraine			UA2	Tadzhik				ZL			Chatham		
CE0X					San Felix			IX					Ukraine			UA0	Uzbek				ZL			Kernadec		
CE0Z					J Ferndz			IY					Ukraine			UB	Tadzhik				ZM7			Tokelan		
CO					Cuba			K.W					Paraguay			UC2	Uzbek				ZP			Paraguay		
CN					Morocco			KC6					S Africa			UD6	Uzbek				ZS			S Africa		
CP					Bolivia			KC6					Marion I			UF6	Uzbek				ZS2			Marion I		
CR9					Macao			KG4					Namibia			UG6	Kazakh				ZS3			Namibia		
CT					Portugal			KH1					SMOMalta			UH8	Uzbek				LA0			SMOMalta		
CT2					Azores			KH2					Spratlly			UI8	Tadzhik				1S			Spratlly		
CT3					Madeira			KH3					Monaco			UI8	Kazakh				3A			Monaco		
CX					Uruguay			KH4					Agallega			UL7	Kirghiz				3B6			Agallega		
D2, 3					Angola			KH5					M'rithus			UM8	Moldavia				3B9			M'rithus		
D4					C Verde			KH5K					Rodrig'z			U05	Moldavia				3B9			Rodrig'z		
D6					Comoros			KH6					Eg G'nea			UP2	Lith'nia				3C			Eg G'nea		
DJ					West Germany			KH7					Annobon			UQ2	Latvia				3C0			Annobon		
DU					Philips			KH8					Fiji I			UR2	Estonia				3D2			Fiji I		
EA					Spain			KH9					Swziland			V2	Antigua				3D6			Swziland		
EAA6					Balearcic			KH0					Tunisia			V3	Belize				3V			Tunisia		
EA8					Canary I			KL7					R Guinea			VE	Canada				3X			R Guinea		
EA9					Cent			KPI					Bouvet			VE1	Sable I				3Y			Bouvet		
EI					Iceland			VT0								VFT	S' D'atl				3V					

KDK The New FM-240 for 2-Meters

With the User Friendly

MMI
Mini Machine Interface

List Price \$579



There is **NO OTHER** Transceiver On the Market Today that can Surpass the **KDK FM-240** in size, features, and Price! **NONE!**

SPECIAL PRICE \$449.00
Voice Synth Option \$59
Special on External Speaker with FM-240 \$10.00
Mode of scan can be programmed with **EACH MEMORY**.....

\$ 449.00

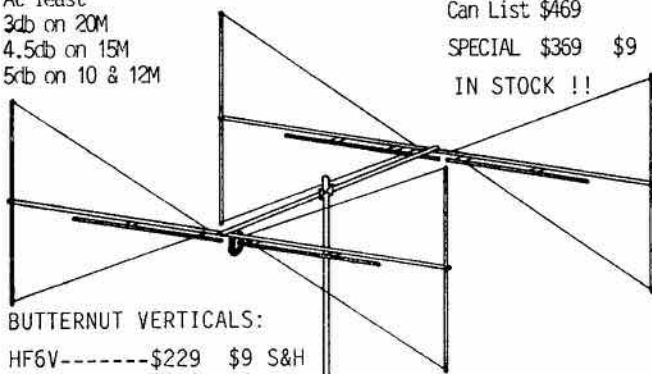
The KDK FM-240 features:

- 25-watts of power (5-watts in Low power)
- 16 memory channels plus one priority channel
- Automatic offset programming standard and oddball.
- Easy to see Alpha-numeric LCD readout system
- Simple tuning & programming nothing complicated
- 16-position touchtone pad mounted on speaker/mike
- Up/Down tune, and lock switches on speaker/mike
- Programmable sub-audible tone ENCODE and DECODE
- Optional Voice Synthesized module easily plugs in
- Four modes of scan-manual, timed, stop/skip & stop/resume
- Comes with mobile bracket, speaker microphone, power cord and easy-to-read operating instructions.
- Features 90-day warranty
- Compact. Measures approx. 1-1/2H x 5-1/2W x 0-5/8D (inches)
- Covers 2-meter band, plus CAP and MAP

Introducing the BUTTERFLY™ Beam from Butternut!

Gain:
At least
3db on 20M
4.5db on 15M
5db on 10 & 12M

Can List \$469
SPECIAL \$369 \$9
IN STOCK !!



BUTTERNUT VERTICALS:

HF6V-----	\$229	\$9	S&H
HF2V-----	\$219	9	
TBR-160----	\$ 99	3	
RMK-II-----	\$ 99	6	

**The HF4B Compact, 2-element
Beam for 20-15-12-10 meters**

Compact Size

The HF4B's 12 1/2-foot elements and 6-foot boom are ideal for home-station use and for weekend retreats, condos, apartments and other places where oversized beams are prohibited. Its light weight (17 pounds) means it can be turned with a tv rotator, yet it is robustly constructed in the best tradition of our world-famous Butternut verticals.

Performance

The HF4B BUTTERFLY™ has not sacrificed performance for compactness. Its unique design with fanned elements and L-C circuits avoids use of power-robbing traps yet provided high-efficiency operating on all bands. The BUTTERFLY™ outperforms anything in its class.



DAIWA HAM EQUIPMENT:

METERS:

CN-520 1.8-60MHz 200/2kW--\$ 99.95	CN-540 50-150MHz 20/200W\$119.95
CN-620B 1.8-150 20/200/2kW\$169.95	CN-650N 1.2-2.5GHz 2/20W\$319.95
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LA-4030 3W-35W for 440MHz--\$239.95	

CAVITY CONSTRUCTION COAXIAL SWITCHES:

CS-201 2 position-----\$ 39.95	CS-201G with N Connector\$ 59.95
CS-401 4 position-----\$119.95	CS-4 4 pos BNC Con SALE-\$ 29.95

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MR-750PE with preset-----\$499.95	MR-750E incl 1 motor---\$449.95
MR-750U extra motor-----\$149.95	UP TO 4 MOTORS MAY BE USED.....

AF-606K Active Filter PLL--\$179.95	DK-210 Keyer with Meter--\$129.95
CN-419 Antenna Tuner+520--\$379.95	←200W CW 1.8-30MHz Continuous.

AFFORDABLE PACKET RA

An identical TAPR TNC 2 clone with a new cabinet and added f

\$ 229.00
MFJ-1270



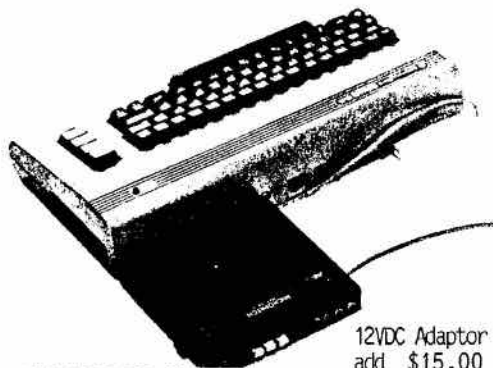
Join the exciting packet radio revolution and enjoy error-free communications ...

MFJ brings together efficient manufacturing and TAPR's (Tucson Amateur Packet Radio) leading edge technology to bring you affordable packet radio. You get a nearly identical clone of the widely acclaimed TAPR TNC 2 with identical software and hardware. It's in a new cabinet and includes a TTL serial port for extra versatility.

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MICROPATCH™ Computer Interface

SUPER CLOSEOUT SPECIAL
\$ 199.95



12VDC Adaptor
add \$15.00

HARDWARE FEATURES

- Easy hook-up to transceiver;
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- Automatic threshold correction circuit (ATC) for good copy when one tone is lost in QRM or selective fading. (Not a low-cost phase-locked-loop detector);
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- AFSK sine wave;
- Plus or minus;
- Automatic P;
- Scope outpu;
- Drain on hos

Get an Inter only \$40 mor MBA-TOR-64 MICROPATCH You're gett The MBA-TOR be used by

The MICRO user a compl TOR™ AEA RTTY, ASCII The MAP-64/ the popular C

The with keyboard operate from as the AC-1 (



SWR POWER & FS METER
MODEL SWR 35 \$59.95

This model is a compact through-line type Power SWR & FS meter designed for the wide frequency range measurement for the amateur radio station. Equipped "On the Air" LED light up in accordance with the output power. Reversible two antenna systems or antenna and dummy load by easy switch operation.

Impedance	50 - 52 ohms	
Frequency Range	3.5 - 150MHz	
Power Range	0 - 20, 200W - 2 ranges	±10%
SWR Measuring Range	1.1 - 1.3	
Punctual Power	3.5 - 30MHz (HF Band) 200W 50 - 160MHz (VHF Band) 50W 100 uA F.S.D.	
Meter Sensitivity	M Typ (ISO 239) 1 x TX, 2x ANT	
Connector	150W x 65H x 70D mm	
Dimensions	400 g	
Weight	Par Antenna 1pc.	
Accessory		

Hansen

BOTH HAVE LIGHTED METERS WITH 12VDC

SWR POWER METER

MODEL FS-55

This model is an easy to use model consist of independent 50 - 52 ohm coax cable watts and SWR meter "On the Air" LED light

Specifications:	
Frequency Range	3.5 - 150MHz
Power Range	0 - 20, 200W - 2 ranges
VSWR	1.1 - 1.3
Impedance	50 - 160MHz (VHF Band) 50W
Punctual Power	100 uA F.S.D.

Connector

Accessories

Dimensions

Weight

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... for an incredible \$229
 home computer with a RS-232 serial port and a Commodore 64, 128 or VIC-20 you can use to get on the air immediately. You get interface on tape or disk and complete instructions ... on packet radio. Order MFJ-1282 (disk) or MFJ-

TNCs, you never have to worry about your MFJ-1270 change computers or because packet radio stands any computer with an RS-232 serial port and an app. If packet radio standards change, software updates as TAPR releases them. Also speeds in excess of with a suitable external modem! Try that with a ma- without hardware HDLC as higher speeds come into also use the MFJ-1270 as an inexpensive digipeater. 25 Version 2.0 software, hardware HDLC for full du- tect for HF, 16K RAM, simple operation plus more. evolution now and help make history. Order the

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with MBA-TOR Software for than the software itself!!! is for \$159, Now get the -64/2 for only \$199.95 !!!... an interface for \$40.00 !!. software portion can also elf with another interface.. CH™ Model MAP-64/2 offers the hardware and full-featured MBA- ware package for use in Morse, d AMTOR communication modes. ugs into the game cartridge slot of odore 64 personal computer.

MAP-64/2 come complete verlay and operator's manual and external 12VDC power supply such included).

tuning with triple LED tuning

output;

W output keying;

available; user supplied 12VDC (reduces mputer)



95.
 compact Power & VSWR Meter. This Power meter and SWR meter adaptable to ver meter can be measured for 0 - 1000 - 5 VSWR on antenna circuit. Equipped accordance with the output power.

150MHz
 20, 200, 1000 watt 3 ranges ±10%
 1 - 1.5
 - 52 ohms
 - 30MHz - 1000 watt
 - 150MHz - 50 watt
 TYPE (ISO-239)
 connector cable for illumination lamp.
 logic Fastener x 2, pcs
 36(GI) x 75(HI) x 90(D) mm
 36g

1986 CALLBOOKS



The "Flying Horse" has a great new look!
 It's the biggest change in Callbook history! Now there are 3 new Callbooks for 1986.

The North American Callbook lists the amateurs in all countries in North America plus those in Hawaii and the U.S. possessions.

The International Callbook lists the calls, names, and address information for licensed amateurs in all countries outside North America. Coverage includes Europe, Asia, Africa, South America, and the Pacific area (exclusive of Hawaii and the U.S. possessions).

SHIPPING ON BOOKS \$5.00 ANY QUANTITY..

North American Callbook \$30
 International Callbook - \$29
 BOTH CALLBOOKS - \$59
 Callbook Map Library - \$12

ARRL 1986 Handbook - \$26
 1986 Hardcover Handbook \$40
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 Hardcover Antenna Book - \$20
 Satellite Handbook - \$15
 FM & Repeater Book - \$8
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 ARRL Tune in The World - \$15
 (The above is with CW Tape
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 HF Antennas for all Locations \$17
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 Radio Database TBE 2.25-5.7Mc \$7
 Both Database IBE & TBE \$19
 WORLD RADIO TV HANDBOOK - TBA \$29.00

For our store customers we now carry the following:
 QST CQ 73 Popular Comm DX Ontario
 Modern Electronics TCA (CARF)...

HI-Q BALUN

- For dipoles, yagis, inverted vees and doublets
- Replaces center insulator
- Puts power in antenna
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- Small, lightweight and weatherproof
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- For full legal power and more
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- With SO 239 connector
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Only \$19

40/80 Meter Antenna Kit For "Perfect Dipole"

Quick Installation - Nothing Else to Buy

Also resonant on 10, 15, 20M with a Tuner !!



Unadilla/Reyco 5 Band Dipole Kit.

- Complete Kit \$125.00
- W2AU 1:1 Balun
 - Pair of W2VS KW-40 Traps
 - 125' #14-7 Copper Wire
 - Complete Installation & Pruning Instructions

W2AU Balun 1:1 or 4:1 specify - \$35.00
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 Unadilla Traps 10 15 20 30 40 80M per Pair - \$65.00
 Ansatulator (Centre Insulator for Dipole) - \$16.00
 End Insulators (each) - \$5.00
 AW-150 14 Gauge 7 Strand 150' Antenna Wire - \$29.00

SWR/Power Meters YAESU

Frequency Range 140-525 MHz
 Measurable Power Range 0-200W
 Meter Full Scale Ranges 4/20/200W
 Power Meas. Accuracy ±10% of full scale
 4W Range: ±5% of full scale
 20/200W Ranges: subtract 10% 1/5
 Note: 220 - 420 MHz: add 10% 1/5
 450 - 525 MHz: 4 watts
 Minimum Power for SWR meas. 1.0:1 to infinity
 SWR Measuring Range
 Insertion Loss:
 140 - 250 MHz: less than 0.1 dB
 400 - 470 MHz: less than 0.2 dB
 525 MHz: less than 0.3 dB
 Input/Output Impedance 50 ohms
 Input/Output Connectors SO 239
 Dimensions (WHD) 120 x 72 x 85mm
 Weight 540g (19 oz.)



YS-500 \$129

The new YS-60 and YS-500 are handsome, compact, multi-function instruments for monitoring both average and peak transmitter power output and reflected power, and voltage standing wave ratio (VSWR) of antenna systems in two-way radio stations from 1.6 to 60 MHz (YS-60), or 140 to 525 MHz (YS-500). The small size and color coordinated cabinets make these ideal additions to any Yaesu transceiver. Three functions provide monitoring of either forward or reflected average transmitter output power for CW, AM, FM and FSK modes, or peak envelope power (PEP) for SSB modes, and VSWR for testing and monitoring the performance of transmitting antenna systems.

Frequency Range 1.6-60 MHz
 Measurable Power Range 0-2 kW
 Meter Full Scale Ranges 20/200/2000W
 Power Meas. Accuracy ±10% of reading (add 5% of reading between 1.6 and 3.5 MHz)
 Minimum Power for SWR meas. 3 watts
 SWR Measuring Range 1.0:1 to infinity
 Insertion Loss: less than 0.1 dB
 Input/Output Impedance 50 ohms
 Input/Output Connectors SO 239
 Dimensions (WHD) 120 x 72 x 85mm
 Weight 680g (24 oz.)
 Power Requirements 13.8V DC @ 200mA



YS-60 \$159

Insured Shipping & Handling - Please add 2% (\$5 Minimum) to all orders. Some items are subject to freight collect..... Visa / Mastercard accepted at slightly lower discounts..... ONTARIO RESIDENTS - ADD 7% SALES TAX AFTER ADDING SHIPPING. PLEASE SEND 2 - 34¢ STAMPS FOR CATALOG & INFO REQUESTS..... NOTE: ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE..... SPECIAL PRICES BASED ON CHEQUE WITH ORDER. CREDIT CARDS ARE ACCEPTED AT SLIGHTLY LOWER DISCOUNTS - USUALLY ABOUT 5%....

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F	France	<input type="checkbox"/>	<input type="checkbox"/>	KX6	Marshall	<input type="checkbox"/>	<input type="checkbox"/>	VK9	Willis I	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4U	Hq UN	<input type="checkbox"/>	<input type="checkbox"/>
FB8W	Crozet	<input type="checkbox"/>	<input type="checkbox"/>	LA	Norway	<input type="checkbox"/>	<input type="checkbox"/>	VK9	Xmas I	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4W	Yemen	<input type="checkbox"/>	<input type="checkbox"/>
FB8X	Kerueln	<input type="checkbox"/>	<input type="checkbox"/>	IU	Argentina	<input type="checkbox"/>	<input type="checkbox"/>	VK9	Cocos-Ke	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4X	Israel	<input type="checkbox"/>	<input type="checkbox"/>
FB8Z	Amstrdam	<input type="checkbox"/>	<input type="checkbox"/>	LX	Luxmborg	<input type="checkbox"/>	<input type="checkbox"/>	VK9	Melish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5A	Libya	<input type="checkbox"/>	<input type="checkbox"/>
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FS	St Martn	<input type="checkbox"/>	<input type="checkbox"/>	OE	Austria	<input type="checkbox"/>	<input type="checkbox"/>	VP2E	Anguilla	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5R	Malagasy	<input type="checkbox"/>	<input type="checkbox"/>
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FO0	Clppton	<input type="checkbox"/>	<input type="checkbox"/>	OK	C'slvkia	<input type="checkbox"/>	<input type="checkbox"/>	VP5	Turks I	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5W	W Samoa	<input type="checkbox"/>	<input type="checkbox"/>
FO	Fr Plyn	<input type="checkbox"/>	<input type="checkbox"/>	ON	Belgium	<input type="checkbox"/>	<input type="checkbox"/>	VP8	Falkland	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5X	Uganda	<input type="checkbox"/>	<input type="checkbox"/>
FP	S Pierre	<input type="checkbox"/>	<input type="checkbox"/>	OX	Grenland	<input type="checkbox"/>	<input type="checkbox"/>	VP8	S G'rgia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5Z	Kenya	<input type="checkbox"/>	<input type="checkbox"/>
FR	Glorioso	<input type="checkbox"/>	<input type="checkbox"/>	OY	Faroe I	<input type="checkbox"/>	<input type="checkbox"/>	VP8	S Orkney	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6O	Somali	<input type="checkbox"/>	<input type="checkbox"/>
FR	J de Nva	<input type="checkbox"/>	<input type="checkbox"/>	OZ	Denmark	<input type="checkbox"/>	<input type="checkbox"/>	VP8	S Sndwch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6W	Senegal	<input type="checkbox"/>	<input type="checkbox"/>
FR	Reunion	<input type="checkbox"/>	<input type="checkbox"/>	P2	P N Gnea	<input type="checkbox"/>	<input type="checkbox"/>	VP8	S Shtnd	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6Y	Jamaica	<input type="checkbox"/>	<input type="checkbox"/>
FR	Tromelin	<input type="checkbox"/>	<input type="checkbox"/>	PA	Nthrland	<input type="checkbox"/>	<input type="checkbox"/>	VP9	Bermuda	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7O	Yemen	<input type="checkbox"/>	<input type="checkbox"/>
FW	Wallis	<input type="checkbox"/>	<input type="checkbox"/>	PJ	N Antlls	<input type="checkbox"/>	<input type="checkbox"/>	VO9	Chagos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7P	Lesotho	<input type="checkbox"/>	<input type="checkbox"/>
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GM	Scotland	<input type="checkbox"/>	<input type="checkbox"/>	PZ	Surinam	<input type="checkbox"/>	<input type="checkbox"/>	VU7	Lacadive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9G	Ghana	<input type="checkbox"/>	<input type="checkbox"/>
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HC	Equador	<input type="checkbox"/>	<input type="checkbox"/>	ST0	So Sudan	<input type="checkbox"/>	<input type="checkbox"/>	XZ	Burma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9N	Nepal	<input type="checkbox"/>	<input type="checkbox"/>
HC8	Galapgos	<input type="checkbox"/>	<input type="checkbox"/>	SU	Egypt	<input type="checkbox"/>	<input type="checkbox"/>	Y2-9	E Germany	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9O	Zaire	<input type="checkbox"/>	<input type="checkbox"/>
HH	Haiti	<input type="checkbox"/>	<input type="checkbox"/>	SV	Greece	<input type="checkbox"/>	<input type="checkbox"/>	YA	Afghnstn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9U	Burundi	<input type="checkbox"/>	<input type="checkbox"/>
HI	Domncon R	<input type="checkbox"/>	<input type="checkbox"/>	SV	Crete	<input type="checkbox"/>	<input type="checkbox"/>	YB	Indonesia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9V	Sngapore	<input type="checkbox"/>	<input type="checkbox"/>
HK	Columbia	<input type="checkbox"/>	<input type="checkbox"/>	SV	Dodcnese	<input type="checkbox"/>	<input type="checkbox"/>	YI	Iraq	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9X	Rwanda	<input type="checkbox"/>	<input type="checkbox"/>
HK0	Malpelo	<input type="checkbox"/>	<input type="checkbox"/>	SV	Mt Athos	<input type="checkbox"/>	<input type="checkbox"/>	YI	N Hbrdes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9Y	Trinidad	<input type="checkbox"/>	<input type="checkbox"/>
HK0	S Andres	<input type="checkbox"/>	<input type="checkbox"/>	T2	Tuvalu	<input type="checkbox"/>	<input type="checkbox"/>	YK	Syria	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	/a/z	Abu Ail	<input type="checkbox"/>	<input type="checkbox"/>
HL	Korea	<input type="checkbox"/>	<input type="checkbox"/>	T30	W Kirbt	<input type="checkbox"/>	<input type="checkbox"/>	YN	Nicragua	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>
HP	Panama	<input type="checkbox"/>	<input type="checkbox"/>	T31	C Kirbt	<input type="checkbox"/>	<input type="checkbox"/>	YO	Romania	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>

Arrow Air Disaster, Gander

December 12, 1985

BY DON VOIGE

For many hams, and for most of the time, the enjoyment of Amateur radio comes from ragchews with friends, regular contact with relatives, home-brewing, or building the ultimate antenna... another side of Amateur radio is the provision of public service in times of emergency: this facet of our avocation engaged hams of Gander and surrounding area on Dec. 12 and 13, 1985. The crash of the Arrow Air DC8 in the early morning of Dec. 12 was the most serious accident to ever befall Gander Airport and the response of community organiza-

tions— including ARCON, the Amateur Radio Club of Newfoundland, was immediate, efficient and effective.

Some background may help to set the stage for the Amateur reaction to this tragedy. ARCON is the Ham club representing most of the Amateurs within a 60-mile radius of Gander—including members of the armed forces rotated here. The club has had its ups and downs over its 20-year existence— with the last five or six showing signs of renewed interest and activity in radio communications. The reason for this new growth is directly linked to VHF development

and our club effort to build and operate a two metre facility.

As a result of this work ARCON members were invited to take part in a simulated emergency exercise in the fall of 1984. From this experience the club decided to build a new and better 2 Metre station and, with the help of a New Horizons grant, work was begun on this project in early 1985.

Under the guidance of VO1KG and VO1OT the new station was completed and tested by September, in fact ready for the next emergency exercises to be held later that month or in early October. VO1DB and VO1II took part in this exercise and as a result of their report at the next club meeting, it was decided to rebuild the old 2-metre unit. By November VO1KG, VO1OT and VO1FA had

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First Row— L-R: Derm VO1DF, Kader VO1DB, John VO1DC, Isabel VO1PV, Gordon VO1CU seated; Second Row— Lew VO1EK, Brian VO1OT Fred VO1IT; Third Row— Graham VO1NK, Don VO1GE and David VO1CC. Missing from photo Eric VO1FA and Howard VO1KG.

rebuilt and tested the old repeater and it was used as a standby. Both units therefore were operational, and equipped with auxiliary emergency power when the crash occurred in December.

The first indication that we would soon put this station to a serious use came with a phone call from VO1FA to VO1GE and XYL VO1PV at about 7:55 a.m. (local)— with news of the plane crash at the airport. Acting as co-ordinator, VO1GE, assisted by VO1PV, contacted five club members immediately. VO1FA with VO1IT proceeded immediately to the crash site and returned to the hospital where they were joined by VO1DB, VO1CC and VO1EK for assignments to the medical teams. While VO1FA provided communications at the hospital the others went with the medical teams to the crash site. ARCON members were at the hospital by about 0845 a.m. and ready to provide direct communications as soon as the teams arrived at the site.

It was soon apparent that there were no survivors and preparations were begun to set up a temporary morgue in Hangar 21, with VO1CC reassigned to this area to be joined by VO1CU a short time later. VO1OT

was assigned to replace VO1CC at the crash site and we now had a communications line from the Hospital to the site and the hangar. This then was the pattern laid down and followed throughout the day and until almost midnight using VO1IT, VO1DC, VO1DF and VO1NK as relief crews, while VO1KG provided standby maintenance and kept the necessary supply of Ni-cads charged for the hand-helds. Early the next morning ARCON members were on the job again and provided VHF communications between the Hospital and the Morgue until about Midday when Commercial means were made available. So at about 1500 Local we had completed our VHF emergency communications work and returned the repeater station to normal operation, in all about 18 hours of emergency operation.

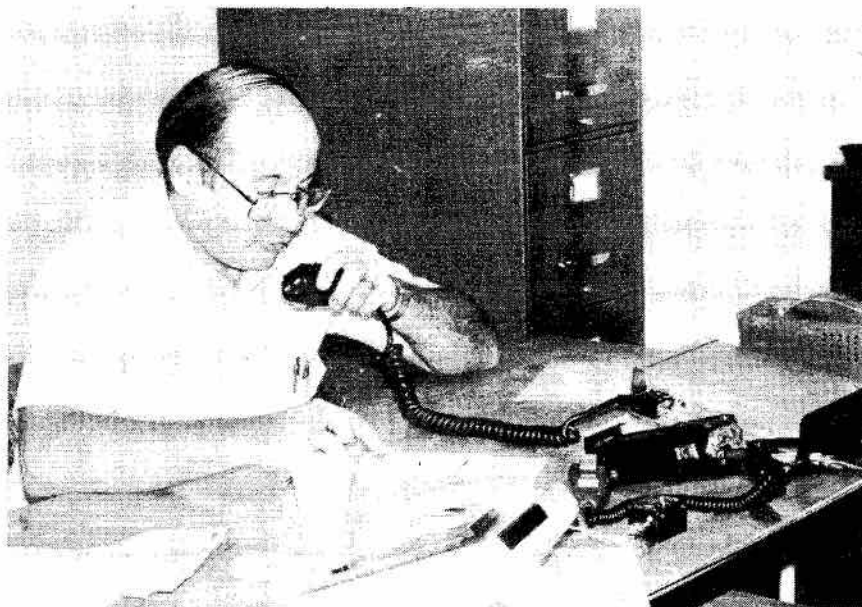
Concurrently while setting up the VHF communications we received a call on the mid-morning of Dec. 12 from VE3GOC in Ottawa asking that we set up a HF link with them. VO1CU was reassigned to his home QTH where within a half an hour of the request he had established contact with VE3GOC on 20 metres and a

short while later with KEM80 in Washington and KDM50 in Atlanta GA. VO1CU with assistance from XYL Dorothy and VO1DC passed traffic to the emergency coordination centre in Gander. As a result of this link and the traffic content we were able to use our two metre station to gather information on hotel space, car rentals available, etc... for a radius of 60 miles, using VO1CE 40 miles to the east and VO1EX, VO1GI, VO1BJ 60 miles to the west. An interesting point here is that many Amateurs on the Avalon Peninsula— over 100 miles east— were also monitoring our VHF and HF and through VO1HP offered whatever help we needed from SONRA. As darkness fell and 20 metres faded VO1IT was assigned to 80 metres to carry on the HF link with Ottawa and Washington and this circuit was monitored till well after midnight, with VO1BS and VO1FG as backup stations for traffic relay. By mid-morning of Dec. 13 VO1CU had again established contact with KEM80 and KDM49 and maintained this communications circuit till about 1730 local when commercial communications took over the job. ARCON members provided about 22 hours of HF traffic service— to meet a need caused presumably by the overloading of commercial circuits.

As this report is being written the club has not yet evaluated our performance— but a few conclusions can be drawn:

- (a) The simulated exercises were certainly helpful— they served to focus attention on the role we might play using VHF.
- (b) There is a good deal of mental and physical stress experienced by those working on this type of emergency and it is important to have (1) relief available at intervals; (2) spare equipment in good working order; (3) participants properly dressed for the job and weather conditions; (4) a competent maintenance technician to ensure the radio gear functions well; (5) a co-ordinator who knows the area, the people available and the equipment needed for the job.

All of these observations have been reached and preached by Amateur emergency groups for the past 50 years and our experience served only to confirm their validity. While ARCON members realize the small part they played in this monumental emergency, they derive some satisfaction in knowing that through its smooth and efficient functioning, their club clearly demonstrated the value of Amateurs and Amateur radio as a public service.



Ron Walsh VE3IDW, President of CARF in a role he performs well. Ron, a member of ARES Kingston, is shown here acting as net control station during a simulated disaster at the Kingston Arena. Area hospitals, police, fire and ambulance services were called into action for the exercise.

ARES Kingston provided communications for the two major hospitals and outlying clinics. 17 Amateurs were dispatched to various locations in the city, including a mobile van at the disaster scene. Staffers VE3NWT, VE3MNI and VE3LYW provided liaison between site officials and hospitals. Photo by Sansom VE3LXA.

Long Delayed Echoes

BY DOUG BURRILL
VE3CDC

All aboard! for a trip backward in time, when a lawsuit over a curable bit of RF interference would have been unthinkable and electric organs and microwave ovens in the home were unknown. So much for progress, so let's take a look at the Amateur scene in Canada—

40 YEARS AGO IN 'XTAL MAGAZINE' OF MARCH 1946

The magazine by this time was the official voice of CAROA, the Canadian Amateur Radio Operator's Association, which was taking steps to set up a Communications Department a la ARRL. With great expectations which unfortunately were not to be realized, a field organization of eight districts was to be activated, with District Communications Managers who would initially be appointed and who would also be the CAROA field reps. Under each of these officials there was to be a net of Traffic Managers, CW and phone 'relay' stations, which never was fully established and did not survive.

The big news event was the announcement that the Minister of National Defence had given the OK for an organization to be known as the Air Force Amateur Radio System (AFARS), which many of our older members will remember. Its aim was to set up a nation-wide net of 'qualified operators' who would be trained in RCAF procedure and who would set up and run nets. Preceding our present EMO provincial and local nets the idea was to have a reserve of Amateurs which could be called upon in local, national or international emergencies and it would keep its members abreast of the latest developments in service communications and radar. The whole shebang was to be organized in some 15 districts with squadrons which could have one or more 'flights' of up to 20 Amateurs, affiliated with local RCAF Auxiliary units. A prime mover in the organization was one known to most Canadians, VE3CJ, Noel Eaton.

Many Maritimers will remember an episode reported in this 1945 issue. It is part of the VE1 folk lore and bears quoting:

"LOST AND FOUND— Digby, N.S.

Nov 27 (1945). (C.P.) Maritime Telephone and Telegraph's radio station at Point Prim, three miles from here was entered tonight and the equipment for an entire transmitting station stolen... (the) general manager of the company said that men experienced in radio work must have aided in the theft as nothing was torn from the walls but removed skillfully. The station provided three (long distance phone) channels between Nova Scotia and Saint John and its loss has seriously affected the service."

Well, you'd better believe it, they WERE experienced! The next day a C.P. despatch from Halifax read:

"Losing its compass bearings on unfamiliar land, the Royal Canadian Navy (remember when we had one? Ed.) it was disclosed today, staged an action against a civilian radio station at Point Prim and not only carried the day but carried away the whole station in the belief it was an RCN installation... Although faces in naval circles are slightly red, the MT&T was satisfied the case was solved... 'Some time yesterday, the navy received a signal to dismantle its station, located on the same lonely, deserted road as the MT&T station,' A.M. Mackay, general manager of the telephone company said today. Through an error the sailors assigned to the job went to the wrong station. When they found the building locked, they are reported to have forced an entry, dismantled the radio and drove off to the nearby HMCS Cornwallis naval base."

I wonder if any of our readers could add to this story... like who got the inevitable 'rocket' for this one?

Good news was the announcement that more wartime restrictions were being lifted and 50-54 MHz (it was mcs, megaCYCLES, then) 27.185-27.455 (which went to CB later) and 235-240 would be returned to the Amateur Service on March 15th and glory of glories, 80 metres, 3.5 to 4.0 would be back on April 1st... no foolin'.

In contrast to today, with then only four or five thousand licensees, Amateur radio in Canada was rather like a big club as the four pages of chit-chat about doings of individuals across Canada showed. Today, with 23,000 or more stations, such a column would be difficult to put

together and probably meaningless to most readers.

In one of the ads, which were mostly still of the institutional type, the Canadian Marconi Co. displayed a series of tubes graduated by size and one was of particular interest to WW II Vets... it was the tiny 1 1/4 inch tube which was the heart of the proximity fuse used in various artillery shells... This first sub-miniature tube was used in the sort of radar in the fuse device which ensured that the shell exploded when close to its target.

35 YEARS AGO— SKYWIRE MAGAZINE FOR MARCH 1951

This was the month that two important moves affecting Canadian and U.S. hams were made. The U.S. 75 metre phone band was lowered to 3800 kHz and the Canadian band went down to 3725 in response, which didn't make a number of CW ops very happy. The DOC and FCC signed a treaty to permit reciprocal operation by Canadian and U.S. operators. This did away with the bothersome necessity of sealing one's set before crossing the border but it was about three decades later before the bothersome permits required were done away with. In the U.S., call sign licence plates were authorized and moves were set afoot to have Canadian provinces do the same.

Brand-new war surplus stuff was beginning to appear on the market... like the RCAF AT-1 transmitter. It ran on 12 or 24 volts and its VFO-controlled amplifier put out a reasonable CW and an indifferent phone signal... on a number of places on the band at once; all for \$19.50. The only transmitter advertised was the famous Harvey-Wells, available in three models, ranging from \$142 and \$182 to \$224... and that was in 1951 dollars. The dealers were now appearing in the magazine but most of it was surplus stuff and components with a good variety of receivers. In those days, before the advent of Japanese imports and solid-state stuff, transceivers were not produced for Amateurs.

15 YEARS AGO— VE NEWS OF MARCH 1971

This issue noted some changes to a proposal for a third class of Amateur

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ticket, intended to increase the number of Amateurs and to populate the UHF and the VHF bands, which CARF had sent to the provincial societies for discussion. The proposal had originally suggested a ticket which would be valid for three years, restricted to operations on 30 MHz and above and with no code requirement, with a provision for upgrading to the Amateur or Advanced class by passing the appropriate morse test. The change was to revise the lower band limit to 144, rather than 30 MHz. Repeaters were multiplying rapidly and the DOC had issued 'Guidelines' which were being revised with plentiful input from Amateur organizations. On a personal note, your writer was interested to read how he first became involved with CARF. The NEWS reported that I had

volunteered to replace the late Jim Strain, who had resigned at that time as the CARF DOC Liaison Committee chairman, as he had joined that Department.

10 YEARS AGO— FROM TCA FOR MARCH 1976

1971 was only the beginning for proposals for a third class of certificate for the Amateur Service. This issue of TCA noted that in addition to the 1971 proposals above, CARF canvassed the provincial societies and members again in 1972 and 1974. A group of Ontario ops made a new proposal and DOC advised that it would put this latest one up for public comment in a forthcoming Canada Gazette. The disastrous Guatemala earthquake had seen Canadians operating

around the clock with emergency traffic and this was one of the episodes which finally got Emergency Planning Canada to set up a complete communication facility, including Amateur and commercial radio facility in Ottawa about four years ago.

Laugh of the month came from Victoria, B.C. where a local op was ejected from a bus for using his hand-held on the way to work. Contacted by the TCA reporter, the transit commission said that it was 'just a policy.' Sounds like the hassle one gets when boarding a plane with one in your luggage.

Comments on this column would be much appreciated... drop a line to me at 151 Fanshawe Avenue, Ottawa, Ont. K1H 6C8

SWAP SHOP

WANTED: Propeller pitch; 2 KW-up linear amplifier. Confirm specifications and best price. VE2OU, 2785 Valcourt St., Ste Foy, Quebec G1W 1W2.

FOR SALE: Heathkit HW-8 QRP CW transceiver, hardly used, good condition, \$150. TRC-458 Realistic CB unit AM/SSB good condition, \$125. Robert Golden, 114 Decou Road, Simcoe, Ont. N3Y 4K2, 519-426-4847.

FOR SALE: Drake R4C, T4XC, AC4/MS4 plus filter and crystals. Mint condition. Drake WH7 Wattmeter, MN75 matching network, Drake DC-4 mobile supply for 'Twins'. Telephone 1-519-579-0536. Doug Wismer VE3EHC, 18 Sheldon Ave. N., Kitchener, Ont. N2H 3M2.

FOR SALE: One only Kenwood TR2600A 2 metre Hand-held with speaker-mic Model SMC-30 and a Larsen magnetic mount antenna NMD-150. Price \$430.00. Mel Lever VE1VX, 30 Raymoor Drive, Dartmouth, N.S. (902) 434-5250.

FOR SALE: Complete Hustler mobile system or 80 through 10 metres, including bumper mount, resonator spring, quick disconnect, all resonators. Excellent condition. \$175. MFJ-202 Noise Bridge \$50. John Benson VE3JH, 234 Third St. N., Kenora, Ont. P9N 2L7.

LOG/DUPESHEET software for your Apple II+/c/e computer. One keypress to see callsign list. 1000 QSOs per band. Fast sorting. Prints logs and dupesheets. Will not allow dupes in contest log. Diskette \$25.00

VE3GFN, 298 Warden Avenue, Scarborough, Ont. M1N 3A4.

FOR SALE: ICOM 740 solid state transceiver. Matching phone patch speaker. SM-5 microphone. Mint condition. Premium used rig. Price 800.00 dollars. (306) 377-4744 or Chris Besse (VE5AEX) Box 57, D'Arcy, Sask. S0L 0N0.

WANTED: EICO Model 615 Adapter and Charts for EICO Tube Checker Model 667. Ernie Savage VE7FB, 4553 West 12th Avenue, Vancouver, B.C. V6R 2R4, Phone 224-5226. Postage returned on all letters.

WANTED: 32 to 40 ft. Heavy Duty Ham Tower. Larry VE3OIB, 2439 Maryvale Court, Burlington, Ont. L7P 2P1. (416) 335-3481.

FOR SALE: Byte Magazines. Almost complete set from 1977 to 1985. Too large and heavy to ship. \$75. Dennis Brown VE2DAF, 785 Neptune Blvd., Dorval, Que. H9P 2A9. (514) 631-6552.

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. Include your full address with postal code; if using a phone number, include the area code. TCA accepts no responsibility for content or matters arising from ads. This feature is for the use of members wishing to trade, buy or sell personal radio gear. It is not open to commercial advertising.

AND WHAT DO YOU THINK?

I would like to share with you an argument I heard recently, says George VE3JQW.

"In the early days of our hobby, most people were 'tinkerers, experimenters.' They put together their own equipment, tested it and made it run, and they enjoyed the achievement they received through the success of their own efforts.

"Unfortunately, through the years, things have changed. As more and more people have entered our ranks, the number of those who continue the old traditions drops. Today, most of our equipment is produced by large companies and has become so complicated that the average user is totally unable to do more than simple maintenance. And to compound the problem, the government is aiming its licencing system around the method of operation rather than knowledge.

"As a result, our ranks are filled with 'appliance operators.' They need to know only three things: how to operate their equipment (and unfortunately, not all of them can do this very well), what regulations they are required to follow (and unfortunately, not all of them do this very well, either), and where to go in case of trouble (the repair business shows that they can do this extremely well).

"In my opinion, unless a person can prove that he can build his own equipment and repair it when something goes wrong, he shouldn't be allowed to hold a driver's licence."

George Morgan VE3JQW
687 Fielding Dr.
Ottawa K1V 7G6

From the Clubs...

I am sure that each of us knows some individual who makes a major contribution to Amateur radio— one who is always ready to take on a job, such as serving on club committees, taking part in club projects, assisting in putting on Amateur radio courses, etc. Without this type of person our hobby would be a lot poorer.

Would you and your club like to provide some recognition for such an individual? Then send me a short write-up on why he or she merits special recognition and CARF will be honoured to award that Amateur with a Certificate of Appreciation.

Tony VE7CAD raises a point that I have heard several times before and perhaps deserves consideration. He says in the Nanaimo ARA's *Static* in an article entitled 'The SWL,' that "...short-wave listening was and is a viable and engrossing hobby, and it often seems a pity that the ARRL and CARF don't have an equivalent to the RSGB's allocations of BR's (British Receiving Station) numbers to truly interested short-wave buffs. A visit to a Field Day in the U.K. would show BR's members doing the logging,

putting up antennas and making tea or coffee... In the USSR one can't even attempt the licence until he or she has served an SWL apprenticeship and produced a log of CW stations heard and verified."

I wonder how many of us came into Amateur radio by way of short-wave listening? Or who still spend time searching the broadcast bands?

Do you remember the difficulties you encountered the very first time you went on the air on CW? I've heard tell that some individuals never get over the shock and are never heard on the HF bands again. Well, there are a lot of clubs and groups that try to make it easy for the new ham to build up confidence, and in the North Okanagan RAC's *Ragchew*, I find this interesting approach.

"While on a visit to our last club meeting, Joe VE7ESA from Nakusp mentioned a beginner's net on 3715 kHz each morning at 0900 PST. Participants take turns transmitting, using text from the handbook or *TCA* magazine. After a session of code, the group moves up to 3747 kHz where Steve VE7OF, the net manager, gives

a resume of what was sent on CW and then takes checkins on both phone and CW."

I am always intrigued by the fun things that go on out at the west coast. According to the 'Burnaby Connection,' Lou VE7CGE coordinated the communication part of the Burnaby 'Wheel-a-thon' held on Sept. 22. It apparently was a gala event, and many people participated in pushing wheel chairs from Central Park to Edmonds and return. Everyone dressed in various costumes and make a real fun occasion of it. For our part, we set up communications along the route and kept track of all these four-wheelers as they travelled the entire route and returned. Apparently some of the chairs had various problems such as flat tires and loss of wheels, and the Hams made their plight known and repairs were quickly sent to help them out. All in all the event seemed to go over very well and seemed to be even smoother because of the radio communication."
73 & 88 for now.

Keeping Fit...?

BY LOU CURTIS VE4AEM

Society today is largely sedentary. The farmer rides a comfortable tractor equipped with radio. Power machinery has eliminated labour—even walking. A man with inadequate exercise is like a stagnant pond; it soon becomes the breeding ground or a myriad of bugs, polliwogs, mosquitoes, etc. By contrast a running stream will throw aside these pests.

The Immune System transports three times more 'lymph fluid' through the anatomy than there is blood. Millions of tiny one-way valves convey the fluid through the body which also lubricates the joints. But, it has no pumping station, the Lymphatic System is activated solely by muscle contraction. It has an ingenious defence system of traps or lymph-glands to fight and dispose of potential invaders.

A sluggish digestive system compounds the danger. It is estimated that three out of five men and half the women suffer from chronic constipation. And 80,000 North Americans succumb to cancer of the colon every year. The tragedy is our

modern eating habits. The chief cause is lack of fibre in the diet.

Modern food processors have a mania for refining everything that we eat. Packaged foods are so refined and loaded with salt, sugar, chemical additives that bugs, worms are turned off.

This was my experience. At the age of 30, I was so constipated that I had hemorrhoids along with other maladies. Fortunately, I was introduced to the value of eating liver, energizing foods along with exercise.

The first step was to de-toxify my body. I fasted for seven days and, at the same time, I took an internal bath (enema) night and morning. I broke fast with fruit and vegetable juices. From then on my diet constituted whole wheat products, cereals, lightly cooked vegetables, fresh fruits and salads. Gradually I added beef, poultry, and fish—no pork—I nearly killed myself eating bacon and eggs.

The result was a miracle! Within six weeks, constipation was no longer a problem and gradually the hemorrhoids began to disappear. I have not looked back since. Today at

almost 82, besides the power and balance to do a head-stand on a trampoline, I can run two miles in 14 minutes.

Many argue that stress is the scoundrel. True managers and executives work under great tension. Fear of not performing well, poor economic conditions, fear of losing their position. The mind has a powerful influence over a person's well-being— "In fear, there is torment..." 1 John 4:18.

The remedy is eat right, exercise, and have your mind tuned to the right frequency.

A fitness center is time consuming. And, I don't enjoy having my ears bombarded with an explosion of noise and nervous energy of such intensity. This brand of music has no therapeutic value. Therefore, being a violinist, I tape a variety of Aerobic exercises to music with positive healing power, action packed, and much more fun. I employ Isometric exercises— a system of dynamic, balanced muscle-tension -WHAT YOU DON'T USE, YOU LOSE!... Check your body SWR!

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




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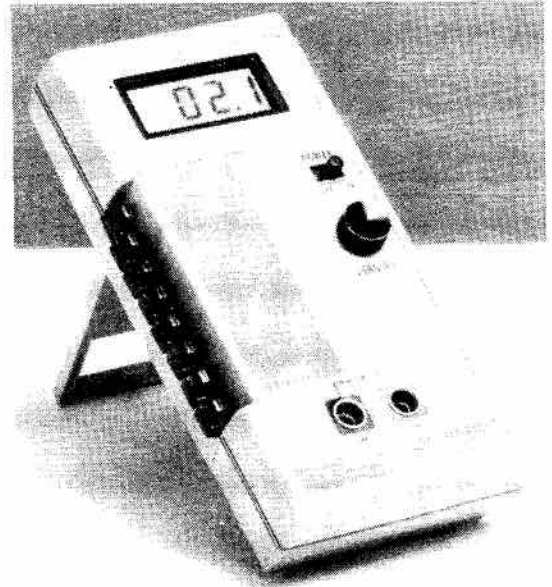
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*Crystal time base
*Use the push buttons, for easy one hand operation
*Main components used the 100 PPM, 0.5% precision material.
*Wide test range can measure very low and large capacitance
*Protected against damage from charged capacitors.
*Fast sampling time.
* Portable type.

General Specifications:

Display:	13mm (0.5") LCD (Liquid Crystal Display) Max. indication 1999.
Range:	DM6013A: 8 ranges will full scale values from 200pF to 2000uF
Overload indication:	Indication of "1"
Calibration adjustments:	DM6013A-One internal adjustment for accuracy. One front panel adjustment for zero.
Zero adjust:	External adjustment for zero value of the display. This is limited to $\pm 20pF$
Out-of-Range indication:	Indication of "1"
Sampling times:	0.5 second
Time base:	Crystal O.S.C.
Operating temperature:	0°C to 40°C (32°F to 104°F)
Operating humidity:	less than 80% RH
Power supply:	006P DC 9V battery
Battery life:	Approximately 200 hours on alkaline or 100 hours on carbon zinc battery with normal usage. (Typical consumption current 3-4mA on 200pF-200uF range)
Dimension:	17.5x8.5x3.6cm (6.9x3.4x1.5inch)
Weight:	280g (0.62lb)/(including battery)
Standard accessories:	Test alligator clips (red and black) 1 pair. Spare fuse (0.2A) 1 pc. Instruction manual 1 pc.

DM 6013A



DM 6013A.....\$135.50

(includes Federal Sales Tax)

Prices include carrying case and battery

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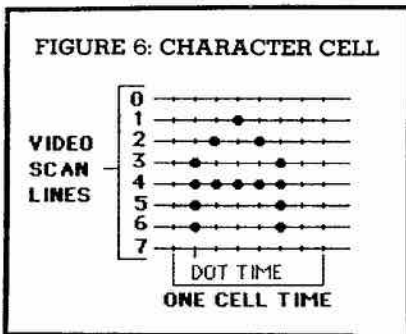
Phone or write for more information



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

OUTPUT CIRCUITRY

Figure 6 shows the arrangement of a Character Cell and the general way it is scanned. The video circuitry must read the memory location pertinent to the cell, obtain the character number, add a Scan Line number and present this as an address to a ROM chip, which serves as a Character Generator. The Character Generator now presents the actual bit pattern to a shift register which will serialize it and send it to the T.V. as a 'Dot Stream.' Figure 7 shows a 74S165 shift register which will serve nicely.



The overall sequence is to access memory at the address for the upper left of the screen, work across one scan line then move to the next after issuing Horizontal sync. This continues to the bottom right and is re-started by Vertical sync. Note that each memory location is accessed eight times to form a complete character. The Video Counter shown in block form in Fig. 8 will give a general idea of how these systems work.

Most Video Controllers are now made as a single LSI chip. This greatly reduces the complexity of the Video System and further assures more precise timing.

PARALLEL I/O

A computer is a pretty useless thing unless it has some means of talking to the outside world. This is accomplished via Inputs and Outputs. Since the computer is internally a Parallel device no I/O would be possible if it were not for parallel ports. Even Disc Drives and serial ports present themselves to the Data Buss as Parallel Ports with all conversion being external.

Fig. 10 shows the schematic for a fully Bi-directional Parallel Port. (Note the simplicity.) This is a practical port which should adapt to nearly any computer with little or no variance from the drawing.

The entire port is enabled by the signal DSEL and will respond only

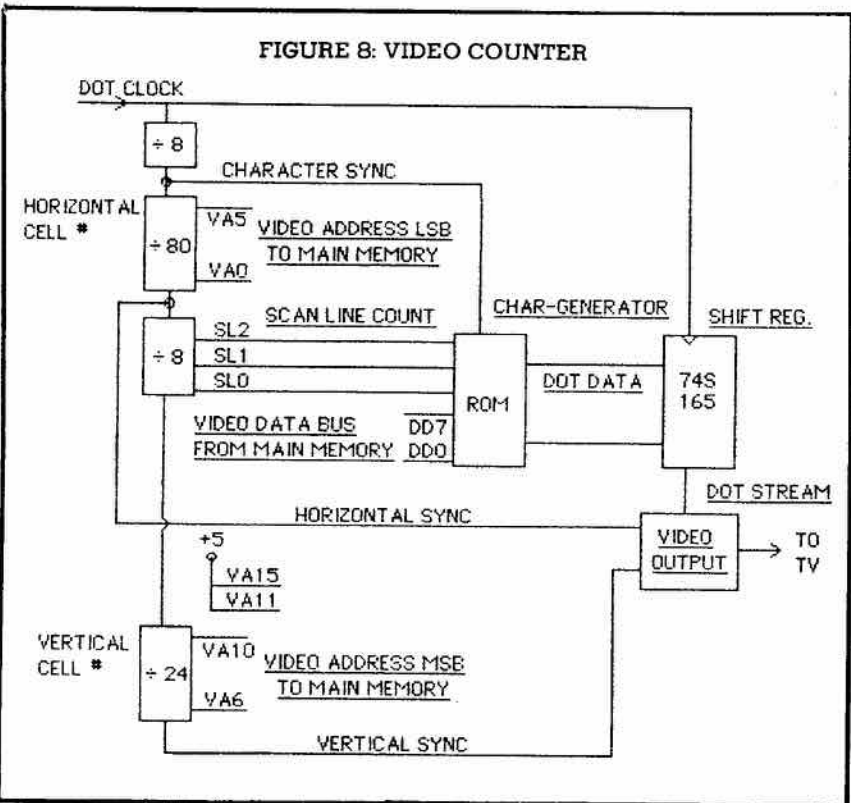
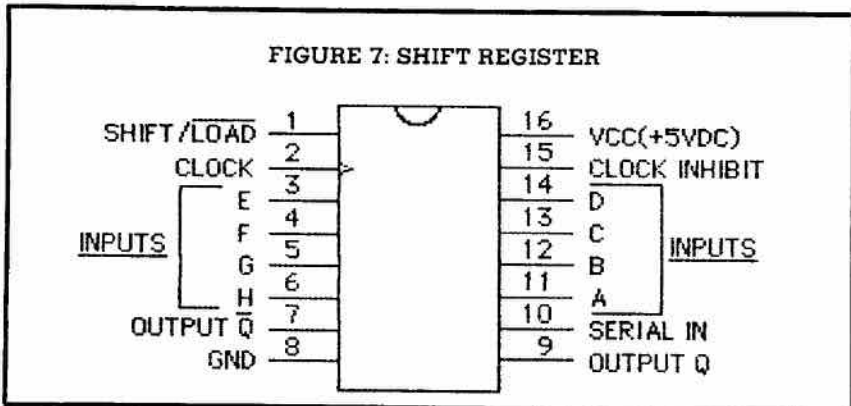
when DSEL is low. The 74LS155 uses AO and WR from the computer to decode two full ports. Two are decoded because most devices (Printers, etc.) require and produce several signals beyond the eight Data Bits. The second port is identical to the main port (0) except tied to the Read 1 and Write 1 signals. Thus port 0 responds at Even Addresses and port 1 at Odd Addresses.

Input Data is handled by a 74LS373 with its control lines tied to the LS155. This is a TIL device therefore inputs must be limited to the range of 0 to 5 VDC to prevent

damage. When DSEL is low and WR is high the LS373 presents stable data to the Buss. The address line AO determines which LS373 responds.

Data is output VIA the 74LS374 when DSEL is low and WR is low. AO again determines which LS374 responds. The 74LS374 is a positive edge triggered latch used with its output enable (OE) tied to ground. In this configuration the data will remain stable until the next access is made.

To incorporate this part into a computer the line DSEL must be tied to a spare line on the Map Generator.



If there are no spares (infrequently the case) then the I/O Decoder described in 'Map Generation' could be built giving you 16 lines to use.

SERIAL I/O

Serial I/O is actively more a matter of conversion than of true type. A device called UART or 'Universal Asynchronous Receiver Transmitter' is used to convert the Parallel data from the computer to a Bit Stream or Serial signal then at the other end it is converted back to Parallel format. There are almost endless variations of software or protocol used in this process, Packetizing represents the most widely used in Amateur work, but in general the hardware action is very simple and standard.

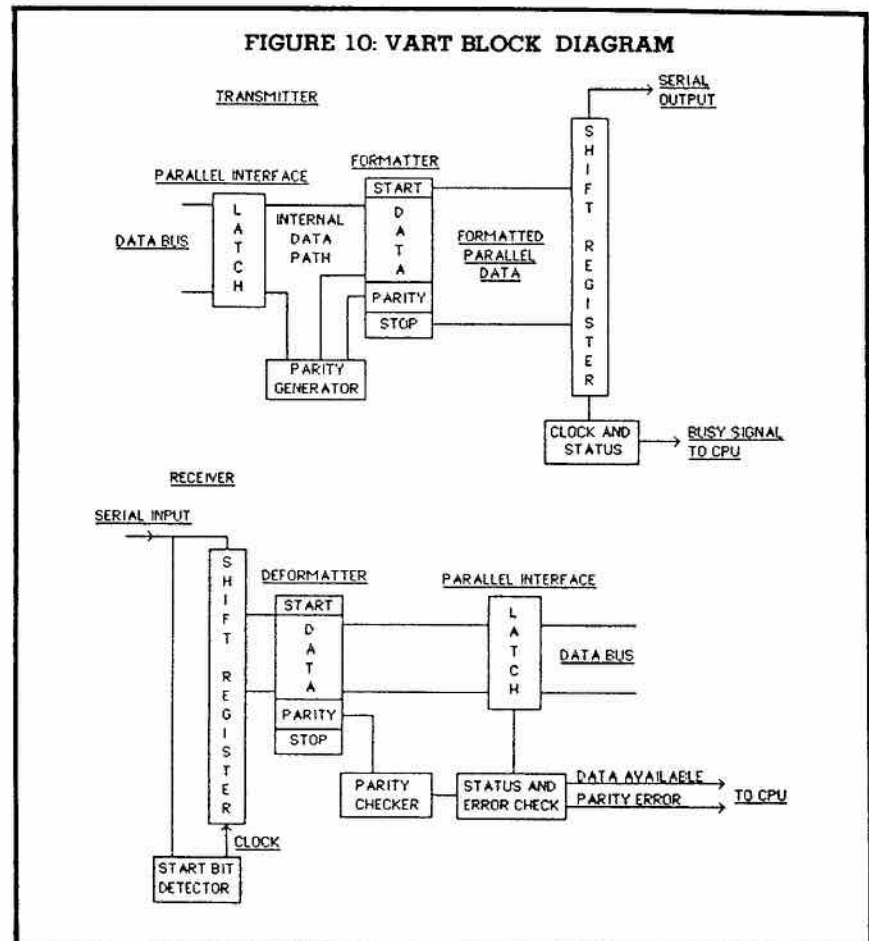
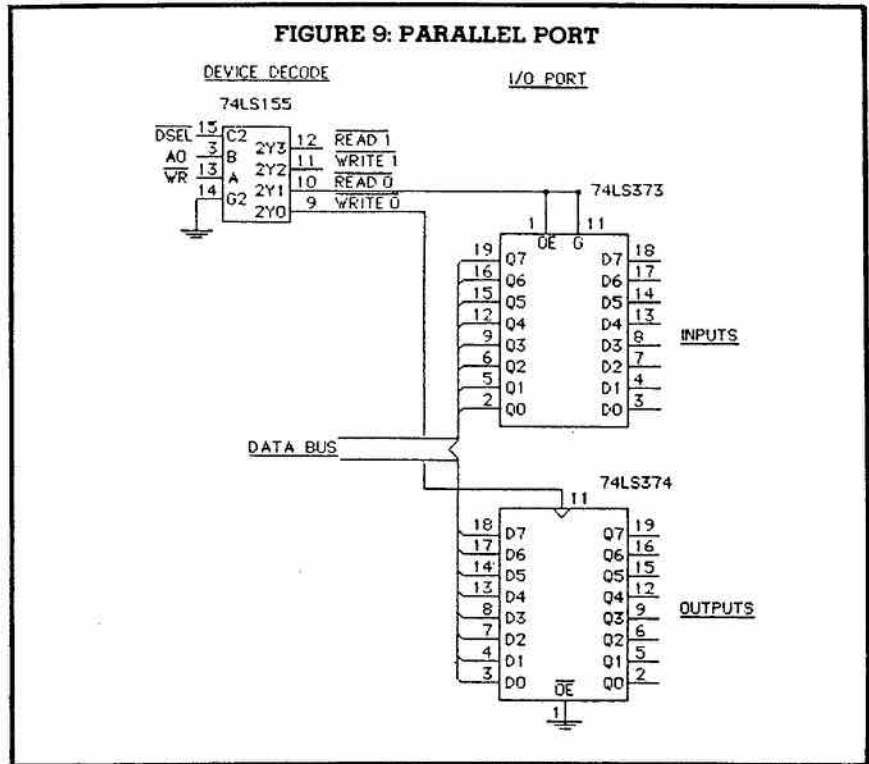
UARTs accept 8 bits of parallel information, add a Start bit, Parity and 1 or 2 stop bits then send the data through a Shift Register and out on a single wire pair. The process at the receiver is reversed. Shift Data In, Strip the Start, stop and check the Parity. If everything is OK the Parallel Byte is then made available to the CPU. The reason for adding Parity is to trap errors and the process is very simple.

Parity generators are of two types: ODD and EVEN. The ODD generator seeks to ensure that there are an ODD number of '1' bits in each work. For example '10011100' has an even number of 1's therefore an ODD generator will add a 1 to the end making '100111001'. If the word were '00011100' an ODD generator adds a 0 making '000111000'. An even generator simply generates an opposite parity bit for example '1011100' becomes '10111000'. Although far from fool proof, this very simple scheme traps about 80% of the errors which fortunately are more infrequent as technology improves.

Start and Stop bits are added in the interest of timing. Since UARTS remote from one another cannot be synchronized to a common clock, some means of compensating for slight variances in speed is required. A start bit always is the first transition on a serial link and is a Space (0) to Mark (1) transition. After the data Byte is sent, the stop bits are sent and are always spaces (0). Thus the UART can time itself to the Start Bit preventing 'Bit Displacement' caused by slight speed errors. (Thank heaven for Crystal clocks!)

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More & more equipment on hand. Please refer to the extensive listing which appeared in the Feb. issue of TCA. All dimensions are in inches. As manuals are rarely received, detailed technical information is seldom available.

Voice privacy units used between telephones, etc. Solid state made by Tech Comm Corp., Model 107RB 1. Size 15x4x12 deep, table top cabinet. Built in AC pwr supply. Switchable from clear to private. 4 wire 600 ohm termination. Sold in pairs with identical plugin coding modules. \$75.00.

Audio generators. Belco Model TY 75. Sine or square wave output. 600 ohm or Hi Z. Covers 19Hz to 200000Hz in 4 bands. Size 6x8x5 deep. \$50.00.

Audio generators. Waveform Model 510B. Adjustable output 19Hz to 1MHz in 5 bands. Size 6x4x5 deep \$30.00.

Fax revr. Muihead Model D900PG. 16x10x12 deep with amplifier unit 19x10x13 deep. Less cables. \$30.00.

Extremely high intensity lights. Strong "Mighty Mite". System consists of 2 units. DC power supply delivering 24V @ 60-70 amps, size 18x20x12. Lamp housing containing ignition xmfr, current meter, 1/4" plate glass parabolic mirror with controls for focus, vertical & horiz. position and 1500 watt Xenon bulb. Safety shutter in front of bulb. Size 17x17x12. \$150.00.

Adjustable attenuators. Weinschel Engineering Model 953. In original boxes. Type N fittings input and output. Calibrated 1 to 10 DB insertion loss at 4GHz. Correction plate for 2.5GHz & 100GHz. Very nice precision made units. Overall length 8 1/2. \$90.00.

Thermister mounts. HP Model 478A. 200 ohms Negative. 10MHz to 10GHz. \$30.00.

Oscilloscopes. Tektronix Model 310. DC to 4MHz. 3" CRT, calibrated sweep range 0.5us to 0.2 sec Sweep magnifier, built in calibrator. Size 10x7x18 deep. Wt. 23 lbs. \$100.00.

Selective voltmeter. HP Model 3591A complete with sweeping oscillator plugin Model 3594A. Range 20Hz to 620Hz. Amp range 3uv to 30v in 15 steps. Internal calibrator. Five selectable sweep rates. 5 digit frequency readout. Size 16 3/4x8 3/4x18 deep. Wt 38 lbs. Solid state table top cabinet. \$750.00.

Receiver control head. Military C5319/UR. No data available, appears to be sophisticated control for other chassis modules making up a complete receiver. Unit is rack mounted 8 3/4x19x17 deep, all solid state, 6 digit display, 12 button key pad entry of freq. controls for mode select (FM/AM/USB/LSB/CW), thumb wheels for setting SWP DVN, spinner type main tuning knob, audio, clarifier, etc. \$30.00.

Tektronix Oscilloscope plug ins:

1A1	Dual Trace FET Input \$85.00	53/54D	High gain DC differential	\$ 50.00
1A4	Four Trace FET Input \$100.00	53/54E	Low level AC diff.	\$ 50.00
1A5	Differential Comparator \$85.00	53/54L	Fast rise high gain	\$ 50.00
1A7	Differential Amp. FET Input \$85.00	53/54C	dual trace	\$ 50.00
67	Time base \$50.00	CA	Dual trace	\$ 75.00
82	Dual trace \$75.00	D	High gain DC Diff.	\$ 60.00
81	Adapter \$50.00	L	Fast rise high gain	\$ 60.00
M	Four tracer \$90.00	O	Operational amp	\$100.00
Z	Differential comparator \$60.00	H	Wide band Higan DC	\$ 60.00
Q	Strain gauge \$60.00	T	Time base generator	\$ 50.00
E	Low level AC differential \$60.00	K	Fast rise DC	\$ 60.00
1S1	Sampler \$140.00	2B67	Time base	\$ 50.00

Sampling package consisting of: 3S2 dual trace sampling plugin, S2 sampling head DC to 4.6GHz, S50 pulse generator head 18GHz count down, 3T1 random sampling sweep plugin plus 4 manuals (one for each unit). Also included are the Tektronix protective carrying cases. \$400.00

Oscilloscope plugins to fit Tektronic 500 series scopes: (these are made by other than Tektronix)

Fast rise calibrated preamp Hickok Model 1832 \$40.00

Dual trace Hickok Model 1823A \$45.00

Dual trace Lavoie Model LA265CA \$50.00

Plugins, various units made by HP to fit their equipment:

Aux. plugin Model 1780A \$5.00

Dual trace Model 1750A \$50.00

Aux plugin Model 3301A \$3.00

Time Interval Model 526B \$8.00.

Autoranging Model 3442A \$30.00

Hand held ultra violet lamp made by Ultra Violet Products Inc., Model Blak-Ray BLF6. Mains operated size 9x3x3 high. \$15.00.

TV camera. Sony Model AVC 4600. Built in CRT monitor 3x2. Camera accepts C mount threaded lenses. Built in intercom facility. Overall size 14x10x5 1/2. With rack mount camera control unit 3 1/2x19x12 deep. Controls include level meter, beam/focus/aperture/video level/pedestal. Auto or manual selectable. Studio style camera with "camera in use" light. Less lens. 15" cable. \$145.00.

Alarm bells. 10" Edwards adaptable units operate from 12V 2A 60Hz with mounting plate. A real noise maker, painted red. \$15.00

Siemens & Halske "Pegelmessen". 3 — 70KHz. 4" meter calibrated in Nepers 3 to +2 in 2 ranges. Input terminals, range switch etc. all mounted on a panel 9x4 1/2. \$6.00.

Audio amplifiers. Bell Carlton Model 10-A. Rated 10 watts, built in 110V supply, size 7x12x8 deep. Usually less most or all tubes. Microphone, Program and Tone controls on front panel. \$1.00.

Multiscaler. LeCroy Research Systems Model 105B. Size 8x3x11 deep. Contains 9 BNC chassis fittings, transistors, resistors and 144 IC's. \$5.00.

Bridge. GR Schering bridge Model 671A. Measure Power Factor and capacity. With manual. Rack mounting, size 12 1/2x19x9 deep. \$35.00.

DF loops, marine Bellini-Tosi crossed shielded loops. Each loop approx. 40" in diameter and mounted at right angles to each other. Aluminum shielding. \$25.00.

RF oscillators (plugin only) Alfred Model 653C covering 4 to 8GHz and Model 655C covering 8 to 12.4 GHz. Each contain BWO pin diode leveling or attenuator, gold plated connectors. Size 7 1/2x5 1/2x17 deep. With manuals. \$50.00 each.

Power supplies. Military PP5273. rack mounting, size 5 1/4x19x21 deep. Test points, LED's & circuit breaker on front panel. Inside Lambda LXD-C-152R regulated unit 15V @ 2.5A plus Lambda 5V @ 45A and Acopian unregulated 180v unit. All mounted in Lambda LRA-11 rack adaptor. One 4" muffin fan for cooling. \$50.00.

Antenna multicoplers, rack mounted size 3 1/2x19x9 deep, 1 input with 8 outputs & built in 110V pwr supply. Military type AMC-2348C-8. Contains 30 to 300 MHz AEL solid state amp size 5x1 1/2x1 3/4 coax input/output. 24V DC pwr supply plus a coax splitting unit. All BNC internal fittings. \$70.00

Antenna multicoplers, as above except Military type AMC-2349C-8 and covers 250 to 500MHz. \$70.00.

Oscilloscope. HP Model 141A. 5" variable persistence/storage unit. Uses two plugins. Table cabinet with rack adaptors, beam finder, internal calibrator. Supplied with two HP Model 1402 dual trace plugins (for XY operation) plus Time Base plugins. Model 1420A & 1423A. \$265.00

Antenna beam rotator Telex Hy-gan Model CD45 11. New boxed. \$195.00.

Signal generator. HP Model 618B covering 3.8 to 7.66 GHz. Calibrated attenuator, direct reading freq. dial. Pulse delay/width/rate all adjustable. Mod CW/FM/Square. Size 17x14x17 deep. \$75.00.

UHF antenna. Reflector consists of truncated pyramid 24" square at base or open end, 18" deep, circular radiator 3" diameter fed by BNC connector at small end. Rear mount for mast. \$10.00.

X band test set by Marconi consisting of 15" length W/G section with noise source tube built in, control box 5x3x7 for noise source plus 5x3x7 box containing multimeter, function switch, etc. Built in 110V 400Hz pwr supply. \$20.00.

Receiver. Nems-Clarke Model 1037. All solid state with meters for tuning, output, FM deviation, uv signal strength. Built in pwr supply and miniature speaker. Size 9x7x16 deep. Rack mounting. With one RF plugin covering 135-155MHz. \$100.00.

Receiver, as above but with RF plugin covering 2200-2300 MHz instead. \$100.00.

VTVM. South Western Industrial Electronics Model R-1. Reads MV, V and ohms. 1MV to 1000 Volts. Scale expansion controls. 4" square meter. Rack mounting, 19x8 3/4x10 deep. \$20.00.

Frequency meter. Military BC221 less case, xtal & manual. Size 7x10x7 deep. \$6.00.

UHF Sweep generator. Telonic covering 450 to 900 MHz. Adjustable sweep width, built-in pwr supply. BNC output. Size 10x12x10 deep. \$20.00.

VHF admittance bridge. Wayne Kerr Model B801. Direct reading in pf and micromhos. Size 11x7 1/2x5 deep. \$180.00.

Admittance bridge. Wayne Kerr Model B701. Direct reading, size 7 1/2x9x7 deep. \$180.00.

Admittance bridge. Wayne Kerr Model B601 covering 15KHz to 5MHz. Size 15x10x10 deep. \$180.00.

Q meter. Boonton Model 160A. Range 50KHz to 75MHz, direct reading on 4" meter. Built in pwr supply, 7 RF bands. Size 20x11x8 deep. \$125.00.

Q meter. Boonton Model 170A covering 30 to 200 MHz in 3 bands. Self-contained pwr supply, direct reading. Size 16x9x7 deep. \$65.00.

Q meter standard. Boonton Model 513A in felt lined wooden box size 4x4x5 1/2. \$25.00.

Leather cases to fit AV08 multimeters. \$15.00.

XY monitor. Tektronix Model 604. Solid state 5x4 CRT. 110V pwr. Rear BNC inputs for X, Y & Z, either plus or minus. Socket for external program. Size 8 1/2x5x19 deep. Less cover, wt 17 lbs. \$140.00.

Gas analyzer. CO, CH4. Hc. Byron Model 233A. Direct meter reading 3 to 300ppm full scale in 5 ranges. Internal ignitor for flame, spectrum or barograph output, separate gauges for carrier, air, hydrogen. Oven temp gauge. Rack mounting in cabinet size 13x22x15 deep with handles. \$90.00.

Chemiluminescence monitor made by Aero Chem Research Labs. Direct reading on meter of NO, NOx, NO2, O3 in three ranges from 0.1 to 10 ppm full scale. In cabinet size 12x19x16 deep. \$75.00.

Keyboard display by Delta Data Systems Model TelTerm TT11. Green CRT, mask 12x9 diagonal 13". Solid state, size 18x15x28 deep. \$125.00.

Antique turntable. Micromatic three speed 78/45/33. 12" aluminum turntable. Grey research studio type pickup arm. Overall size 17x9x20 deep slide rails to allow mounting in standard relay rack — slide out for use. \$45.00.

Electrostatic printer/plotter. Versatec Model IP860 Matrix printer. Size 18x36x18 deep. Floor model. With supply electrostatic paper. \$75.00.

Frequency counter. HP Model 521CR, rack mounting size 19x8 3/4x14 deep. Weight 28 lbs. Maximum frequency 120KHz; count presentation 5 places neon. Xtal time base, variable display time, automatic or manual reset. \$22.00.

Blowers, rack mounting centrifugal type complete with removable front panel filter, indicator lights, circuit breaker & air vane switch. Motor rated 1/4 HP, 1725 rpm. Size 19x14x18 deep. \$20.00.

Stereo record player. Fleetwood Modular Model IP2236. Table unit, imitation wood base, plastic dust cover. Garrard auto/manual turntable for 16.33.45 and 78 records. Solid state amplifier dual spkr outputs, tone control & dual volume controls. Size 15x15x8 high. \$25.00.

XY Storage Monitor, Tektronix Model 603. Solid state 5x4 CRT. 110V pwr.. Rear BNC inputs for X, Y and Z either plus or minus. Socket for interfacing with TTL systems, program level of +5 & -2 volts. Size 8 1/2x5x19 deep. Wt 17 lbs. With timebase option, Less cover. \$200.00.

Telephone handsets with 6 ft cord. Carbon mic insert & magnetic earphone insert. Various colours but NO black. \$3.00.

Inverters, solid state ARC Model DV-14A. 28VDC input, output 400Hz. Size 3x3x7, \$8.00.

PH meter, less probes. Radiometer Model PHM4C. Direct reading, adjustments for temperature & buffer. 4" square mirror meter, zero centre for balance. Size 16x10x10 deep. \$30.00.

Capacitance meter, Rohde & Schwarz Model KARU 510. Direct reading 0 pf to 10 mfd in 6 ranges. Self contained pwr supply. 2" meter. Carrying case 9x11x7 deep. Drum type rectangular scale calibrated directly in capacity. \$125.00.

Antenna, aircraft Military Model AS/1869-ARM83. These have Collins part number 437M2. Fibreglass shell semi flush mounting approx. 20x3x48 long. BNC connector. New. boxed \$25.00. As above except used, \$14.00.

Receiver, National HR050T. Appearance very good. With plugin calibrator National Model HCU-50. With 10 sets of coils and two wooden coil boxes. Coils include A-14 to 30MHz (BS 27 to 30); B-7 to 14.4MHz (BS 14 to 14.4); C-3.5 to 7.3MHz (BS 7 to 7.3); D-1.7 to 4MHz (BS 3.5 to 4); E-900 to 2050KHz; F-480 to 960KHz; G-180 to 430KHz; H-100 to 200KHz; J-50 to 100KHz; AB-25-35MHz. Dial strips mounted on receiver include A, B, C, D, J, E, F, Cs and Ds. Extra strips supplied cover Ds, G, H, Bs, Cs, BS, As. In table cabinet. \$350.00.

Audio generator Military Model TS5008/U, equivalent to the HP205AG. Covers 19 to 20000Hz in 3 ranges. 3" input and output meters. Impedance adjustable 50,200, 600, and 5000 ohms. Db attenuator 6 to 100 in 10 db steps plus 0 to 10 in 1 db steps. 110V pwr supply. Cabinet size 19x11x12 deep. \$75.00.

Chart recorder, Sanborn Model 320 dual channel DC amplifier plus event marker. Speeds 1, 5, 20, and 100 mm/sec. Input 0.5 to 20 in 6 steps selectable MV/mm or V/cm. Paper size approx. 5 1/4. Carrying case with handle measures 14x14x9 1/2 deep. \$30.00.

Signal generator, HP Model 608E. 10MHz to 480MHz in 5 bands. Built-in xtal calibrator. Calibrated attenuator. Cabinet mounting size 13x16x21 deep, wt 63 lbs. \$200.00.

Digital multimeter, HP Model 3469A. AC/DC volts 1mv to 500/1000v in 7 ranges; ua 1 to 100 in 6 ranges; ohms 1 to 10 megohms in 8 ranges. Size 5x7x11 deep. All solid state. \$90.00.

Projection screen, Radiant 30x40 roll up floor model with self contained tripod stand \$10.00.

Microphone, Military Type T-17, carbon 35-90 ohm. Push-to-talk, 5 ft. cord, no plug. \$3.00.

Variable low pass active output filter. Made by Electro Mechanical Research Industries, Model 95. Pass band any freq from DC to 3Hz to 10.5KHz. Input impedance 40K ohms. Built in pwr supply. Size 19x5x16 deep. Weight 47 lbs. All beyond cutoff 36db/octave. With manual. \$25.00.

Resistor noise test set, Quan-Tech Labs unit measures excess resistor/diode noise 100 ohms to 22 megohms. Applied DC variable from 3v to 300 volts. Size 15x11x11 deep. Wt 30 lbs. With manual. \$85.00

Electro Voice dynamic microphone, Military Model M43/U, less stand, with 15 cable & plug. \$5.00

Receiver, Hammarlund Model SP-600. Range 540KHz to 54MHz. Built in AC pwr supply. Rack mounting. 5 meter, xtal filter. Size 19x10 1/2x16 deep. Wt 75 lbs. \$125.00.

Receiver, Marconi Model CSR 5. Range 80 to 575KHz & 1.5 to 30 MHz in 6 bands. 2 RF stages, xtal filter. Requires external 12VAC @ 2.7A plus 250VDC @ 100MA. Size 19x8 3/4x14 deep. Wt 45 lbs. \$50.00.

DVM, Keithley autoranging Model 168. Solid state, built in battery charger & batteries for portable use. Pushbutton operation for ohms, AC/DC volts, MA and Amps. Size 8x3x11 deep. \$90.00.

Signal generator, RF Communications Model 808. Metered & calibrated output. Range 100KHz to 80MHz selected by 5 decade switches plus 3 digit counter for 0-100Hz. CW/AM/FM/Pulse operation. Manual or automatic freq sweep of 0-80MHz, 500 KHz, 50KHz, 5KHz or 500Hz. Meter for deviation & modulation. Solid state, cabinet style size 5 1/4x17x17 deep. \$300.00.

TV camera, Diamond Electronics Model ST3-U. Accepts C mount lens (less lens). Plugin modules for sync. control, video, vertical deflection, LV power & HV power. Four spare modules supplied 110V operated. Size 8 1/2x8x15 deep. All solid state. \$75.00

Precision spectrophotometer, B & L Model 33-26-50. Twin lamp housing, mechanical digital readout of wavelength, adjustable slit, mirror meter for absorbance/transmittance. Size 30x10x20, \$95.00.

Spectrophotometer, B & L Model Spectronic 505. Built in chart recorder to plot out directly. Size 16x15x22 deep. \$45.00

Roller coils, B & W cat number 3851. Approx. 7uh 12 turns on porcelain form 3 3/4x2. Overall size 5x3x5 1/2 deep. Glazed ceramic end plates. \$15.00.

Oscilloscopes, Military OS5006/GPN. 5" CRT, built in markers, sweep delay, internal calibrator (xtal included), input att, etc. Rack mounting, size 19x13x18 deep. Cheap unit for the experimenter or for parts. \$10.00

Fax demodulator, TMC Model XFD, rack mounting, size 19x3 3/4x5 deep. Mark Space adjustments plus monitor jacks and transmit/standby switch. \$5.00.

Dual antenna beam position indicators & control panel Rascal Model MA8018 rack mounting, size 19x5 1/4x10 deep. Consists of two 5" diameter Hygan azimuth indicators calibrated 0-360 degrees driven by 60Hz 115V syncro transmitter-receivers. Also on panel are dual pwr switches and dual CCW/CW control switches. \$75.00.

Fax transmitter, Murhead Model K220PM/1. Optical scanning, 110V operation. Built in Db meter, push button controls for power, standby, set wh, send wh, phase, picture, 1020Hz & 1020Hz scan. Size 16x8x15 deep. \$30.00.

Chart recorder, Hitachi Model GPD 33. Uses 11" paper with 10mv input. Three speeds of 30/60/1200 mm per minute. Single pen plus event marker. Table top style size 5x16x14 deep. \$50.00.

Multicoupler, passive design LF unit, TMC Model LFD-1. Uses UHF style connectors one input & 4 outputs. Size 19x1 3/4x5 deep. \$6.00.

Gandalf data sets, Nice blue finished cases, rubber feet, size 3x4x8 deep. Contain dual thumbwheels LED indicators, PCB with Hammond 110v xmfr etc. RS232 input socket on rear. \$5.00.

VHF single channel receivers, Northern Electric Model R2B or military URG-60. Built in power supply rack mounting, size 19x5x12 deep. Front panel controls for pwr, RF gain, squelch, volume, AVC and speaker. \$5.00.

Load cells made by Emery. Dial indicators 18" diameter hydraulic operated complete with sensor.

Two ranges:
 Cell and dial to indicate 0 — 30000 lbs \$30.00
 Cell and dial to indicate 0 — 5000 lbs \$30.00
 Cell and dial to indicate 0 — 30000 lbs with tool kit, copper line & mounted in wood cabinet on castors, size 39x22x22 deep. \$50.00.

Dolby noise reduction unit, Realistic Model 14-893. Left & right meters. 110V operation, case has wood side panels, size 7x3 3/4x10 deep. \$6.00.

Pressure gauges, old fashion 6" diameter units with rear flange for surface mounting. Mostly 0-100PSI, brass & steel construction. Dirty, glass may be cracked (threaded glass retaining ring). Various manufacturers. Clean up quite well, good ornament for the rec room wall. \$2.00.

Carbon monoxide analyzer, Andros Model 7000. All solid state, digital readout. Pushbutton selection of ranges from 20,50,100 and 200. Table cabinet, semi portable with carrying handles & tilt bail. Built in circulating system and temperature control, blower cooled. Size 5 1/2x17x17 deep. \$50.00.

Phase shifter, Brookdeal Electronics Ltd., Model 421. All solid state, built in pwr supply. Controls for sensitivity, Freq range (1Hz to 1000KHz), coarse & fine phase adjust, etc. Size 3 1/2x8 1/2x10 1/2 deep. \$15.00

Electronic voltmeter, Bruel & Kjoer Model 2409. 0.01V to 1000V in 11 steps with selection of high or low damping at either average, peak or RMS values. Size 7x10x5 deep. \$25.00.

Rotary inverters, 27.5V at 9.2A input, output 115V, 400Hz, 100VA 3 phase. Approx size 8x3" diameter. Mounting base 4x5x2. \$5.00

Direction finding rcvr, ARC Model R30A. Covers 190 to 1750 KHz in 3 bands. Size 4 1/2x4 1/2x10 1/4. Weight 9 lbs. Requires separate pwr supply. \$10.00.

Sigmoidscope tubes, another odd medical unit, brand new, Heavy chrome plated tube 15" long with taper plug which can be pulled out by a handle. Tube calibrated in inches, approx 3/4" dia. Appears to be all brass and certainly good for something. \$1.50.

Voltage regulators, Superior Electric Stabiline units Model EMT4115. Accepts 95-135 V input and gives a constant 115V output at 15KVA. All at 60Hz, 4" sq. monitoring meter for voltage. Motor driven variac inside. Rack cabinet size 23x23x15 deep. \$115.00.

Auto-Dryaire dehydrator. Output 1 cfm atmos at 10-15 psi. Input 8A 110V. Pump belt driven by 1/4 HP motor. Built-in pressure gauge and twin dehydrating cylinders. Size 17x19x16 deep. \$55.00.

Flow meters, Fischer Porter units 6x3x2 high designed for surface mounting. 3" measuring tube with flow control valve at base. \$2.50.

DC power supply, Sorensen Nobotron Model T50-1.5, with panel voltmeter. Output 0 to 50 VDC at 1.5 amps. Size 8 1/2x10x11 deep. \$45.00.

DC power supply, Sorensen Nobotron Model 06-4. Output: 4.5 to 8VDC at 4 amps. Size 7-1/2x5x11. \$25.00.

Radiation detection simulator, like new, Military Model SM5021/ADR501. Finished in olive drab. Portable simulator in gasket case 7x7x11. Battery operated, with separate loop antenna, cables and earphones. With military technical manual. \$75.00.

Printer, 80 column line printer, Digital Model LP01-FA. All solid state, floor model, size 42x23x22 deep. With spare nylon print ribbon. \$140.00.

Printer/plotter, Potter Model LP3000. Floor model on stand, uses 15" paper, all solid state, 110V input, with cables. Size 31x40x26 deep. \$95.00.

Modulator, Military Model MD129B/GR. Has 0-300AC meter, 0-500MA meter, 2 blowers, xmfrs, pair 465A tubes, chokes sockets, switches etc. Loaded with parts. Size 17x12x20 deep, rack mounting with schematic. \$25.00

Dictating Stenorette 1/4" reel to reel tape recorders. German made, solid state. Uses 3" reels. Size 10x3x8 1/2 deep. Push button operation, tape counter, 115/60Hz 30W input. Model Embassy Mk V, by Dejour/Grundig. \$2.00

Generating set, Generator output 28V @ 100A DC with regulator, 0-200DC ammeter, 0-50DC Voltmeter, direct coupled to a 220V 60Hz 3 phase motor. Approx 25x18x13 wide. \$25.00.

DC power supply, 28V at 100A. Xmfr, rectifiers, 0-150DC ammeter, 0-30V meter. Input 208V 60Hz 3 phase. Mounted in steel case with handles, size 20x25x15 deep, Military Model PP1383/MPN11C. \$20.00

Transmitters, Military Model T282GR. Designed as single channel UHF. Used 3 type 4CX250 or 4x150 tubes. Contains loads of shaft couplers, gears, worm drives, shaft, knobs, parts etc. These units are not complete but are missing the two meters, antenna relay, tubes and a few other parts, however they are well worth the price of \$10.00. Size 17x12x20.

Photographic developing sink, stainless steel Bar-Ray on legs. Insulated sink size 64x17 deep, 21 wide. Stainless splash back 30" high containing 19x17 negative viewer, 4 timers, 2 temp gauges, temp controller, burst & bleed regulators, 4 pressure gauges plus numerous taps & switches. Also couple of small negative containers which fit in the sink proper. \$300.00.

Modulator, Military Model MD22B/URA71. Provides noise/tones/MCW/CW. Gasket sealed case 7x12x15 deep. Operates from 110V 60Hz or 12VDC or 6VDC. Internal pwr supply. \$6.00.

Signal generator, HP 624A covering 8.5 to 10GHz. Pulse/FM/CW, calibrated attenuator/pwr output meter. Built in freq meter using micrometer dial. Size 11x19x10 deep with removable cover. \$75.00.

Note: All items are used unless indicated otherwise. Items never stocked "in depth" and in many cases only 1 or 2 of each are in stock. This listing is correct at time of submitting ad to printers which is never less than 40 days before the 1st of the month of publication date. All shipments FOB Smiths Falls, Ont, and may be by rail, bus, post, truck or courier at purchasers option. Ontario residents please add 7% Sales Tax. When writing please ensure that a postage stamp is INCLUDED if a reply is desired or expected.

QRP—

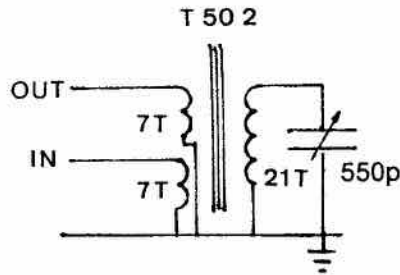
Items from *SPRAT*, the G QRP club bulletin

AN ATU FOR THE FOXX TRANSCEIVER

BY DONALD C. YOUNGER
W2JEK

After failing to cure AM breakthrough on my FOXX with a hastily built ATU, a second attempt solved the problem. The first QSO was with W3NR on 7 MHz, 325 miles away in Erie, Pennsylvania. The output is only about 360 mW, which is possible due to the RFC in the amplifier, wound on a slug from an old TV set instead of a ferrite bead!

I built my FOXX into a 5x7x2 chassis box, and enough room remained for an ATU. The details of the ATU are shown in the diagram. I used 21 gauge wire on a T-50-2 core, twisting one long and two short lengths together. After winding five turns, separate the shorter wires and continue the longer one for a total of 15 turns. This was mounted on a miniature 365 pF variable with plastic dielectric. (Use 7, 7, and 21 turns for 80m, and 500 or more pF— Editor.)



(Beginners— an ATU, or antenna tuning unit, is a transformer. The impedance of an antenna may not— frequently does not— match the impedance of the transmitter, so, to maximize the power transfer, a transformer is used. Unlike a power transformer, ATU's are usually tuned. This allows them to match TX to antenna over a range of frequencies.)

QRP DIARY

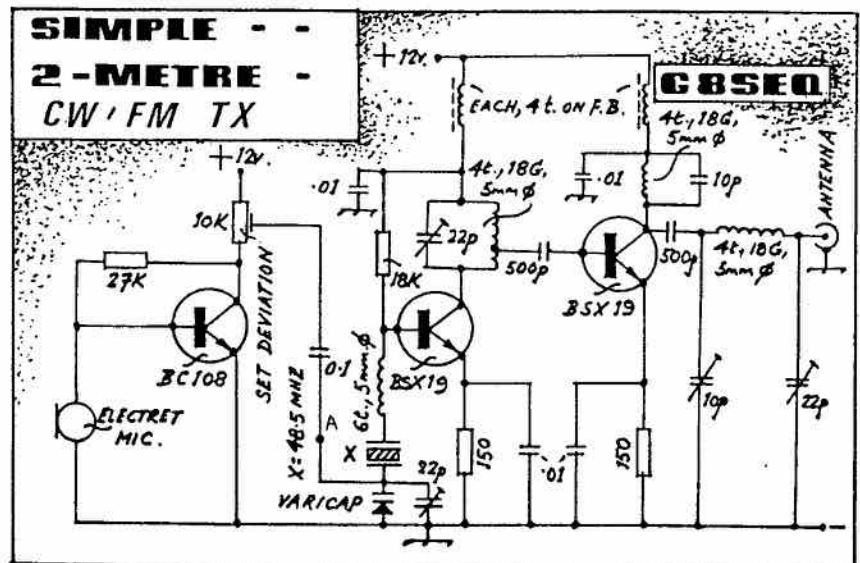
March 1-2 ARRL International DX CW Contest— QRP section
 March 29-30 CQ WPX SSB Contest— QRP Section
 April 20 RSGB Low Power Contest (3.5-7 MHz)
 April 19-20 ARCI Spring SSB QSO QRP Party
 May 1 AGCW-DL QRP-QRP Contest
 May 24-25 CQ WPX CW Contest— QRP Section
 July 19-20 AGCW-DL Summer QRP Contest
 July 20 RSGB 3.5 MHz Field Day
 August 20-21 Scandinavian Contest— Class for QRP
 September 11-12 ARCI Fall QSO QRP Party
 September 19 RSGB 21 MHz CW Contest— CW Section
 September 25-26 CW WW SSB Contest— QRP Section
 November 1-7 HA QRP CW Contest
 November 29-30 CQ WW CW Contest— QRP Section
 December 6-7 TOPS 3.5 MHz CW Contest— QRP Section
 December 26-January 1 (Daily) G-QRP Club Winter Sports
 Note: Not all the above dates have been confirmed, so please treat the list with caution.

2 Metre Transmitter

Here is a QRP transmitter designed by John G8SEQ. John recommends that the transmitter be built small, on a board not bigger than 2x3 inches. The parallel tuned circuits should be set at right angles to each other to avoid instability. It might be a good idea to put the oscillator in a shielded box. A tuning potentiometer (20 k ohm with a slow motion drive recommended) can be connected to point A. An FSK RTTY signal may be injected here, too. The 22 pF variable may be a front panel control to cover a small range of frequencies. A 1N4006 or similar power diode will do for a varicap. ■

14,000 MILES PER WATT

GW3ATM worked VK3MR on 10 MHz with 850 mW to an OXO transmitter, receiving a 229 report.



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

CONTEST SCENE

March

1-2 ARRL DX Phone Contest
8-9 QCWA PHONE QSO Party
15-16 YL-ISSB CW Party
15-16 Bermuda Contest
29-30 CQ WW WPX SSB Contest

Contests come in a wide variety of flavours, ranging from the 'Big' 48-hour DX Contests to State QSO Parties to short four hour operating events.

March, like most other months, offers a selection of these different types of contests. Starting off the month (and very probably finished by the time you read this) is the ARRL DX Competition. The other two 'Big' contests in March are the RSGB Commonwealth CW Contest and the CQ WPX SSB Contest.

The RSGB CW Contest has been held for a number of years on the second weekend of March (March 8-9 this year), but activity and publicity have been little to nonexistent the past several years. It used to be a very good contest, with a lot of DX and (hold your breath!) NO AMERICANS. I like Americans as much as the next person, but it sure was nice to have one contest a year without any in it. In any case, should you decide to check this out this year and do come across

DOC's TVI BOOKLET

DOC puts out a most useful booklet on the identification and resolution of TV and radio interference. Its catalogue number is Co 22-18/1978, and is available in English or in French.

The booklet is slanted to the non-technical citizen. It starts out with colour pictures of TV images with various faults, and explains the cures. It covers the installation of filters, how to ground, and the various sources of interference. Simple technical details follow, then notes for CB operators.

The booklet concludes with a list of addresses of DOC offices.

Any Amateur changing his address, or going to a higher power, or making some alterations in equipment, might keep one of these booklets on hand to give to any neighbour needing help to resolve an interference problem.

CONTRIBUTORS:

Please note the next TCA deadline is March 14 for May issue.

CONTEST SCENE

activity, the exchange is a signal report and serial number. Complete rules are in March CQ for either this year or last year. The contest period is from 12Z Saturday to 12Z Sunday if you want to give a listen.

WPX RULES

Rules for the WPX Contest are quite simple. The exchange consists of a signal report and serial number. The multiplier is the number of prefixes worked, counted only once regardless of the band. Contacts with Canadian stations count zero points, but are permitted for multiplier credit. Other stations in North America are worth two points on 28, 21 and 14 MHz and four points on 7, 3.5 and 1.8 MHz. Contacts outside of North America count three points on the three high bands and six points on the three lower bands. Single operator stations are restricted to working only 30 hours out of the 48 hour contest. The 18 hours of off time may be taken in up to five periods. More complete rules are in the January issue of CQ.

Canadians are always popular with the Americans in this contest, because they can't work each other for point credit. Especially on the low bands, working a lot of Canadians is important to an American trying to make a big score.

QSO PARTIES

Another type of contest, the QSO Party, is represented in March by the QCWA Phone QSO Party and the YL-ISSB CW Party. QSO Parties are generally organized by clubs and organizations as an operating activity for their members. It is also a good opportunity to publicize their existence to non-members, who are almost always welcome to participate.

There is a plethora of QSO Parties throughout the year, with practically every state sponsoring one, in addition to organizations such as the QCWA and YL-ISSB. Some of them have become quite popular, and can attract large numbers of participants, although not on the scale of a major DX Contest. As a result, they can be a good way to start contesting, if you don't feel up to jumping into one of the DX Contests. Most QSO Parties try to limit their activity to the upper part of the phone or CW subband, so that is the place to look for these contests.

I have had a request to provide some coverage of QSO Parties and the like. This could prove difficult for three reasons. First, I have no better source of information than you do for these contests. Second and third, the dates and rules for QSO Parties tend to be a lot like traffic lights— they are

always changing. Trying to keep up with all the QSO Parties could be a real nightmare. Therefore, one has to draw the line somewhere, and I chose to draw it between major DX Contests and everything else. That is, I decided to have major DX Contests as the main emphasis of the column. If a lot of people want to see a broader range, covering QSO Parties, some of the smaller DX Contests, etc. let me know and we will see what can be done. For now, I will try to expand the calendar at the start of the column to include more contests. Be warned that the dates for the smaller contests, QSO Parties in particular, may well be wrong though; due to the lead time for preparing this column, they may be the dates from the previous year. If the organizers decide they didn't like that weekend and change it, there isn't much I can do about it.

BERMUDA CONTEST

An overview of the March Contest Scene wouldn't be complete without a mention of the 'Win a Trip to Bermuda' Contest. That's right, first prize in the Bermuda Contest is a trophy which is presented at the Radio Society of Bermuda's annual dinner in October. If you are the top score in Canada, they will pay for your transportation and accommodation to go and pick up your award. Now, that has got to be better than a piece of paper to put on the wall!

I hear people out there clamoring for details. Okay. You may work stations in the U.K., West Germany and Bermuda. Send signal report and province. Each QSO counts five points, and the multiplier is the number of VP9 stations worked on all bands. You may work stations once on phone and again on CW provided that there is at least 30 minutes between the two contacts. But multipliers are counted once per band regardless of mode used. Activity takes place on 3.5 thru 28 MHz. Operate up to 36 out of the 48 hours, and off times must be at least three hours long. Lastly, you must operate from your own residence.

Entries must be received by May 31, and go to the Radio Society of Bermuda, Box HM275, Hamilton, Bermuda.

So when you go to collect your trophy, send me a post card, okay?

That will about finish up another month, I guess. Special thanks to VE6UP for his letter which gave me something to talk about this month. As always, correspondence is more than welcome. Until next Month, good DX and 73.

Is your Beam really headed North?

BY CLAUDE VALLEE
VEZARU

Any Ham who puts up a beam, will be looking for the most accurate installation possible. One will naturally refer to a compass. But one should not forget that some corrections must be brought up to a compass reading, because the magnetic north is not coincident with the geodesic north. And the metallic structure of a high rise building for example could induce quite an error on a compass reading.

In front of the Quebec Parliament building, some 100 metres north of the central door, there is a solar clock (see Fig.1).

This 'monument' is dedicated to the Surveyors of Canada, and it was built in 1967, by the Architect J.C. Tardif from Sherbrooke. This is also a geodesic point situated exactly at a Latitude of 46 degrees 48 minutes 35.39 seconds north, and a Longitude of 71 degrees 12 minutes and 50.72 seconds west, and an altitude of 77.11 metres above mean sea level.

I first thought that at noon its shadow should point directly north. I adjusted my watch very accurately and went for my first observation to check on my theory. It did not work that easily. Well, I thought, maybe I have to consider daylight saving time, or UTC and of course the longitude has to do with the position of the sun at noon because as the earth rotates 360 degrees in 24 hours, the sun moves 15 degrees in one hour. Which means that our real noon should be 4 hours later than Greenwich, for the first 60 degrees, plus $12^{\circ}50.72''/15$ of the next hour, which gives me 16 h 44 min and 51.5 s (UTC). After further observations of the noon shadow I compiled timings between 16 h 28 min 30 s and 16 h 59 min and 06 s (UTC), varying from day to day.

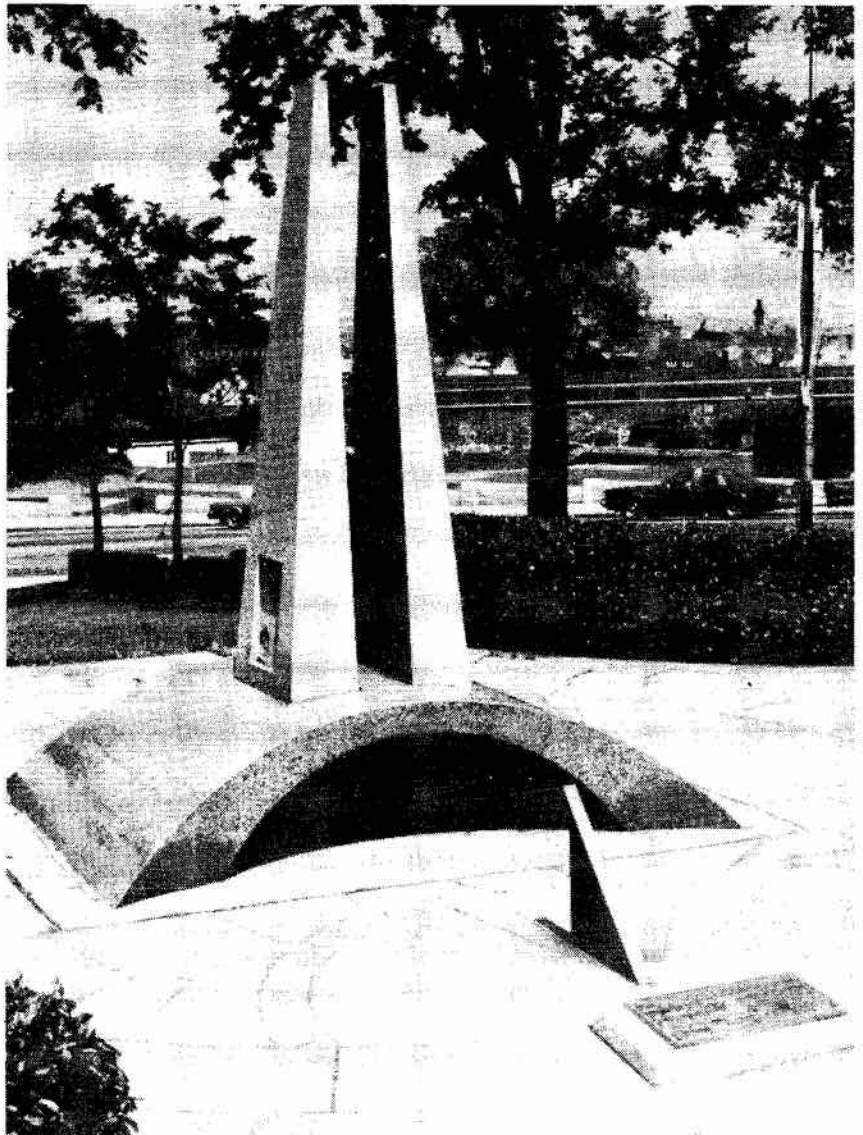
I was wondering where this variation could come from, and nobody around me could help. After a few months of research, I found the answer in a book of 'Physical

Geography' written by Mr. Arthur N. Strahler, Professor of Geomorphology, Columbia University.

Let's mention briefly the explanations that I found.

The earth is travelling around the

sun in an elliptic orbit, and its speed varies from day to day. On June 21 we are 94,500,000 miles from the sun while on Dec. 21 we are at 91,500,000 miles away. The earth averages a speed of 66,000 miles an hour, and



Monument and solar clock, some 100 metres North of the main door of the Quebec parliament building.

the maximum speed is on Jan. 4 (perihelion), while the minimum speed takes place on July 4 (aphelion). A point that intrigued me much is the fact that if Quebec is at noon on June 21, after travelling 180 degrees (6 months) around the sun, on Dec. 21 the noon point looking at the sun, should be at midnight. Otherwise the rotation would have to gain half a turn or 12 hours each six months??? The explanation to this situation, is that the sidereal day (looking at the earth from the Polar Star) is really 23 hours 56 minutes and 4.09 seconds.

Based on the above facts, how can we figure the daily correction to noon time? Well, on most globes, there is a

graph shaped as an 8, called the analemma, which will give us the equation of time for each day, together with the declination of the sun (23.5 degrees north on June 21, and 23.5 degrees south on Dec. 21). Knowing this correction it is easy to situate exactly the north which is pointed by any vertical shadow at the real noon time, provided that we have a clear sky (Figure, pg. 44)

For example, my QTH, according to a military map, is situated at 71 degrees 14 minutes and 43 seconds west (the smart ones will say that I live only 2 minutes away from the Parliament building). If we transpose the minute-second in decimal figures,

we are exactly 71.25 degrees west (or very close) which means that the sidereal noon here is at 16 h and 45 min and 00 s (UTC) plus or minus the daily correction. On July 25 the real noon will be 16 h 51 min and 30 s, on Nov. 5, the reading should be taken at 16 h 28 min and 30 s (UTC), on Dec. 26, Sept. 2, April 16, and June 15 according to the analemma there is no correction.

From the above calculation, I had to correct the orientation of the beam many degrees from the original setting, which is negligible when the radio conditions are good, but could make the difference in making a QSO or not if the conditions are bad.

Votre antenne pointe-t-elle vraiment vers le nord?

PAR CLAUDE VALLEE VEZARU

Tout amateur qui installe une antenne dirigée (beam), recherche l'orientation la plus précise possible. Il est naturel de se fier à une boussole pour trouver le nord, mais il faut cependant se rappeler que le nord magnétique, et le nord géodésique ne coïncident pas. Nous devons tenir compte de la déclinaison magnétique qui elle-même change légèrement d'une année à l'autre, d'autant plus que l'orientation de l'aiguille de la boussole peut être drôlement déviée par la structure métallique d'un édifice en béton armé.

Mon travail m'amène au Parlement de Québec à tous les jours ouvrables de l'année, à l'heure du dîner, tout en faisant la petite promenade de santé, j'y ai découvert un point géodésique installé (en 1967) à quelques cent mètres au nord de la porte principale (qu'on appelle la porte de l'Amérindien), et sur ce point a été construit une horloge solaire (voir fig. 1), œuvre de l'Architecte J.C. Tardif de Sherbrooke, et dédié aux Arpenteurs Géomètres du Canada.

Ce point géodésique est situé précisément à 46 degrés 48 minutes et 35.39 secondes de latitude nord, sur une longitude de 71 degrés 12 minutes et 50.72 secondes ouest, et à 77.11 mètres d'altitude (253 pieds). Sur la plaque on y lit également les azimuths de Fredericton N.B. (103 degrés 21 minutes 56.8 secondes), de Toronto, Ont. (244 degrés 22 minutes et 15.20 secondes), ainsi que d'Ottawa (247 degrés 46 minutes 0.49 secondes).

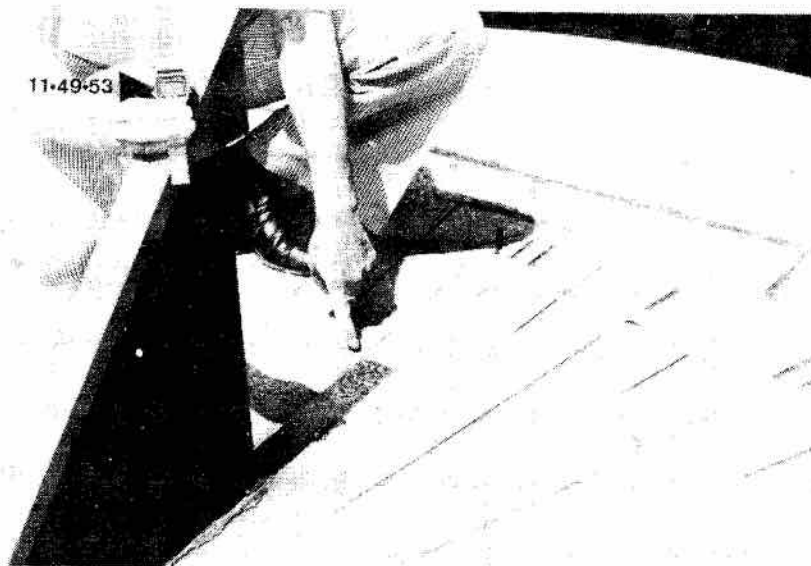
J'avoue avoir été passablement

intrigué par cette horloge solaire. Au début je me disais à midi, le soleil étant au sud, l'ombrage devrait pointer exactement vers le nord. J'ai donc ajusté ma montre à la seconde près (WWV) et commence mes observations afin de vérifier ma théorie. I m'a semblé que rien ne correspondait à mes prévisions. Je me suis dit, encore faut-il tenir compte de l'heure avancée, ou solaire, ou de l'heure UTC, sans oublier la correction due à la longitude qui a aussi une influence sur la position du soleil à midi. Car on sait que la terre tourne 360 degrés en 24 heures, soit 15 degrés en une heure. À partir de ce fait, selon notre longitude notre midi

sera 4 heures plus tard qu'à Greenwich pour les 60 premiers degrés, plus 12' 50.72"/15' de l'heure suivante, ce qui devrait nous donner exactement 16 heures 44 minutes et 51.5 secondes UTC pour notre emplacement géodésique du Parlement. Or mes observations des jours qui suivent ont démontrées que l'ombrage passe par le point nord entre 16:29:36" heures et 16:59:06" heures (UTC), variant selon les dates d'observation.

Mais d'où vient donc cette variation de notre midi me suis-je demandé??? Personne dans mon

page 44



On June 15, the sun went through 180 degrees (South) at 16 h 44 m 51.5 s.

entourage n'a pu répondre à mes questions (Ingenieurs, Administrateurs encore moins un Deputé ou un Ministre). Après plusieurs mois de recherches j'ai trouvé la solution dans le livre du professeur Arthur N. Strahler, du department de Géomorphologie de l'Université Columbia. Ceux qui voudraient plus de détails pourront toujours s'y référer. Nous résumerons brièvement ci-dessous les raisons les plus évidentes.

La Terre dans sa course autour du Soleil n'est pas sur un orbite circulaire (comme nos satellites

geostationnaires) mais bien sur un orbit elliptique, avec le resultat que sa vitesse varie constamment d'une journée a l'autre. Au 21 decembre nous nous retrouvons a 91,500,000 milles du Soleil pour passer a quelques 93,500,000 milles le 21 juin, sa velocité moyenne étant de 66,000 milles a l'heure, sa vitesse sera maximum vers le 4 janvier (perihélieon) pour etre minimum vers le 4 juillet (aphélieon). Un autre detail qui m'a étonné, c'est que vue des etoiles, si le 21 juin il est midi a Quebec, apres une course de 180 degrés autour du soleil nous devrions

theoriquement nous retrouver midi a minuit, le 21 decembre. Ce qui est absurde et ne se produit pas. Est-ce que notre jour avancerait de 12 heures de six mois en six mois me suis-je demande?. L'explication de ce phénomène c'est que le jour sideral (calculé sur la position des etoiles) en realite n'est pas de 24 heures comme nous le chronometrons en moyenne, mais bien de 23 heures 56 minutes et 4.09 secondes ce qui explique le glissement de 180 degrés aux six mois.

Comment pouvons-nous calculer la correction a apporter a la course du soleil (ou plutot de la terre). Sur la plupart des globes terrestres nous retrouvons une courbe en forme de 8 (voir fig. 3), qu'on appelle 'analemma.' Cette courbe nous donne deux informations importantes pour nos calculs:

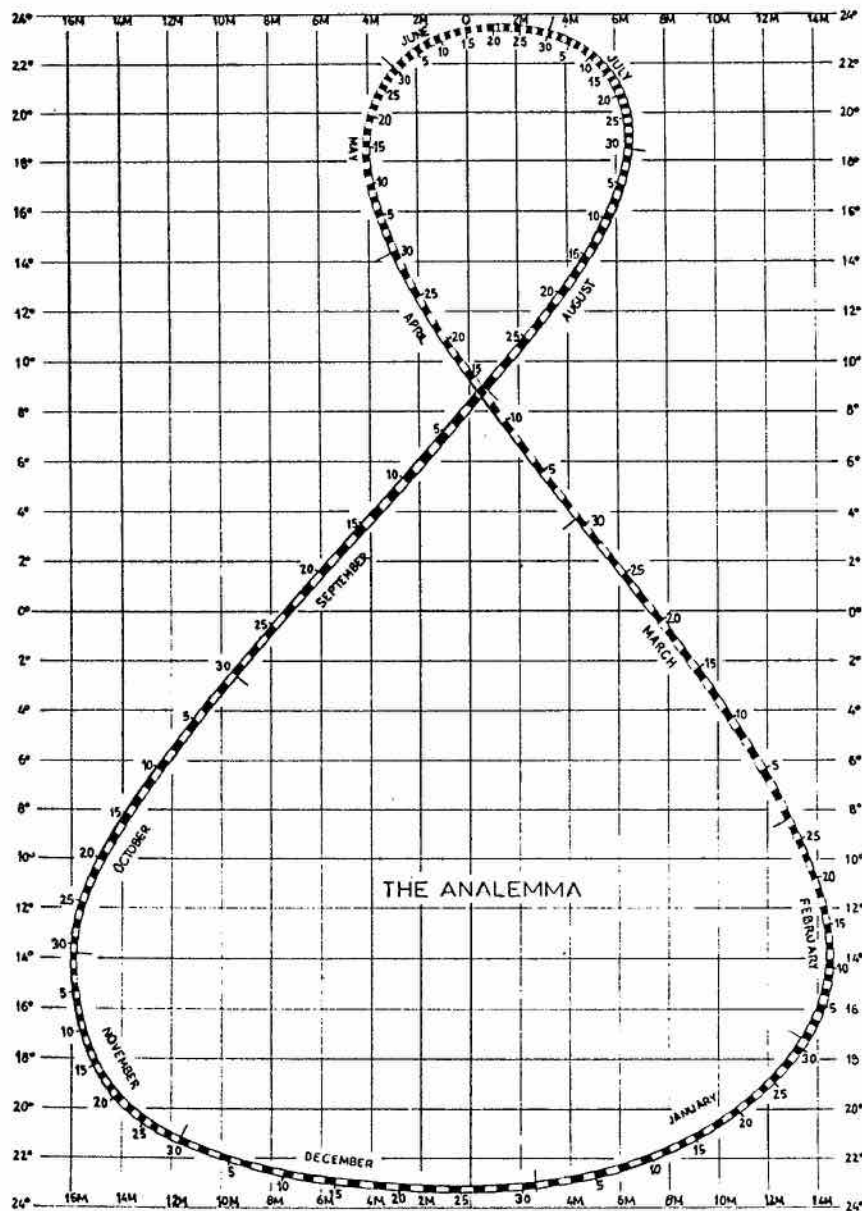
1- Elle nous indique la déclinaison journalière du soleil par rapport a l'équateur (qui varie de 23.5 degrés nord le 21 juin pour atteindre 23.5 degrés sud le 21 decembre).

2- L'équation de correction en minutes/secondes (en plus ou en moins) a apporter au midi de chaque jour de l'année.

Connaissant ces informations il est donc très facile de déterminer le nord géodésique véritable a tous les jours que le soleil nous gratifie de sa présence sans nuage a midi.

Donnons un exemple: Mon QTH selon la carte militaire que je possède, est situé a 71 degrés 14 minutes et 43 secondes (les malins diront sans doute que je demeure a deux 'minutes' du Parlement). Si nous transposons les minutes/secondes en décimales, nous obtenons 71.25 degrés (ou bien près) le midi géodésique passera donc a mon QTH a 16 heures plus 11.2453/15 de l'heure suivante, soit exactement 16 heures 44 minutes 58.8720 secondes plus ou moins la correction journalière de l'analemma soit pour le 25 juillet (la correction étant positive) le midi (180 degres sud) sera a 16 heures 51 minutes et 30 secondes, le 5 novembre (négative) a 16 heures 28 minutes et 30 secondes (UTC), les 26 decembre, 2 septembre, 16 avril et 15 juin, il n'y a pas de correction a apporter pour ces quatre jours de l'année.

Inutile de dire que j'ai du corriger de plusieurs degrés l'orientation première de mon antenne. Lorsque les conditions sont bonnes, cest une erreur qui n'a pas d'importance, mais lorsque les signaux sont faibles et sur la limite du bruit, ce pourrait être la difference entre établir ou non un certain QSO désiré.



The Analemma tells you where the sun will be at noon any day of the year. The vertical scale tells you the sun's altitude above or below the equator; the horizontal, how fast or slow suntime is, compared to standard time.

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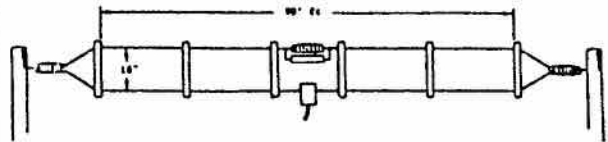
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Nom

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Adresse

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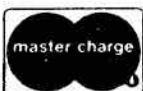
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Model	Description	Suggested List
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MD-1B8	Desk Microphone	130.00
FTE-36	Tone Encoder (31 Tones Selectable)	TBA
FTS-32R	Tone Squelch (32 Tones Selectable)	119.00
FT 726-50	Module unit for 50-54 Mhz	355.00
FT 726-144	Module Unit	264.00
FT 726-430	Module Unit for 430-440 Mhz	471.00
FT 726-440	Module Unit for 440-450 Mhz	471.00
FT 726-HF	Module 21-28 Mhz 10-15 Meters	361.00
FT 726 SAT	Module for Satellite cross-band full duplex	187.00
SP-102	External speaker w/tone controllers'	96.00
SP-102p	External speaker w/tone controls and phone patch	134.00
FT 726DC	DC cable for DC operation	19.00
XF-455MC	Filter: 600 Hz CW filter	90.00

FT 757 GX All mode Transceiver, Dual VFO's and Eight Memory Channels, Programmable Memory Scanning CAT System, Full Duty Cycle, Full Break-in CW.

Model	Accessories	Suggested List
FAS-14R	Remote Antenna Selector w/ FC 757AT	129.00
FC 757 AT	Automatic Antenna Tuner	495.00
FP-700	Power Supply w/ speaker 13.5 VDC, 20 Amps	257.00
FP-757GX	Power Supply, Switching 13.5 VDC, 20 Amps standard	284.00
FP 757HD	Power supply, heavy duty 13.5 VDC, 20 Amps	303.00
FTV 700	Monoband V/UHF Transverter(w/o band module)	215.00
FTV-6M	6M Module for FTV 700	199.00
FTV-2M	2M Module for FTV 700	270.00
FTV-70cm	430 Mhz Module for FTV 700	485.00
FIF-232c	Interface Unit for RS232c	110.00
FIF-65	Interface Unit for Apple II	91.00
FIF-80	Interface Unit for NEC	213.00
MH-1B8	Hand-held microphone	32.00
MD-1B8	Desk Microphone	130.00
SP-102	External Cabinet speaker	96.00
SP-102p	External Cabinet speaker w/ phone patch	134.00
FRB 757	Relay: Switching box for linear	17.00
FL-2100z	Linear amplifier: HF all bands 1KW	1139.00

FT 980 All Mode HF Computer Aided Transceiver, CPU Controlled Memory System, Programmable Bands, CAT Interfacing, Compatible computer systems for NEC-PC, Apple II, and RS232c.

Model	Accessories	Suggested List
FIF 232c	Interface Unit for RS 232c	110.00
FIF 65	Interface Unit for Apple II	91.00
FIF 80	Interface Unit for NEC	213.00
MD-1B8	Desk Microphone	130.00
MH-1B8	Hand-held Microphone	32.00
SP-980	External speaker w/tone controls	146.00
SP-980P	External speaker w/tone controls with phone patch	177.00
XF8.9 GA	Filter: AM 6 Hz	59.00
XF8.9 HC	Filter: CW 600 Hz	59.00

FRG 8800 All Mode General Coverage Receiver, 150KHz-29.999MHz, 21 button keypad, 12 internal memories, two 24 hour clocks, automatic power switching, interfacing with most computers, VHF option.

Model	Description	Suggested List
FRA 7700	Active Antenna	110.00
FRT 7700	Antenna Tuner: Freq. Range (150 Khz-30 Mhz)	92.00
FRG 8800V	Receiver with Converter installed	1058.00
FRG 8800	General Coverage Receiver	895.00
FRV 8800	Converter: VHF Freq. conv. 118-173.999 Mhz	158.00
FRG 88DC	Power Cord DC operation	8.00
YH-55	Headphones: 8 ohms Impedence	32.00
YH-77	Headphones: 6.35 mm(1/4) plus 130 cm of cable	32.00

FRG 9600 Mode Communications Receiver 60-90MHz, VHF/UHF, full scanning, CAT, personal computer interfacing, Optional Video IF Unit available for TV reception on a video monitor.

Model	Description	Suggested List
FIF-23c	RS232c Interface for most brands	110.00
FIF-65	Interface for Apple II	91.00
FIF-80	Interface for NEC PC-8001	213.00
MMB-28	Mobile Mounting Bracket	18.00
NTSC	Video Unit	23.00
PA-4B	Wall Charger: 117VAC	21.00
PA-4C	Wall Charger: 220VAC	21.00
SP-55	External Speaker (4 ohms)	32.00
YH-55	Headphones: 8 ohms Impedence	32.00
YH-77	Headphones: 6.35 mm(1/4) plus 130 cm of cable	32.00

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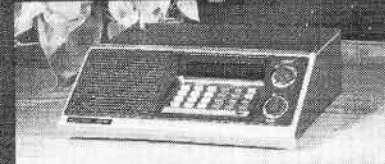
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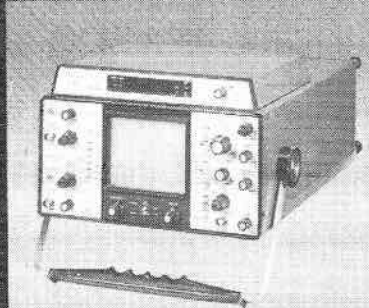
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