

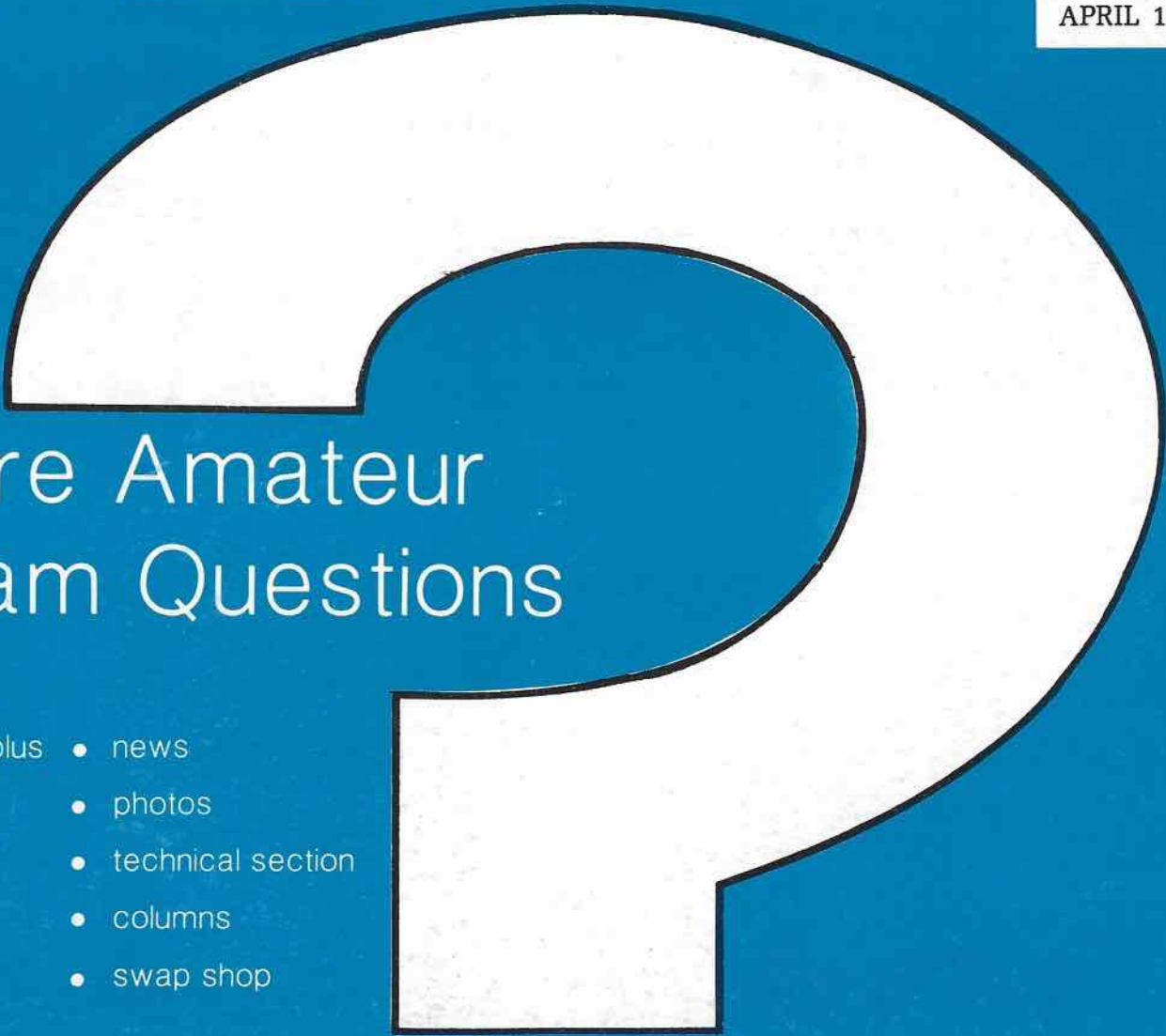
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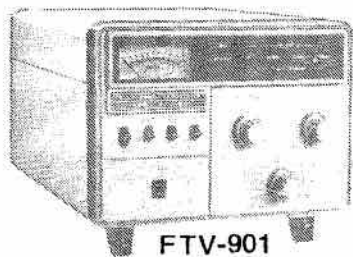
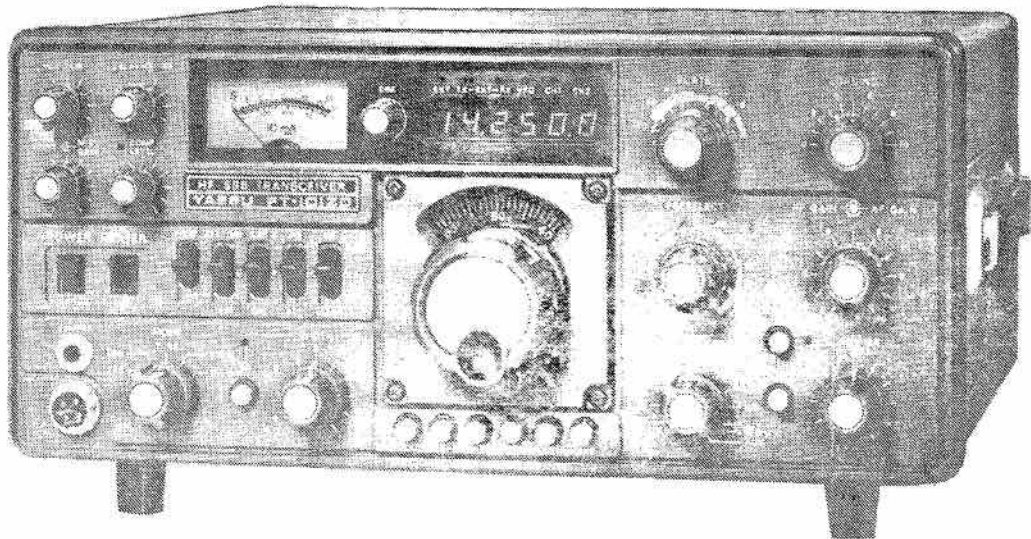
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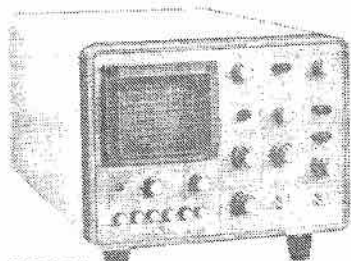


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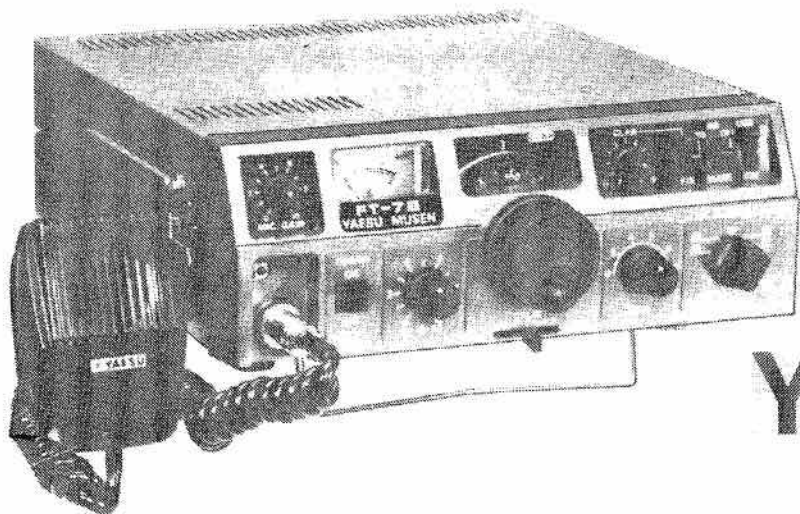
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TCA




THE CANADIAN AMATEUR

April 1980

Vol. 8 No. 4

Contents

Letters to the Editor.....	12
Canadian Contest Scene.....	15
New Minister for DOC.....	15
Chips and Bits.....	16
CRAG Repeater Column.....	18
Social Season.....	18
CARF comments on BCI/TVI.....	19
Response on special calls.....	20
Reciprocal Licensing.....	20
New CARF Vice-President.....	21
Instructors, Unite!.....	21
DX Column.....	22
Regulations changes okayed.....	26
CARF Brief on 900 MHz band.....	27
More Amateur Exams.....	28
FCC gets with it!.....	30
Repeater power alternatives.....	31
'BY' on the air?.....	31
No Code Regulations.....	31
Visual Ear for the Deaf.....	32
Amateur links for CORK.....	32
Observations of a Traffic Handler.....	33
Advertisers' Corner.....	33
Lid Street.....	33
Coast Club bridges gap.....	34
News Briefs.....	34
TCA on Tape.....	40
Swap Shop.....	45
CARF Infosection.....	45
TECHNICAL SECTION	
Have you got CB disease?.....	35
Adding Incremental Tuning to HW-101 receiver..	36
Feeding Longwire Antennas.....	38

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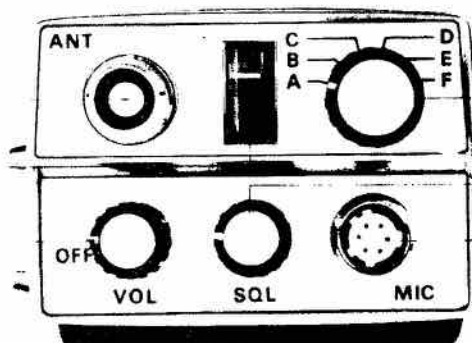
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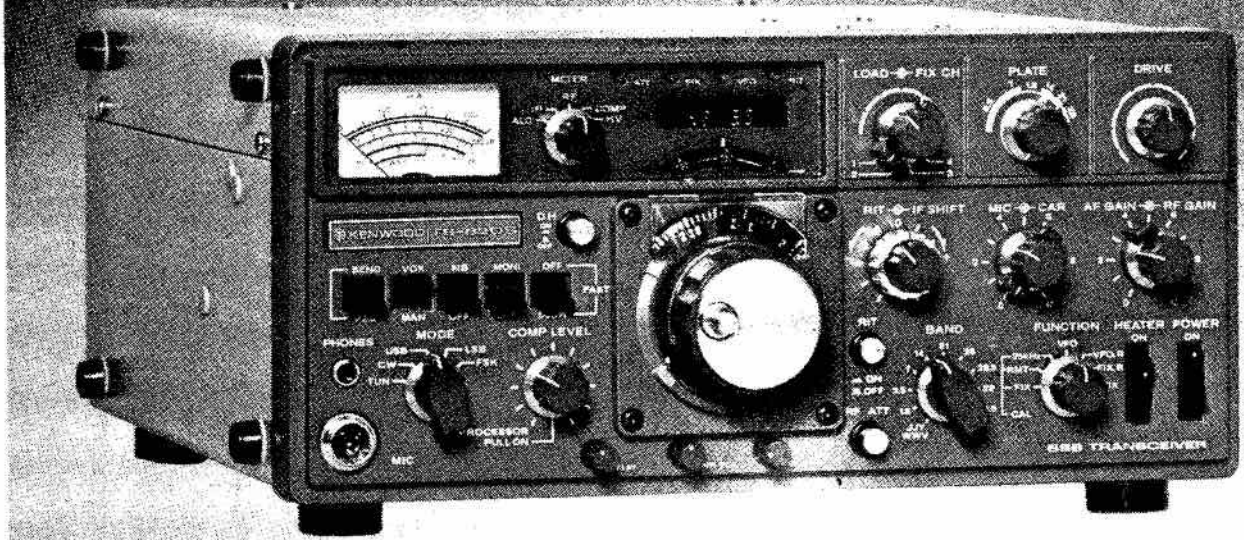


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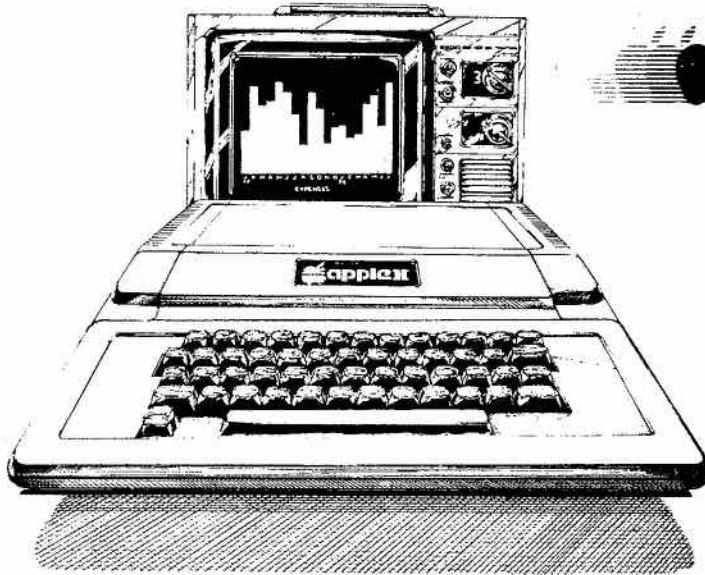
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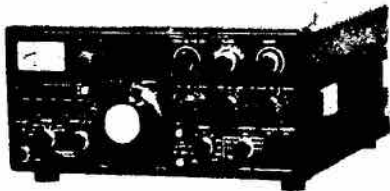
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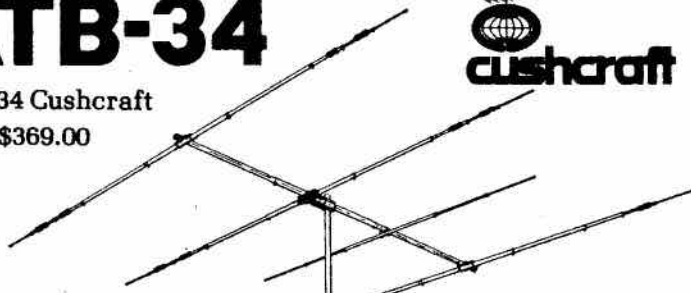
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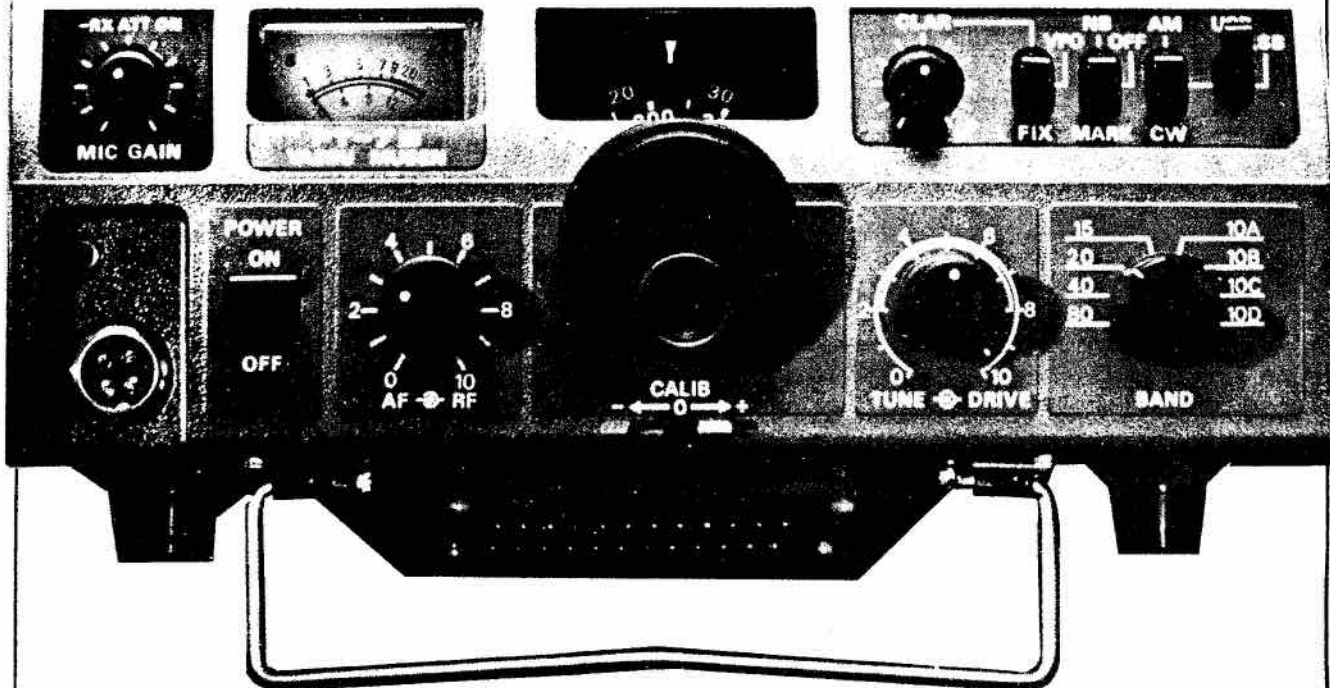
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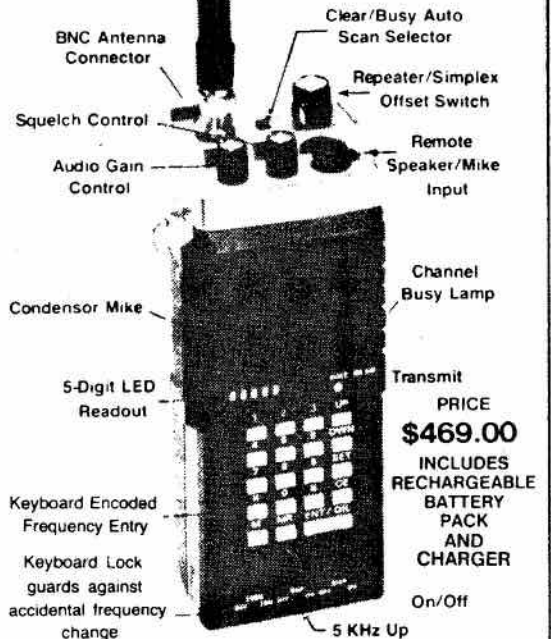
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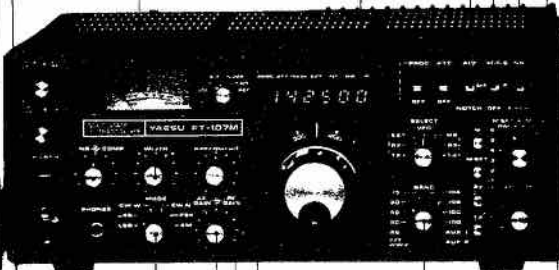
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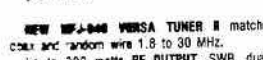


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A 2 to 30 MHz 2 KW low pass filter \$24.95



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- S5T---\$585
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- S2T---\$589

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The New ICOM 551

Proven Digital Technology

ICOM has used its expertise with Digital Technology, developed with the IC-701, in designing the all-new IC-551. A Microprocessor Controlled PLL is at the heart of this rig. The frequency tuning dial is ICOM's unique Optical Chopper, which provides years of problem-free service. This is also the first radio to use a pulse power supply, resulting in a lighter weight.

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The IC-551 has All Mode capability: USB, LSB, AM, CW, and FM. The operating mode is indicated by an LED display beside the frequency readout. The module to provide FM is optional. Scanning is a standard feature, which includes Program Scan and Memory Scan. Program Scan allows scanning between two programmed frequencies. Stop-On-Signal and Speed adjustment is also included. All scanning operations work in any mode. Reading and writing to the three memories is quick and simple. Complete 4 MHz coverage without a band select switch. Two built-in VFO's provide split frequency operation at no extra cost. The optional extras for the IC-551D includes . VOX, and Pass Band Tuning. The IC-551D includes all of the options, except FM, plus 80 watts RF output. An external power supply is necessary for this model.

Specifications

GENERAL	
Frequency Coverage	: 50 - 54MHz
Operationable Temperature	: -10°C - +60°C (14°F - 140°F)
Power Supply Requirements	: 13.8V DC ±15%, negative ground, or 117V/240V AC ±10%
Power Consumption	: Receive at min. audio level DC 0.9A AC 35W at max. audio level DC 1.1A AC 41W Transmit in SSB/CW modes DC 3.3A AC 98W in AM mode DC 3.0A AC 92W in FM mode* DC 3.3A AC 98W
Dimensions	: 111mm (H) x 241mm (W) x 31mm (D)
Weight	: 6.1 kg
TRANSMITTER	
RF Output Power	: SSB 10W PEP (1 - 10W adjustable) CW 10W (1 - 10W adjustable) AM 4W (0 - 4W adjustable) FM* 10W (1 - 10W adjustable)
Modulation System	: SSB/AM Balanced modulation FM* Variable reactance frequency modulation
Max. Frequency Deviation*	: ±5KHz
Spurious Emission	: More than 60dB below peak power output
SSB Carrier Suppression	: More than 40dB below peak power output
SSB/AM Unwanted Sideband	: More than 40dB down at 1000Hz AF input
Microphone	: 600 ohm dynamic or electret condenser microphone
RECEIVER	
Receiving Mode	: A1 (CW), A3J (USB, LSB), A3H (AM), F3 (FM)*
Receiving System	: SSB/CW/AM Single Superheterodyne (Triple Superheterodyne when Pass Band Tuning unit is installed) FM* Double Superheterodyne
Intermediate Frequency	: SSB/CW/AM 9.0115MHz (When Pass Band Tuning Unit is installed: 2nd IF: 10.75MHz, 3rd IF: 9.0115MHz) FM* 1st IF: 9.0115MHz, 2nd IF: 455KHz
Sensitivity	: SSB/CW/AM Less than 0.5 µV for 10dB S+N/N FM* More than 30dB S+N+D/N+D at 1 µV
Spurious Response Rejection Ratio	: More than 60dB
Selectivity	: SSB/CW/AM More than ±1.1KHz at -6dB Less than ±2.2KHz at -6dB (When Pass Band Tuning Unit is installed: less than 1KHz at -6dB) FM* More than ±7.5KHz at -6dB Less than ±15KHz at -60dB
Squelch Sensitivity	: SSB/CW/AM 1 µV FM* 0.4 µV
Audio Output Power	: More than 2 watts

551-\$749 FM-\$195 VOX-\$85 PBTUNE-\$169

551D-\$1125

PS-20-\$299



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Canada

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VANCOUVER, B.C. V6P 6E3 (604) 321-1833 TELEX 04-54315

LETTERS:

MAILING THE MEAN GREEN

I, too, was surprised by the September article requesting green stuff in exchange for QSLs. I was even more surprised by your editorial comment in the January letters column where you state that "it's a free choice and a free world".

I beg to differ. The Radio Regulations, part II, para. 56 states "No tolls, fees or other consideration shall be received ... on account of any service performed by the station." The CARF regulations handbook elaborates by advising that even recovery of long distance phone charges incurred in patching could be illegal.

An avid QSLer certainly considers a QSO and resultant confirmation as a 'service performed' by the DX station, and green stuff certainly is 'consideration'. Law abiding hams should strenuously resist such solicitations, and TCA should refuse to print them. Our Amateur status is at stake.

Brian Rowbotham VE4XI
We sort of doubt that your legal point cuts much ice, Brian and as we said, it's a free choice as to whether or not one chooses to send IRCs etc. for DX QSL cards. The other side of the picture, stated by 5Z4YW in the following letter may help Amateurs to exercise their choice one way or another.

In reference to VE7KRP's comments (January's TCA) about sending DX stations

IRC's and 'green stamps', maybe he should look at it from a DX station's point of view.

As an example, I work between 125 and 200 stations daily from my station 5Z4YW. It cost me 51 cents to mail a card back to North America plus the price of the card and envelope. At an average of 90 cards daily, (not everyone QSLs) that is a daily expense of around \$50.00. If you expect a DX station to reply to anything less than a green stamp or 3 IRC's plus a return envelope then your return on DX QSLs is probably quite low. Needless to say, a DX station cannot be expected to bear such a financial burden.

After all, the last thing I really need is another VE3 or W2 card. And I don't wish to sit down for an hour every evening filling out addresses on envelopes.

Canadian Amateurs are one of the worst for QSLing procedures.

I was guilty of the same as a VE3 but when you begin operating as a DX station one begins to see things very differently.

The QSL bureaus are fine but it costs me a big chunk to mail even a small box of cards back to the North American bureaus also. So VE7ERP, take heed and think of it from my point of view also. 73

Rob Bareham 5Z4YW

Thanks, for a view from the 'other side'.

Rob by the way is one of the minority of Amateurs who

are still experimenting and isn't in the 'DX game' for the bucks, if indeed any of them are in view of what he tells us here. Anyone wishing to pursue this subject further, look for Rob on 21.250 - 21.270 every day at 1830 - 2000 Z.

BAND POLICEMEN

On the subject of 'Band Policemen', (January TCA) VE2EHG summed up the situation perfectly. These people are not occupying the frequency legally, nor have they the right to act as guard.

A new concept is required for the so-called 'DX Station'.

Instead of occupying 20 or 30 KHz, if they used 14200 for their operating frequency, it would solve a lot of problems.

They could say five up or five down and no one would be getting excited.

I would strongly ask for DX organizations to consider the viability of this suggestion.

Rowland VE3AML

U.S. PHONE EXPANSION

At a recent meeting the Bancroft ARC discussed the proposed expansion of U.S. phone privileges below 14.200 MHz. The discussion resulted in response to the recent CARF Bulletin concerning this matter.

There are an overwhelming number of Amateurs in the U.S. and if extra band privileges were allowed them, they would monopolize them to the detriment of international use. It is evident that the expanded U.S. phone

**TCA welcomes Letters to the Editor. Please send correspondence to Editor
TCA, 151 Fanshaw Ave., Ottawa, Ont. K1H 6C8.**

privileges on 75 metres, has resulted in unnecessary interference with established Canadian nets. On 20 metres the impact would be felt worldwide. The situation would be aggravated by many U.S. stations which insist on operating with high power above that required to carry on a normal QSO.

International communication would suffer from any such proposed expansion. The Bancroft ARC supports any action or presentation that CARF intends to make in opposition to the expansion.

Do not hesitate to contact us for any further assistance on the matter.

Vic Liimatainen VE3KBU
Sec.-Treas. BARC

This is one of many letters expressing similar opinions, which have been received by CARF.

H.M.S. BELFAST

After the very interesting article by Garry VE3GCO, I received a letter from Don G3HZL of the Royal Navy ARS, Belfast Group, London. He asked me if I would forward the following information so that readers can join in the Easter activities aboard H.M.S. Belfast.

The **Royal Naval Amateur Radio Society** will be operating Amateur radio station GB2RN (Great Britain Two Royal Navy), aboard the preserved cruiser HMS Belfast, moored in London's Upper Pool, opposite the historic Tower of London, commencing 0001 GMT Friday 4th April 1980 and ending

1800 GMT Sunday 13th April 1980.

Primary operating frequencies are:

CW: 1828 (QSX 1802), 1838, 1858, 3520, 7020, 14052, 21052, 21120, 28052, 28152 kHz.

SSB: 1875, 3660, 3780, 7070, 14140, 14245, 14340, 21175, 21433, 28470, 28933 kHz.

Anyone interested in the RNARS Mercury Award give me a call as a contact on each band counts as points. (The cost of the award is now 6 IRC.)

Norm Moore Ve3EMU
RNARS No. 777
228 Dufferin St.
Stratford, Ont. N5A 2H2

THIRD PARTY WITH HOLLAND?

I was pleasantly surprised to see my first literary effort for the "Splatter" (York North Amateur Radio Club - Newmarket, Ont.) reprinted in your fine magazine's February issue.....

The main reason for this letter, is how could CARF be of assistance in obtaining a "Third Party Agreement" with Holland? As I am at a loss on how to approach this, I would like to solicit your cooperation!!

A.Ph (Tom) Van Den Elshout
VE3LNt
12 Johnson Rd.

Aurora, Ont. L4G 2A2

Our DOC has no 'hang-ups' with third party traffic agreements and will quickly reciprocate such arrangements IF the other country requests it. You might like to have VERON, the Nether-

lands Amateur organization try to persuade their regulatory agency that third party traffic could be a good public relations gesture between two nations whose wartime bonds should be nurtured and maintained.

ILLEGAL OPERATION

Amateurs must operate within the terms of their own licences in their own country, **or when outside of it.** The regulations are very clear, but a few make mistakes; others try to beat the system, and few are bootleggers.

You cannot circumvent the terms of the licence that you hold, by crossing an international border line!

With improved conditions on HF bands, there have been quite a few instances of out-of-band operation lately, particularly U.S. licensed stations operating temporarily in Canada.

Foreign stations, operating temporarily in Canada are required to "operate in accordance with the provisions of **their own licences** but only in so far as these do not conflict with Canadian regulation". (General Radio Regulations 13.2)

The class of licence held is listed in the U.S. Callbooks. U.S. Amateurs operating phone in the 'DX Window' are operating illegally, and if Canadians conduct a QSO with these stations they are thus also operating illegally!

Usually violators are glad to be informed that they are out-of-band and they will move to authorized frequen-

cies. But a few hardliners and bootleggers rationalize illegal operations, coming up with all kinds of invented 'legalities' for their lawlessness.

These hardliners should be reported, with full particulars of the out-of-band operation, to the Intruder Watch maintained by (some Amateur) organizations, to the DOC and FCC.

Incidentally, the Novice and Technician Class licences in the U.S. are not recognized in Canada, because we do not have these classes here. (See below* Ed.)

The same rules apply to Canadians operating temporarily in other countries. You are governed by the terms of **your own licence** and the rules of the host country. This does not mean that you can operate in the 'DX Window' in the United States, on phone, as that country does not permit phone operation on those frequencies.

Roy Parrett VE7TG

*** Since this letter was written, the DOC and FCC have made new arrangements. Amateurs of both countries are now able to operate in the other country without obtaining the official permit for DOC or FCC and, further, U.S. Novice and Technician class operators may now operate in Canada when visiting here but only within the modes and frequencies permitted to them in the U.S....Ed.**

TECHNICAL QUESTIONS

Being a regular reader of TCA and a member of CARF, I have in the past appreciated the questions regarding the technical exam of the DOC, which were a great help to me personally.

Would it be possible to publish in the future, say

every three months, other similar questions? I do not think that the DOC would object to such publication, because the questions are changed periodically and furthermore, they have about 500 other and different questions in reserve.

It would be quite interesting for your readers to try to answer them and thus members and readers could evaluate and update their knowledge.

Normand Coulombe VE2DXC
Montreal; P.Que.

Thanks for the idea, Norm; take a look inside this issue.

AMATEUR RADIO IN THE CLASSROOM

Amateur Radio has been a stimulating and rewarding hobby for me during the past year and a half and I was always impressed by the sense of camaraderie and friendship among our world fraternity members. Recently, this close bond was dramatically reaffirmed.

As an elementary school teacher (Intermediate Special Education), I experimented with Amateur Radio as a motivational and educational tool in the classroom and had great success; but that is not the primary reason for this letter.

In order for my 'Amateur Radio Project' to succeed, it was necessary to have the cooperation of all Amateurs contacted (on 10 metres). The first phase of the project was to have the students develop their letter writing skills, so they each wrote to a station I contacted. In each envelope was an SWL card of the student's design.

The response was very gratifying. Not only did the stations QSLed in this manner

respond by sending a QSL card, they wrote encouraging letters and in many cases included travel brochures, post cards and even stamps from their country.

My students were tremendously excited - they couldn't wait for the next postal delivery. Finally, letter writing had a meaning. It meant that people would respond. No longer was it the tedious skill that had to be learned. And, the gains in their language and reading skills were made at an accelerated rate.

The prime reason for this letter is to thank all the Amateur Radio Operators throughout the world for their marvelous response... For the short project time period, my students had a glimpse of the world without boundaries, with great fellowship and exceptional warmth. Hopefully, this experience will be imprinted on their memories.

To our Canadian Amateurs, a special thanks is extended. On more than one occasion we had the experience of a 'pile-up' where stations waited to give us a contact. Many stations refused to talk with me - preferring to rag-chew with the students! That was fantastic; thanks again.

Bill Bochar VE3LEL

J.J. McGrand

Catholic School

66 Dufferin Park Ave.

Toronto, Ont. M6H 1J6

Other teachers have used Amateur radio in similar teaching experiments; one, for example, uses it as an incentive in the study of geography.

When replying to advertisements, say you saw it in TCA -
The Canadian Amateur

CONTEST CALENDAR

April

- 5-6 QRP ARC Contest
- 19-20 Bermuda Contest
- 26-27 Helvetia 26 Contest

April, unfortunately, is not a month known for its major contests. However, there are two interesting ones sponsored by the national societies of Bermuda (RSB) and Switzerland (USKA). The Bermuda Contest stands out as the RSB has managed to persuade the Bermuda Dept. of Tourism to pay for transport and accommodation of the high-scoring overseas entrant, so that he can collect his trophy at the annual RSB dinner.

As I am, at present, relying on other publications for copy, mostly the details of last year's contests, I would like to invite any readers with better sources of information to share it with me at the above address. Deadlines for the next few issues are: June (Apr. 25); July (May 27), Sept. (July 28); Oct. (Aug. 27).

The results of the 1979 CAN-AM contest arrived a few days late for last month's issue, so here are the top Canadian scores by province.

CW-Single operator

VE5DX-SK	598000
VE7CC-BC	560637
VE3BVD-ON	411382
VE1AIH-NS	233920
VE1BGD-NB	129168
VE8TM-NWT	105164
VE2HY-QU	39237
VO1AW-NF	24480

CW - Multi operator

VE4VV-MB	561144
VE2FU-QU	427630

VE1DXA-NS	312660
VE1AWN-PE	302220
VE3UDO-ON	185283

SSB Single operator

VE5DX-SK	952271
VE7BGK-BC	872894
CZ6OU-AT	506106
VE3BVD-ON	435860
VE1CCG-NB	58520
VE2QO-QU	6636
VE1BNN-NS	4550

SSB Multi operator

VE4VV-MB	562122
VE2FU-QU	526962
VE1AWN-PE	434076
VE1DXA-NS	398497
VE3VCA-ON	52124

Bermuda Contest

Period: 0000z Apr 19 to 2400x apr 20, 36 hours max. Bands: 3.5 through 28 MHz bands, CW and SSB. Classes: single op only. Exchange: RST plus province or territory. VP9s will send parish, U.K. will send county, and W. Germany will send DOK number.

Scoring: 5 pts. per VP9, U.K. or West German station

worked. Multiplier is number of VP9s worked on each band added together. Entries: Logs must include date, time (Z), call and exchange. Entries must include a declaration that contest rules have been observed. Entries must be received by June 30 and sent to: RSB, Contest Committee, P.O. Box 275, Hamilton Bermuda.

Helvetia 26 Contest

Period: 1500Z Apr. 26 to 1700Z Apr. 27. Bands: 1.8 through 28 MHz, CW and SSB. Classes: single op only. Exchange: RST plus serial number. HB stations will add canton abbreviation. Scoring: 3 points per QSO. Each station may be worked once per band. Multiplier is number of cantons worked on each band added together. Entries should be posted not later than May 27, and sent to TM USKA, K. Bindschedler HB9MX, Strahleggweg 28, 8400 Winterthur, Switzerland.

New Minister for DOC

Two P.C. Amateurs returned to Parliament

Former Communications Minister David MacDonald lost his P.E.I. seat in the Federal election. The new Liberal government minister is Francis Fox, a Quebec member who had been in a previous Trudeau cabinet. He, like his predecessor, is also secretary of state.

Other election results were of more interest to

Amateurs ... the two incumbent Amateurs, Doug Neil VE5NQ, of Moose Jaw and Gord Gilchrist, VE3ANY, of Scarborough East, made it back to Parliament. Doug got a healthy majority of 14,300 over his nearest opponent's 10,600 votes but Gordon had a close run battle with only 586 over his main opponent's 17,146 ballots.

CHIPS & BITS

A COMPUTER COLUMN FOR AMATEURS

By Charles MacDonald

Last month we started our discussion of programming with a few examples of BASIC programs. This month we will take a brief look at machine language programming.

BASIC cannot be used for some applications around the ham shack because it is generally implemented (built, written or put together) as an interpreter. That means that when you put an instruction such as "PRINT" in your program, the machine must start out by looking up the meaning of that command in a table of all allowed commands.

Next it must find from the table where it has stored the procedure to perform the command. The computer then goes through the appropriate procedure that may take 100 or 200 machine code instructions. The procedure built into the BASIC must test for all sorts of possibilities before it can actually do what you ask. For some time-critical applications, like receiving Morse code and displaying it on the screen, it is necessary to program in machine language. Amateurs who don't want to learn the intricacies of machine language can buy prepared software such as the Ham Radio Communications package by Galfo WB4JMD, written for the Apple II.

A computer like a PET or Apple or TRS-80 depends on a single chip microprocessor like the 6502. This chip can add and do logical operations such as ANDing and ORing. It can also do housekeeping tasks like loading a number into one of its internal storage locations, called Registers.

The power of the processor lies in its ability to perform a long list of instructions in sequence, and in the ability to jump to a new position in its list of instructions if certain conditions are met.

These conditions can be things like a number being negative, not negative, zero, not zero, and so on. These conditions are

tested by the status register of the 6502, which has 8 positions, each of which can hold either of two values: true (1) or false (0). These are set by the processor in the course of its normal operation. The flags are:

- 0 C (carry) – the result of an operation was greater than 255
- 1 Z (zero) – the result of an operation was zero or the two numbers in a comparison matched
- 2 I (interrupt) – interrupts have been disabled
- 3 D (decimal) – the processor is in decimal mode (two bed numbers instead of one binary number)
- 4 B (break) – a software break command has just occurred
- 5 V (overflow)
- 6 N (negative) – the result is negative

A typical small program might look like this:

800:A2 00	LDX #0
802:BD 00 09	LDA \$900,x
806:20 ED FD	JSR COUT
809:E8	INX
80A:E0 20	CPX #\$20
80C:DO F5	BNE \$802
80E:60	RTS

The numbers at the left are the address in the machine where the program is stored. The numbers on the right of the colons are the op-codes or the actual machine instructions.

The second column is the mnemonic, LDX is programmer's shorthand for load the X index register with the value of 0.

A large program may have thousands of steps and you want to be able to specify them in a very compact form. To actually convert from the mnemonic to the machine code one must use a program called an assembler, that converts the easily remembered mnemonic to the harder to remember code that the chip itself uses.

In our example (written for an Apple II computer) the first step we want the

If you would like to suggest topics for discussion in this column for future issues, write to Charles MacDonald, P.O. Box 6132, Station J, Ottawa, Ontario K2A 1T2.

computer to take is to load the X index register with zero. The X register is used later by the program. Next we load the accumulator (the main register of the processor) with the contents or location \$900 indexed by X. As X is zero, this will be location \$900 the first time. The dollar sign does not indicate how much the location costs; it indicates that we are talking in hexadecimal arithmetic (base 16).

Once we have loaded the accumulator we Jump to Subroutine (JSR) at the symbolic address "COUT" at actual address (\$FDED). This subroutine puts the character that is in the accumulator on the next available location on the screen. As most uses of the computer require that it put characters on the screen this subroutine is built right in at the factory. Most repetitive functions are best implemented as subroutines, in both BASIC and machine language.

Once the subroutine COUT has done its duty it returns to the program right after the JSR instruction. Next we INX, increment the X register, so that it now contains a 1. Next we compare X with hex 20. This will turn off the zero flag as the difference between the numbers is not zero. Now we come to a BNE, Branch if Not Equal. As the flags indicate that the comparison was not equal, we go back to \$802 where we load the accumulator with the contents of \$900 plus X or \$901. We put it on the screen, increment X and loop back again. This continues until the X register reaches \$20. At this point the comparison does show a result of zero so the computer does not take the branch, instead it goes to RTS ReTurn from Subroutine. The computer comes back from the program to wherever it was called from.

This discussion may seem overly technical and you should not worry if it is not all clear to you. Most users of small computers don't kneed to set that close to the inner workings of the machine. An

Amateur after all does not have to know the second conversion frequency of his receiver to talk to someone across the block.

Now let me give you a recommended reading list:

How to Program Microcomputers, Braden, Sams*

Microprocessor Lexicon, Staff, Sybex
6502 Assembly Language Programming, Lance A. Leventhal, Osborne McGraw Hill*

Z-80 Programming for Logic Design, Osborne, Kane, Rector, Jacobson, Osborne McGraw Hill

The Z-80 Microcomputer Handbook, Braden, Sams

Your Own Computer, Waite & Pardee, Sams

Programming the 6502, Zaks, Sybex
MOS Microcomputers Programming Manual, Staff, MOS Tchnology Inc.

Basic Computer Games, Ah1, Creative Computing Press

Apple II System Reference Manual, Staff, Apple Computer Inc.

The Applesoft Tutorial, Staff, Apple Computer Inc.*

Introduction to Microcomputers for the Ham Shack, Helms, Sams*

Programming & Interfacing the 6502, With Experiments, De Jong, Sams

The S-100 and Other Micro Buses, Poe, Goodwin, Sams

NCR Data Communications Concepts, NCR Corp., Sams

NCR Data Processing Concepts Course, NCR Corp., Sams

The books that have the asterisk are especially recommended. Your local computer store probably stocks a wide range of other books on almost all aspects of microcomputers. Next month we will look (at last) at the chip itself, and what it needs (besides a steady source of 5 volts) to keep it happy. See you then.

Lots of news from the West Coast starts off this month. The following information is supplied by the B.C.FM Communication Association in their December 79 Bulletin. Four new repeaters have been assigned frequencies as indicated by the following list. Unfortunately, I do not know if any of these are on the air yet, nor have I been given any information on their call signs:

Courtenay	146.310	146.910
Chilliwack	146.370	146.970
Nanaimo	144.830	145.430
Trail	147.930	147.330

Other repeaters in Vancouver, Fernie and Merritt were also being considered. In Vancouver, make the following change in your listing:

Vancouver VE7WRS 147.870 147.270

This machine was previously listed as 448.850/443.050. It is strictly an experimenter oriented repeater and will likely see lots of use by packet radio enthusiasts. Also VE7VIC in Victoria is apparently on the air now on 450 MHz but I do not have the frequencies.

From the Three Hills (Alta.) Club comes news of a repeater on the air. Although no frequencies were given, it is assumed that

the current listing for Three Hills can now be changed from:

Three Hills, VE6? to VE6FUN with the same frequencies.

Back in Ontario, Gord Woroshelo, VE3EYW would like to advise all interested parties that the Spring meeting of the Northern Repeater Council will be held Saturday, May 10, 1980 at Laurentian University in Sudbury starting at 1:00 p.m., and everyone is welcome.

In Ottawa, the members of the Carleton University Club would like to pass on the following update on their repeater system VE3OCR. Note that these changes will affect both the Quebec listings (Hull-Ottawa) and the Ontario listings (Ottawa-Hull):

Ottawa/Hull VE3OCR 53.150 53.150 1
Ottawa/Hull VE3OCR 52.525 52.525 1 T
Ottawa/Hull VE3OCR 52.150 53.150 A P 1
Ottawa/Hull VE3OCR 146.250 146.850 A E 1
Ottawa/Hull VE3OCR 223.340 224.940 AE1

That's about it for this month. Please send in any changes or corrections that you may have in order that we can get an updated repeater listing out in the May issue before the travelling starts.

Social Season

It's that time of year again, when plans are being made for vacation ... so here's the bill of fare for hamfest goers for 1980.

June 13-15 Lake Simcoe Hamfest, \$5 at the gate; Molson's Park, Barrie, Ont. For reservations and \$4 for pre-registration, write to Box 2283, Orillia, Ont. L3V 6S1. Auspices of Lake Simcoe Repeater Assoc. Inc. Flea market, displays, beer garden, barbeque.

July 5 Sixth Annual Ontario Hamfest, sponsored by Burlington Amateur Radio Club at the Milton Fairgrounds. \$3 at gate. Camping, food,

prizes, flea market. Gate open 1200 hrs July 4.

August 22-24 RAQI Annual Convention, Tadoussac, Que. Details later.

August 29 - Sept. 1 Maritime Hamfest, or 'Ham Ceilidh '80', the Maritime Hamfest reappears after a two-year absence, with a Gaelic title meaning 'gathering'. Hosted by Sydney ARC. Info and reservations, Box 1051, Sydney, N.S. B1P 6J7. Bring your own bagpipe and kilt. Haggis will **not** be featured at the banquet in deference to Sassenach stomachs.

June 7 The Central Ontario Flea Market and Hamfest

sponsored by Guelph ARC. For info VE3HGZ Rocco Furfaro, (519) 824-1157 plys the sidebanders dinner (contact Jack Kirby VE3AFN).

'BREAK-IN'

This is the title of a well-produced monthly journal of the New Zealand Association of Radio Transmitters, Inc. The publication covers general, technical, and regular features much like 'The Canadian Amateur', and runs to about fifty pages. Info on subscriptions and the like may be had from N.Z.A.R.T. Headquarters, Box 1459, Christchurch, NZ.

CARF comments on BCI/TVI

CARF is represented on those committees of the Canadian Standards Association and the Canadian Radio Technical Planning Board which are studying radio interference problems. As a result of such participation, CARF has recently drawn the attention of DOC to some of the results as they affect Amateurs. A sample of these comments appears in this letter to the Assistant Deputy Minister of Spectrum Management and Government Telecommunications of the DOC:

"The Canadian Amateur Radio Federation actively participates on CSA and CRTPB Committees concerned with EMC*. We note the divergent views among committee members in the CRTPB on the need for Government regulation on EMC matters together with a lack of funding for EMI Standards development in CSA has drastically slowed down EMC activity. Unfortunately, this is happening at a time when utilization has proven that more attention needs to be paid to EMC if Canadians are going to get the worth of their dollars spent on communications and electronics.

The members of CARF, who operate transmitters throughout the spectrum in all parts of Canada, are acutely aware of the large numbers of consumer electronic devices (receivers, hi-fi amplifiers, tape recorders, organs, micro-computers, full sized computers, electronic telephones, games, etc.) that

* Electromagnetic Compatibility is the government and industry euphemism for old-fashioned BCI and TVI insofar as Amateurs are concerned ... Editor.)

are susceptible to low levels of radiation. We are also aware of the great difficulties and controversiality in introducing regulations in the susceptibility area. However, whether regulation occurs or not, we believe there will be worthwhile benefits from continuing work in the following activities.

1. CSA Standards

Standards of performance in EMC, including susceptibility, can be used as guides by the interferer, the interferee and DOC inspectors who come in between.

The development of expertise in making simple measurements and disseminating information in the form of CSA Standards ultimately gives the public (and the judiciary) very useful guidelines.

The availability of voluntary standards should reduce the severity of 'social conflicts' and the involvement of Members of Parliament and the Judiciary that occur in some EMI cases. CARF intends to continue support to CSA EMC Committees in this work.

2. EMCAB-1

(Electromagnetic Compatibility Bulletin No. 1)

CARF believes that DOC's

EMCAB-1 was a step in the right direction. Even without regulatory teeth, EMCAB-1 -2 etc., if developed in conjunction with CSA and CRTPB on a consensus basis, would supplement or precede CSA Standards and significantly help engineers. CARF recommends that the necessary EMI environmental condition surveys be completed by DOC in order to support the development of future EMCAB bulletins.

3. DOC's 'How to Identify and Resolve Radio-TV Interference Problems'

A wider distribution of this pamphlet to the general public should be investigated, e.g. to public libraries. CARF will publicize it in Federation publications.†

4. Re-radiation Intermodulation

Radiation from high power transmitters (such as broadcast and some military) can be rectified and intermodulated in a vast number of places such as cables, power utility plant, rusty joints in supporting structures of all kinds including antennas, room thermostats, etc., and re-radiated at new

† obtainable from DOC offices ... Editor

frequencies that are products of the original mixed frequencies. CARF encourages work by DOC that may prevent further build-up of this type of EMI. We suggest the following lines be pursued:

a) Encourage the concentration of high power stations in locations away from built-up areas.

b) Establish limits in built-up areas on the field strength contours that will

apply to all existing and future broadcast transmitters and will minimize EMI problems.

c) Publicize preventive measures that can be taken by those who design and build structures and operate devices in areas where there are large numbers of transmitters and by so doing, minimize intermodulation products and problems.

CARF representatives will be pleased to discuss these recommendations either dir-

ectly with DOC or in the CSA and CRTPB Committee forums.

The Federation makes these recommendations, not only on behalf of its members, but also on behalf of all those in Canada who use radio and feel the impact of these problems. We sincerely hope that you will ensure continued work and progress in this very important field.

Yours truly,
W.J. Wilson,
President, CARF

Response on special calls

The recent request from DOC for comment on a policy for special calls brought some diverging replies to the CARF mailbox. CARF president VE3NR has replied to the DOC in a letter which noted that while special prefix calls may be useful in publicizing special events they also tend to create some confusion to some listeners. He wrote:

"We recommend that their use be allowed to Amateur stations in a province or region where an event of general interest to the public and lasting more than just a few days is being celebrated. This would allow Amateurs the opportunity of generating some publicity for the event and those hearing about it, time to do something about it...

"For those who would like to have a special prefix for contest operation, you may wish to consider 'contest' prefixes to be assigned permanently (on the same basis as the 3C prefix was permitted to Canadian stations during Centennial Year) for use only during contests.

It would work this way: if I were working in a contest I would use XX3NR while at all other times I would use VE3NR. After a few months it would become known that an XX station was 'contesting' and those in and those out of contests would govern their operations accordingly. Thus

the wishes of contest operators could be satisfied with the minimum of administrative burden on DOC.

"Generally however, it would appear that Amateurs are not much in favour of special prefix call signs being granted for insignificant reasons on an individual basis."

Reciprocal Operating

--WATCH IT!

As a result of the recent reciprocal ditching of the 'permission-to-operate' cards from DOC and FCC, not only will novices and technicians be able to operate in Canada, but Canadian digital licensees may operate in the U.S. It is emphasized, however, that such operations may be carried out only on the frequencies and modes authorized under the terms of their own licenses or certificates and even then they must not conflict with the regulations of the host country. Thus, for example Canadian operators who are

permitted to operate phone from 14.150 MHz to 14.200 MHz in Canada may not do so when in the U.S. because phone is not permitted there under FCC regulations; neither can they operate phone from 3725 to 3775 MHz in the U.S.

Similarly, U.S. novices, for example, if operating in Canada may only use CW and the power and frequencies allocated to them in the U.S. Other classes of U.S. operators are similarly restricted in their Canadian operations by the privileges accorded to them in their own country.

New CARF Vice-President

The CARF Board of Directors has unanimously approved the appointment of Don Slater VE3BID to the office of vice-president. Don will take over the vacancy left by Fred Towner VE6XX, who was recently elected vice-director of the Canadian Division of the American Radio Relay League.

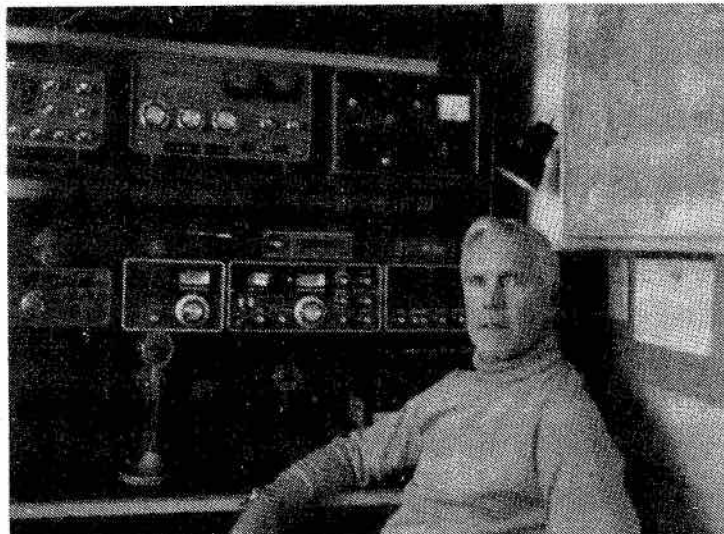
Don, by his hard work in the TCA ad department, has greatly contributed to its success during the past two years. He grew up in Kingston and later attended Albert College in Belleville.

Don's varied background is best summed up in the summary he sketched for TCA: Finance - Industrial Acceptance Corp; 'hustled' the bucks as a young fellow by driving taxi in spare time; Strong back: C.A. Pitts Construction Co.; Broadcasting: most of career spent in both radio and TV in sales and public relations for 26 years, the last 17 being with the CBC in Ottawa. Mobility: moved around - Kingston, Peterborough, North Bay, Cornwall and now living in Ottawa. Community activities - active in Kinsmen, Lions, Kiwanis and Masonic Lodge plus being a Scout leader and an interest in Little League hockey and baseball. Hobbies - besides working an FT-101 with a 60-foot tower, Don has set up the VHF marine communications for a large Ottawa yacht club. Ski patrol, pistol and revolver shooting, motorcycling and motor boating fill the 'spare' time left over from CARF activities. He

even gets on the air on such occasions as 'the boss', Laura VE3KEX, relinquishes her pursuit of DX.

Don's good business sense is a welcome addition to the

Federation as membership grows and financing more and more activities by CARF on behalf of Canadian Amateurs becomes necessary.



Don Slater VE3BID

Instructors, Unite!

Lou, VE7CGE, advises of what may be another 'first' for the West. A new organization has been formed in VE7-land, whose purpose is to meet the recognized need for Amateur radio instructors to get together and exchange ideas and training methods for the betterment of their students.

Sample examination questions, based on the CARF Study Guide and the ARRLs 'Understanding Amateur Radio', are regularly updated and disseminated to the membership. The group is known as: 'British Columbia Amateur Radio Instructors'.

(For info, contact J.A. (Lou) Beaubien, 4813 Fairview Drive. Burnaby B.C. V5C 3R7.

TRANS-CANADA PACKET RADIO SOON

VE7APU in Vancouver has a packet radio beacon on 14.076 MHz. It's the start of an HF packet radio interface with local nets, starting with Vancouver, Saskatoon and Ottawa. It operates on 75 baud (temporarily) for 30 seconds every 5 minutes. It uses an HDLC-based protocol. In Ottawa, a packet repeater on 222.34 has replaced the packet test beacon operating since December.

LDX

By Garth Hamilton VE3EUP
P.O. Box 1156
Fonthill, Ont. L0S 1E0

Abu Ail J28AZ/A 29-30 March QRV duration unknown.

A4XID Oman - very active on 10m at 12Z; 14.220 at 17Z.

BY - China, news is constantly changing on this one, first it's on, then it's off and now it is just one more signature needed to get it all rolling. ZL1AMO and company to practice from /K Kermadec and one other location as yet unnamed before going.

D2A/OK3TAB is now QRT and will QSY to TJ and hopefully be QRV from there.

ET3PG - Two ops keeping this one very active at 16Z and 03Z on 20m.

FB8ZO - Very active lately 14.030, 14.160 MHz at 11Z, 17Z and 22Z. QSL, F6EYB.

FB8W - You'll cry over this one; there is a ham on Crozet Is. but his C.O. won't let him Ham it up as he fears it may be detrimental to experiments on the island.

FR7 - ZQ/E active 14.120 MHz at 16Z and 21.160 MHz at 17Z; usually a 'list' operation.

/G and /T; the trip by the three Americans was wisely cancelled due to the state of emergency existing on Reunion because of widespread destruction on the island left by a passing monsoon.

FW8SC - Active from Wallis Is. 14.220 MHz at 08Z. QSL Box 15, Lano, Wallis Is. via Noumea, New Caledonia.

J5 - Guinea; - Bissau Angelo hopes to be QRV again as D4CBS/J5 in late March and hopes to go to S9 Sao Thome in July.

J7DBB - Lloyd and Iris travelling in the Caribbean will also be VP2KAH. QSL's go via YASME.

JX9WT - to go QRT this spring and currently very active 10-80m.

KH2AD - Western Carolines to be active in mid-April for a week. QSL W6TPC.

S2BTF - Peter has been on 28.750 at 13Z, 21.345 at 01Z, 14.265 at 11Z.

TA2KS - lots of activity from here on 10m. There is a published list of authorized stations but I don't know if DOC has seen

this and lifted our ban on working Turkish stations*

TL8JM - John is back again on 20m split frequency and is to be joined by several others who have licences but no equipment as yet.

TZ4AQS - again QRV 21.275, 21.295 or 21.305 MHz at 19Z.

TZ2/VE3HRS - Ken is home again and says someone by the name of Jack pirated his call. If you didn't work him between the dates of Nov. 7 to Dec. 5, 1979, then you'd best save your cards!

VK0 - The leader of the mapping expedition, Conn, has been licensed as VKORM. As leader, I don't know how much time he'll have to operate. He has proposed 'list' operations between 13Z and 19Z. Patience will be necessary as he is not an experienced Amateur and though coached I doubt he will satisfy the demand by 'list' operation. The radio operator won't be leaving the vessel as he is required to stay on board. Conn is reported as having said an Amateur will be included next time and that several more trips are planned.

VU - Laccadives: DJ9ZB says he received a reply from the Ministry of Home Affairs of India stating that no permission to operate from there would be entertained from either foreign or resident nationals.

ZA - G3SCP claims to have a licence and will operate at Easter time.

ZM7 - Lots of noise on this one, but no real details. 5W1AT has a licence, ZM7AT, but no dates.

4S7 - Lots of activity from here and there is no reason for not getting this one if you need it.

* It's up to the Turkish government to do this. If it wished to lift the ban, it would notify ITU. DOC would act on ITU notice only. To date there is no official notification of the ban being lifted. Turkey is, therefore, still on the DOC banned list as published in TCA...Editor.

5H3FW - Frequently on Africana Net, 21.353 MHz at 18Z. QSL DF4TA.

5X5 - A West German Diplomat in Kampala is trying to get a licence and he confirms that the last legal operation was 5X5NK.

9A1ONU - San Marino; the official prefix will be used by OE6EEG in late March, sponsored by UNICEF.

9U5 - 9U5/AC who has shunned the DX fraternity as a whole will be QRT shortly. There are two other Amateurs trying to get on from there; ON4TC is already there and 9L1GA has been transferred there as well.

(Thanks to Canad-x Long Skip and the DX info net, Geoff Watts DX news-sheet, QRZ-DX, Long Island DX Bulletin and The DX Bulletin and other individuals.)

PROPAGATION TO THE PACIFIC

20 Metres

0200Z - Opening to eastern and central areas followed shortly by western areas.

04Z - Start of peak conditions on the short path, under good conditions the band will be open all night.

12Z - Sunrise peak as daylight arrives here. VK6's peak at 14Z.

16Z - Long path is now open to the eastern areas; look regularly for FO8's, etc.

19Z - Long path moves to the west with VK's appearing with VK6's coming along about 22Z.

15 Metres

16Z - Opens long path to eastern areas moving to ZL by 18Z and VK's a little later. This is a little used path and not much activity.

22Z - Now most activity is short path lasting to about 03Z on 10m.

20Z - Band starting to stir on short path; have never encountered long path activity on 10m.

Two items of interest on the DXCC countries status scene. First is regarding the status of Serrana Bank and Roncador Cay. The USA proposed to turn the administration of the territory over to the Columbians. As it is close to the Columbian coast, it would mean that it would be deleted from the DXCC countries list. Along with Serrana Bank would go Bajo Nuevo because its reason for existence is that foreign soil lies betwixt it and the mainland. However, Nicaragua is laying claim to this area as well, so the March 1st

transfer is postponed until this dispute is settled. An HK group is going on DX-pedition to both areas this summer we are told.

Next we move to the new nation of Kiribati in the central Pacific. This new nation was formed from the amalgamation of three British Territories: the Gilberts including Ocean Is., the British Phoenix Is. including Canton Is., and the Line Is. For DXCC purposes they will be known as Western, Central and Eastern Kiribati. New prefixes are T3K for VR1A, T3P for VR1P, and T3L for VR3.

More news on the saga of George Collins VE3FXT/HS4AMI and his attempt to activate Burma. He has supposedly arranged a UNICEF expedition into Burma for what purpose we are not sure. It is, however, to have an Amateur DX-pedition along with it like 3V8ONU had with OE6EEG and company. The operators haven't been identified as yet, but all should be from SE Asia and the proposed dates are April 15 to July 15, 1980.

The difference is that OE6EEG is himself a doctor and there has never been any trouble with the QSL's. He also didn't ask for tax deductible contributions to UNICEF in exchange for the QSL. George claims the QSL's will be issued as numbered receipts for your contribution. The QSL's go via UNICEF, Bangkok. George has also asked for help for equipment from local groups in Ontario. At present the group has asked for a written proposal which is to include the question of how QSL's are to be handled. Hopefully they will get satisfactory answers and in time they will appear.

March						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

April						
S	M	T	W	T	F	S
				1	2	3
				4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

N4XX Propagation Forecast

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
16-0	17-H	18-H	19-A	20-H	21-L	22-H/L
23-H/L	24-L	25-H/L	26-H/L	27-H	28-H	29-A
30-H	31-L	1-H	2-H	3-H	4-H	5-H
6-A	7-A	8-A	9-H*	10-H/L	11-H	12-H
13-H	14-H	15-A	16-A	17-L	18-H/L	19-H/L
20-L	21-H/L	22-H/L	23-H	24-A	25-H	26-H
27-L	28-H	29-H	30-H			

*start of 54-Day Prediction

AMATEUR EQUIPMENT DELIVERED TO YOUR DOOR

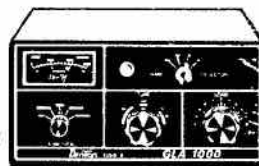
(WE PAY SHIPPING!)



MFJ-941B Versa tuner II

This accurate unit has SWR and dual range wattmeter, antenna switch, built-in balun, 300W RF output. Matches everything from 1.8 thru 30 MHz. You can use just one antenna and increase the useable bandwidth. Has SO-239 connectors. Mobile mounting bracket.

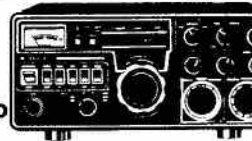
\$124. postpaid.



DENTRON GLA-1000 linear amplifier

Freq. coverage 80 to 10 meters, covers most MARS freq., RF drive: Max. 125, power consumption: 117 VAC 50/60 Hz 12.5 Amps, factory fused at 15 Amps. 234 VAC 50/60 Hz 7 Amps, DC input: 1 KW CW and 1200W PEP SSB. Final tubes 4D-50A tubes (6LQ6).

\$589. List. Call for deal



KENWOOD TS-700SP all mode 2m transceiver

Covers the entire 2 meter band. SSB, CW, FM, AM, and semi-break in CW, side tone monitor, digital frequency readout, receiver preamp and 600 KHz repeater offset operation within all 2m repeater subbands including the new 144.5-145.5 MHz. 10 watts RF output complete with AC/DC power supply.

\$ 1199. Free mic!!

YAESU

**YAESU FT-207R
synthesized Handi-Talkie**
144-148 Mhz. 5 KHz steps, output: 2.5W hi/200 mW low, 4 memories plus programmable offset, prior ch., memory band & auto scan, keyboard encoder freq. entry, 2 tone input from keyboard, keyboard lock, programs odd splits, auto. battery saver for LED, rubber flex antenna & 15 hr. wall charger.



\$479. List. Call for deal



DRAKE TR/DR7 general coverage digital R/O transceiver

Covers 160 thru 10 meters, reception from 1.5-30 MHz continuous, 0-30 MHz with optional Aux-7 modes: USB, LSB, CW, RTTY, AM equiv., true passband tuning, RIT, built-in RF wattmeter/VSWR bridge. SSB 250W PEP, CW 250W AM equiv. 80W. Power supply required for AC operation.

\$2098. In stock



TEN-TEC Century 21 CW transceiver

Full break-in, 70 watts input, all solid state, built-in speaker, receives CW or SSB but transmits CW only, overload protection, offset receiver tuning, adjustable level sidetone, built-in regulated power supply. Crystals are provided to cover the 80 thru 10 meter bands.

\$ 539. In stock



CDE Ham IV antenna rotor

Pinpoint accuracy with snap action switched wedge brake and rotational controls. Tower mounted only. Turns 12 sq. ft. of antenna. 8 conductor cable required.

\$239. Special!



KENWOOD TS-120S HF transceiver

No tune up! With digital display, cooling fan, IF shift, protection for the final transistor, VOX, noise blanker, 25 KHz marker, 80-10 meters, WWV, modes: SSB and CW, 200W PEP SSB, power requirements: R.O. 7A 13.8 VDC, T. 18A 13.8 VDC. Size: 3 1/2" H x 9 1/2" W x 13 1/2" L.

\$ 1049. Call for deal



KENWOOD TS-180S solid state HF transceiver

Covers 160-10 meters, digital frequency control with 4 memories and manual scanning, 200W PEP/160W DC 160-15 meters and tunable noise blanker, dual RIT (VFO and memory/fix) SSB, CW, and FSK, 13.8 VDC operation, and built-in digital display to show VFO freq. and difference between VFO and M-1 memory freq.

\$ 1659. Call for deal

You can use your
Master Charge or
VISA when you order.



HAM



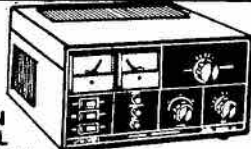
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DENTRON DTR-2000L 2000W precision linear amplifier

Features a Broadcast proven 8877 tube, freq. coverage 160 thru 10 meters, covers most MARS freq., modes: USB, LSB, CW, RTTY, SSTV, power requirements: 234/117 VAC 50/60 Hz. RF drive power 125W max and 65W RMS min for 1 KW DC input. 1.8-21 MHz 2000W PEP.

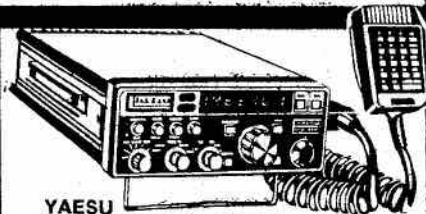
\$ 1699 In stock



YAESU FT-101ZD HF transceiver

Covers: 160 thru 10 meters plus WWV, modes: LSB, USB, and CW, built-in power supply, digital and analog frequency read-out, 6146B final tubes, RF speech processor, variable IF bandwidth, noise blanker, heater switch, VOX, attenuator 10 dB or 20 dB selectable.

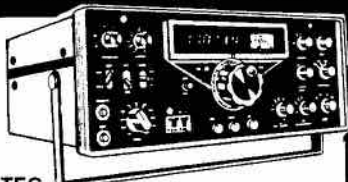
\$ 1299 List Call for deal !



YAESU CPU-2500RK 2m FM transceiver

With 800 PLL ch., automatic scan over entire 2m band, 4 memories, tone burst, 25W hi/3W lo, 13.6 VDC at 8 amps, freq. coverage 144-148 MHz. Keyboard mic allows remote input of memory or dial freqs., up/down scanning control, aux. repeater split selection to 4 MHz, and 2 tone input for autopatch or control link.

\$725. List Call for quote !



TEN-TEC Omni D Series B HF transceiver

Totally solid state, 200W all bands with 50 ohm load. Covers 160 thru 10 meters. Features digital readout, VOX and PTT, 4-position CW/SSB switch 8 pole crystal filter, crystal calibrator, notch filter, zero beat switch, SWR bridge, adjustable sidetone, operates on 12 VDC for mobile. Full break-in CW.

\$ 1735. In stock



NEW KENWOOD TS-520SE High Quality HF transceiver

200 watts PEP SSB, 160 watts DC CW, 160 thru 10 meters, noise blanker, 3 position amplified-type AGC, RIT, 8 pole crystal filter, built-in 25 KHz calibrator, VOX, PTT, MANUAL operation, speech processor, semi-break-in CW with sidetone, low power tune up 20 dB RF attenuator and built-in speaker.

\$ 929. In stock

BENCHER BY-1 Iambic paddle

The Ultimate iambic paddle. Features solid silver contact points, full range adjustment, non-skid feet and heavy steel black textured base.



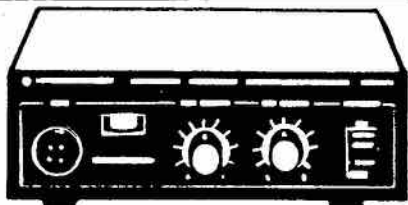
\$ 59.95

BENCHER BY-2 Iambic paddle

The BY-2 has all the features of the By-1 but comes with chrome base.



\$ 74.95



KENWOOD PC-1 phone patch

A matching phone patch for Kenwood equipment with NULL control, RX and TX gain control. Must be connected between a transceiver and a phone line.

\$ 82.95 In stock

KENWOOD TR-2400 synthesized 2m hand-held transceiver

Featuring: 143.900-148.495 MHz, operates on MARS, 10 memories, auto. memory scanning for busy or open channel, mode switch for standard repeater \pm 600 KHz, offset, simplex and non-standard repeater splits, LCD digital readout, built-in touch tone generator with 16 button keyboard, and 1.5 watts RF output. Includes flex antenna with BNC connector, NiCad battery pack and charger.

\$ 499. In stock



KENWOOD TR-7625 25W transceiver

Memory channel with simplex or repeater operation \pm 600 KHz transmitter offset, mode switch, full 4 MHz coverage on 2m (144.00-147.995), 800 channels, 5 KHz offset switch, MHz selector switch, digital freq. display, unlock indicator for transceiver protection.

\$ 659. In stock

TRADERS

ario M3J 2K1

Phone: (416) 661-8800

New Store Hours:

Tues-Wed 10 am to 6 pm

Thurs-Fri 10 am to 9 pm

Sat. 10 am to 3 pm

Sun & Mon appointment only

Regulations changes okayed

NEW FREQUENCIES AND PRIVILEGES DX WINDOW ON 40 METRES

Long-awaited changes and consolidation of the Amateur regulations recommended by the CARF National Symposiums were signed by out-going DOC Minister David MacDonald, who left office on Feb. 26. The official public notice was to be in the Canada Gazette for March 12, but the changes became effective the day they were signed.

The points of most interest were frequency changes which now permit Advanced Amateurs to use phone between 7.050 and 7.100 MHz, thus opening a slot for DX phone operators, and Amateur ticket holders may now, after six months of operating, use radio teletype (F1) in the bands between 3.500 MHz and 28.100 MHz and phone (A3) in the 160 metre band, from 1.800 to 2.000 MHz.

More good news was the official opening of 902 to 928 MHz to Amateurs. The bad news was that, despite vigorous recommendations for A3 and F3 from CARF and others, the bottom part of the 450 MHz band, 420 to 430 MHz, has been removed from the Amateur bands in a DOC decision to re-allocate that slice to other services.

The changes also provide for all classes of U.S. Amateurs to operate in Canada without prior registration, as recently agreed between DOC and the FCC.

They must, however, use the call sign, frequencies, emission types and transmission modes authorized in their own country for their class of licence, **IF** these are authorized by the Canadian regulations. This also works on a reciprocal basis for Canadians operating in the U.S. under a similar formal order issued by the FCC last December.

(That order, incidentally, in noting the reasons for deleting the old permit-to-operate said that the form originally had been designed for the purpose of "facilitating investigation of rule violations by Canadians operating in the U.S. under a similar formal order issued by the FCC last December.")

CQ MEDIC

A radio-alarm system is now being marketed for the elderly or disabled which enables them to call for emergency aid when the telephone is out of reach.

When a button on the unit (about the size of a cigarette package) is pressed, a phone-patched transmitter is activated which dials the number of Medic-Alert (Canada) Ltd., which in turn alerts ambulance, relative, or friend as previously arranged.

The device also available as a neck pendant, has a 250 ft. range and sells for about \$450.

(Globe and Mail, Toronto)

that the number of violations by Canadians operating in the U.S. was "extremely small" and thus the permits were redundant.)

The amended regulations take into account the built-in measuring devices and stability of modern transmitters by deleting some of the former sections which dealt with these matters, including power measurement, and substituted wording in keeping with modern technology.

Contrary to some rumors circulating just after the amendments became effective, the rules for keeping a log were **not** changed, although successive CARF symposiums recommended scrubbing mobile logging. According to one DOC official, the requirement for logging as it applies to all services is to be reviewed at a later date in order to bring the rule in line with modern technology and usage.

Two other minor changes were the dropping of the requirement for logging the language of a QSO if it is in other than English or French and the 'Experimental' has been dropped from the service name. It's just the 'Amateur Service' now.

Public notice of the changes, complete with details, was scheduled for printing in the 'Canada Gazette Part 2' for March 12. It will be reprinted in our May issue.

CARF Brief on 900 MHz band

CARF President Bill Wilson recently wrote to DOC in response to its notice DGTR-019-79 regarding the establishment of a Personal Radio Communications Service (PRCS) in the 890 - 960 MHz region of the radio spectrum. He said:

"This proposal was discussed in two workshops at the CARF third Annual Symposium in Montreal last November and we request that you take the results into account.

"Those who became Amateurs after having been introduced to radio through the General Radio Service generally favoured the proposal as being one which would provide a much better quality personal communications service for those who were primarily interested in short distance communications.

"The propensity of some GRS operators to modify their equipment to operate outside the authorized band causes considerable concern. It was felt by some Amateurs that similar modifications could be easily made to any 900 MHz equipment and out-of-band operation could become a problem. Propagation at 900 MHz in built-up urban areas is such that the location of non-identifying stations is

very difficult, so the Symposium felt that, if the proposed band were located adjacent to the 902 - 928 MHz band, there could eventually be problems of out-of-band operation that would be very difficult for Amateurs and DOC to resolve. It is therefore recommended that the proposed personal radio communication service (PRCS) band be outside the proposed 902 - 928 MHz Amateur band and separated from it by at least five MHz.

"Taking into account the extensive experience of Amateurs with two metre repeater operation, the Symposium also recommended that PRCS repeaters be licensed only to responsible clubs or agencies and that the equipment used be required to be type approved. Further, the Symposium recommended that PRCS operators be certified as was proposed by the GRS operators themselves a few years ago. We make these latter recommendations because we have found that effective spectrum utilization and communications in a system operating around a repeater requires good equipment and operators who recognize the need for sharing, and cooperate accordingly.

"A group of Toronto

Amateurs have also considered your proposal. They express the concern that Amateurs have about the effect of 900 MHz radio energy on human tissue. It would seem likely that the introduction of 900 MHz equipment will allow the production of hand-held units and their wide-spread use in close proximity to the body could potentially be dangerous over the long term. We therefore urge that more investigation be undertaken to determine the precise effects of radiation at 900 MHz before the introduction of such equipment for use by people who are not aware of this problem.

"The Department should seriously consider some form of automatic station identification to be incorporated into transceivers in this band to permit more effective monitoring and enforcement.

"We do not believe that pressure presently exists for access to computers using a PRC type of service. Should this become a desirable feature of PRCS at some time in the future, we would be glad to tell you of Amateur experience so that pitfalls in Personal Radio Communications Service may be avoided.

 CARF

MORE Amateur Exams

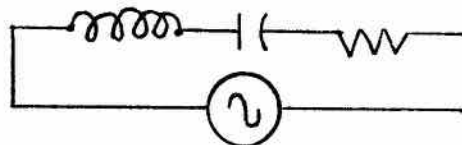
to stimulate your mind

In order to assist those writing their Amateur exams, CARF has obtained the January set of exams from DOC. They are printed here as a guide to the type of questions which can be expected. The regulations questions are not reproduced here as they are largely a matter of memory work. They consist of 40 multiple choice questions with four choices on each.

AMATEUR THEORY EXAM

(Only 10 out of 12 questions need be answered. Marks will be accorded the best ten answers. Each question has a value of 10 points.)

1. What are the four physical factors which determine the resistance of a conductor?
2. Explain how this resonant circuit would behave if
 - a) the frequency was increased?
 - b) the frequency was decreased?



3. Draw a common base PNP basic transistor amplifier circuit using resistors and batteries. Indicate the polarities of the bias voltages and the direction of electron flow in the different branches of the circuit.
4. You have a piece of equipment that requires a DC supply between 22 and 26 volts at 500 ma. (a) draw a circuit diagram of a full-wave filtered power supply selecting your power transformer from the ones listed below, whose primaries are designed to operate from 120v 60 Hz:

	Secondary Volts:	Current:
#1	24 v	300 ma
#2	12v-0-12v	1.2 A
#3	6.3v-0-6.3v	1.0 A
#4	24v-0-24v	1.0 A

- (b) Give a brief description of its operation and the function of the different components.
5. Explain why double sideband amplitude modulation is considered wasteful.
 6. When you frequency modulate a carrier with a fixed frequency audio signal that is varied in amplitude, how is the carrier affected?
 7. What do you associate balanced modulators with and what is their function?
 8. Explain the function of the mixer stage in a superheterodyne receiver.
 9. What do you understand by neutralization and why is it necessary in certain circuits?

10. Explain why it is possible to use HF frequencies for long distance communications. Illustrate by a drawing if you wish.
11. Define the terms a) antenna resistance and b) radiation resistance.
12. You have been authorized by a departmental radio inspector to operate A3 or F3 on the frequency band 28.100-29.700 MHz. Your 100 watt input to the final of the transmitter is interfering with the reception of television channel 2 (54-60 MHz) and you are forbidden to operate until the interference is suppressed;
 - a) What is the likely cause of the interference?
 - b) What method or methods can be used to suppress the interference?

ADVANCED AMATEUR EXAM

(Only 10 questions need to be answered. Marks will be accorded the best 10 answers. Each question has a value of 10 points.)

1. Describe the action that takes place in an inductor when a voltage is suddenly applied to it.
2. What is the impedance of a series circuit which contains a resistance of 5 ohms, an inductive reactance of 22 ohms and a capacitive reactance of 10 ohms?
3. (a) Draw a circuit diagram of a radio frequency amplifier that is self-biased showing how the high power tube may be protected from excessive plate current when a preceding stage is keyed.
(b) Describe the operation briefly.
4. (a) Draw a circuit diagram of a full-wave voltage doubler.
(b) Explain the operation of the circuit.
5. (a) What determines the channel width of a double sideband amplitude modulated RF carrier?
(b) Explain the effects of overmodulating the above carrier.
6. Define 'frequency deviation' as applied to frequency modulation transmissions.
7. Draw a circuit diagram of a balanced modulator and briefly explain its operation.
8. How is it possible to receive a single sideband modulated signal using an AM receiver which has a beat frequency oscillator?
9. Draw a block diagram of a single sideband transmitter using the phasing method and explain briefly the operation.
10. (a) Draw a sketch of the ionosphere layers and identify each layer with their average heights.
(b) Give a brief description of the behaviour of the ionosphere during the day and during the night.
11. What is the velocity factor of a transmission line?
12. (a) Name two likely areas in a transmitter installation that generate harmonics.
(b) What would you do to cure the problem in each case?

DIGITAL TECHNIQUES EXAM

(Each question has a value of 20 points. Answer any four of the first five questions and either one of the last two.)

1. (a) What does modulation mean?
(b) Give examples of the most common methods of digital modulation and describe one of these in detail.
(c) Which bit rates can be practically achieved on a 30 kHz radio channel. Explain why.

2. (a) Describe two error control techniques that can be used to overcome the transmission errors on radio channels.
 (b) Describe the possible sources of errors on a fading radio channel.
 (c) Describe the diversity techniques that can be used to cope with errors on a fading radio channel.
3. (a) What is meant by a random access channel and what are the main characteristics of packet radio?
 (b) Consider a population of mobile digital terminals and a single base station. In which case or cases is polling better or worse than a random access scheme?
4. (a) Which methods do you know that can be used to digitize voice over a 30 kHz radio channel, for communications between mobile stations?
 (b) Is it desirable to integrate on the same mobile radio channel both analog voice and digital data? Which methods would you suggest for integrating voice and data?
 (c) On what basis would you select the packet size for a pure ALOHA random access channel if you were transmitting digital voice?
5. (a) Assume you have at your disposal between point A and point B a total bandwidth of B hertz modulated at one bit per hertz. Packets arrive at one end of the channel and join the queue of waiting packets if the channel is not available. If you want to minimize the average delay per packet (transmission time and waiting time) would you:
 1. Split the channel into M subchannels of B/M bits per second OR
 2. Use a single channel of B bits/sec? Explain why.
6. (a) Draw a block diagram of a packet radio terminal identifying all of its major components. Describe the functions of each component.
 (b) Draw a block diagram of a packet radio repeater identifying all of its major components. Describe the functions of each component.
7. (a) A number of packet radio earth stations communicate with each other through a geostationary satellite. Would it make sense to use the Carrier Sense Multiple Access protocol in this case? Explain why.
 (b) What other protocols could you use? Why?

After each exam sitting there are always some books left over because of 'no-shows'. Instructors and clubs which run courses can contact their local District DOC office and ask for any unused exam books after each exam session. They are given out on a first-come, first-served basis until the supply is gone.

FCC gets with it!

The FCC has come out of the dark ages and into the 20th century by following the Canadian lead in permitting packet radio to start in the U.S. on March 17. In wording which is similar to DOC phraseology, the FCC under a new ruling, now permits ASCII transmissions for conventional communications, computer-to-computer communication, computer control

of repeaters and other stations and "packet communications".

On present RTTY frequencies from 3.5 MHz to 21.25 MHz the maximum speed will be 300 baud using F1. From 28 to 225 MHz F1, F2 and A2 may use up to 1200 baud. Above 420 MHz F1, F2 and A2 may be used up to a maximum of 19.6 kilobaud.

To balance off this

advance, the FCC hit U.S. operators with a retrograde ruling that repeater owners are now to be held responsible for what goes on over their repeater stations. According to a California FCC official, under the Commission's interpretation of the U.S. rules, violations over a repeater will be laid at the door of the owner.

(Tx HR Report)

Repeater power alternatives

With today's emphasis on energy conservation and alternatives, some repeater groups are turning to solar and wind-powered devices for conservation and emergency power purposes.

The following are some sources for solar cells in Canada. Data sheets, application notes, prices and delivery information can be had by writing to them.

Lenbrook Industries Ltd.,
1145 Bellamy Rd.,
Scarborough, Ont. M1H 1H5
(Handles Solarex Cells made in the U.S.)

Motorola Semi-Conductor
Products,
2383 Ness Ave.,
Winnipeg, Manitoba R3J 1A5
(Dick Dupchak is the expert here. 204-837-9242. Motorola has branch offices across Canada that can help.)

Philips Electronics Industries
Ltd.
116 Vanderhoof Ave.,
Toronto, Ont. M4G 2J1

Solar Cells Ltd.,
P.O. Box 1025,
Burlington, Ont. L7P 3S9
(Don Adkinson, Mgr., 416-335-4713.

T.P.K. Solar Systems Inc.
45 Powell Ave.,
Ottawa, Ont. K1S 1Z9
613-233-1842

The situation on wind turbines is quite different. Bristol Aerospace builds them, but of course they are for industrial needs and have large outputs. The expert in this field is Dr. Rangi of the Wind Energy Program, Institute of Aerophysics, National Research Council, Low Speed

Aeronautics Laboratory, Montreal Rd., Ottawa K1A 0R6. Dr. Rangi is getting together a package of information that Amateurs could use to build their own turbines. Before you write him, call the

nearest Airport and get full information on wind speeds at the proposed site, he will need it to answer your questions.

-VE3NR

"BY" on the air?

CARF News interviewed Tom Wong, VE7BC, before he left again on April 9 for China on a business trip. Tom said that the chances of anyone getting on the air from that country are rather slim but that one can never tell what might happen. So far, the 'BY' prefix has been heard legally only once, and that was for a five-minute demonstration by a Japanese Amateur who made one JA contact. The resulting bedlam from DX hounds brought a quick shutdown. The Chinese kept 10 metres for their fixed service which they use in an

almost Amateur fashion for communication between high provincial officials and the capital, according to Tom. In case you overhear it you will not be much further ahead than the Chinese people who hear it as the QSOs are conducted in Mandarin Chinese, a language more or less peculiar to the educated.

Two stations using BY1A and BY2X livened up proceedings in the DX bands during February but the DF bearings and other evidence cast doubts on their authenticity.

No Code Regs

"The use of any secret code or cipher as any part or the whole of any transmission is not permitted." GRRII 52.(8).

In view of this regulation in Canada, and the even more explicit rules of the FCC concerning Amateur communications, it is most surprising and disturbing to find, in an American magazine claiming to have served Amateur Radio for the past 35 years, the following advertisement:

"Ciphers for Security!!!

Possess the capability to communicate with encrypted messages!! Military proven countermeasures to signal surveillance. Free information. Write ..."

While perhaps (and hopefully) this advertisement is not intended to encourage or advocate disregard of the law, it could result in misinterpretation by some Amateurs.

A breach of GRRII 52.(8) could well result in loss of your licence and certificate. Caveat Emptor! -VE3ZS

Visual Ear for the Deaf

Developmental work has now been completed and licensing arrangements between the federal government and the Ontario Mission of the Deaf (OMD) have been announced for the manufacture, marketing and distribution of a new device called the Visual Ear.

The Visual Ear is a combination keyboard and alphanumeric display unit which is acoustically coupled to the phone. It is light (about 1 kg including batteries), portable, and the user can set it up by simply placing it next to a telephone in a store, home, or even a telephone booth.

By typing out messages, people with hearing and speech impediments will be able to 'talk' to anyone who has a Visual Ear or compatible device, such as a revamped teletype machine. Messages appear electronically on the display unit much the same way news is spelled out on cable TV sets, with a maximum of 24 characters shown at once.

It is expected that the

AUX BARRICADES AGAIN?

• The alarm bells are ringing again on the 220 MHz band. The FCC in the U.S. has proposed a new inland marine service in a document dated January 16. It mentions 216 to 220 MHz in a number of places in the notice but in one place states 216 to 225 MHz as the proposed band. It has not yet been sorted out as to whether this was a typographical error, wishful thinking or a Freudian slip on the part of the FCC.

device will retail to the deaf for \$300-\$400.

DOC's aim was to help the handicapped, as well as stimulate Canadian industry. The Visual Ear can also be used for data entry and retrieval functions. It is suitable as a low-cost computer terminal.

The device operates at 60

wpm, which is compatible with the deaf teletype network, and 100 and 300 wpm, which are computer compatible.

The idea for a lightweight, inexpensive, and portable device of this type was first developed by the Ontario Mission of the Deaf. □

-from DOC 'Modulation'



Amateur links for CORK

The highly successful Amateur communications at the Olympic sailing races in Kingston, Ont., in the past so impressed the racing committees that Amateurs have been asked to assist again this year during the Canadian Olympic Training Regatta to be held Aug. 22 to 30.

Amateurs who enjoy sailing and operating at the same time and who would like to participate should contact Bill Bushell VE3DXY, Communications Director, CORK

Executive Board, Box 6000, Kingston, Ont. K7L 5A6 as soon as possible. Those who participated last year will be given priority for places on the communications team.

-VE3DXY

NEW RUSSIAN BIRDS

Two Russian satellites designated RS-3 and RS-4 may have appeared by the time this issue reaches readers. Birdwatchers had been alerted to watch for unusual telemetry between 29.3 and 29.5 MHz.

— Observations of a Traffic Handler —

Since our preferred method of delivery of formal messages is by means of a local telephone, it always helps if the originator includes a phone number in the address. If the number is not known, which is often the case, it is possible to reach Directory Assistance in any area (no charge) by following instructions in the local phone book. (i.e. 112 - Area Code - 555-1212). This will save the delivery station having to do it. If they cannot provide a number, you will know before you start that the chances of prompt delivery are lessened.

In the absence of a phone number, the delivery station has four choices of action. He can:

1) If he's lucky, find it in his telephone directory.

EXTRA CLASS IN BC?

We read recently that there are 'Extra Class' and Novice sessions being held in the Okanagan these days. Is it that the North Okanagan Radio Amateur Club has some new members from south of the border, or did the Ogoogo have something to do with it?

(NORAC "Ragchew" Dec 79)

IT'S REALLY ME, EFFIE

Now there's a new device that allows telephone access to a computer only after identifying the caller's voice. This Japanese gismo can memorize and recognize voice patterns, despite changes in speech wave forms or individual differences, by transforming up to 128 words into digital signals.

2) Try and get it from Directory Assistance.

3) If this fails, mail the message to street address (at his own expense).

4) Service back to the originator to report inability to deliver.

5) The one thing he **must not** do is to file the message in the waste paper basket and forget about it. Acceptance of a message means taking responsibility for further relay or delivery.

A further difficulty arises if the destination is an address which has a phone listed, but in another name or with different initials. A

correct first name or initials helps. (Try searching several pages of the directory for a Smith!)

It is not surprising, considering the number of relays a message may have to go through, that inaccuracies creep in along the way. The usual reply to a request for confirmation seems to be "That's the way I got it".

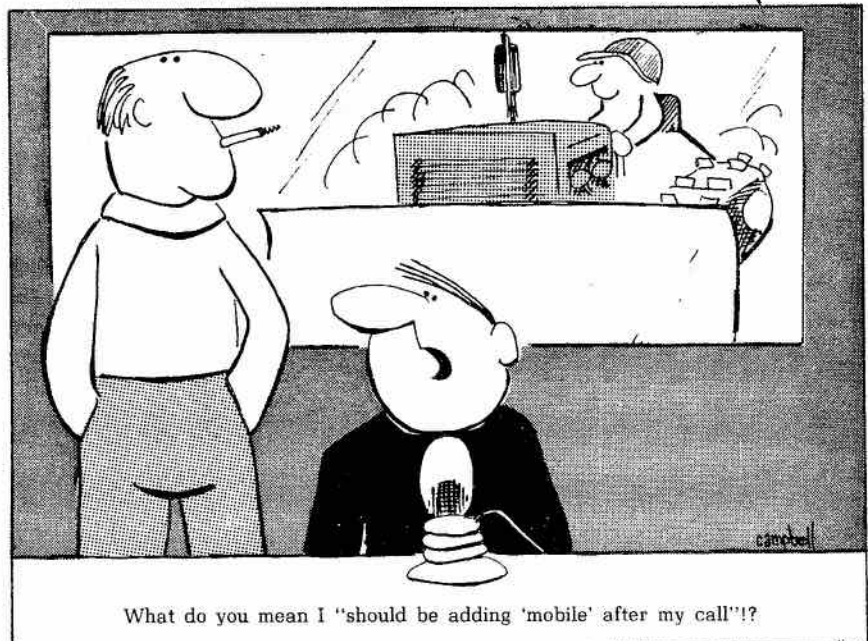
Question the transmitting station but **do not** change the message. Add an 'Ops. note' to indicate corrections which might help in delivery.

George Wells VE7OM
Ganges, B.C.

ADVERTISERS' CORNER

Advertisers please note that TCA is now back on schedule again. Deadline for next issue will be April 7. Deadline for June issue will be May 1. Ad copy received after these dates will **not** be included in the respective issues, and previous ad will be substituted.

Lid Street ^{by} campbell



Coast Club bridges gap

On Nov. 29, 1979, telephone communication from the North Coast of British Columbia to the Queen Charlotte Islands failed.

The Prince Rupert Amateur Radio Club was contacted and asked if they could get through to the Islands. Brian Oltmann VE7DQO and his XYL Vanessa VE7DQV put out a call on VE7RPR repeater and Mike Pilon VE7DQC at Masset came back. Between

them, an emergency communications link was set up.

In the meantime, Allan Radcliffe VE7EBA was at work on the B.C. Hydro VHF radio, asking the Department of National Defense if they would man VE7TAR, the military Amateur radio station at Masset. DND responded by assigning three persons to the station. VE7TAR and VE7DQO made their stations ready for emergency and public phone-

patch service. Radio station CHTK used this service to get more information for their news broadcasts. The information was broadcast several times during the outage to keep the Island people informed.

The Mayor of Masset and the B.C. Telephone Co. have sent letters of thanks for the much-needed service provided by the Amateurs.

-VE7BCZ

News Briefs

CANADIAN OLYMPIC STATION

The special Lake Placid Olympic station turned up with a Canadian special call sign, VE3OLP/W2, when the FCC wouldn't issue one. Joe Colson of the CTV crew at the Games obtained the call from the DOC in Toronto, when he explained the problem with the FCC. Forty Amateurs worked the various frequencies on a 24 hour basis. Amateurs from about 50 countries visited the station during its few days of operation.

QSL cards will be made available later, according to Don. QSL address is VE3OLP/W3, Box 307, Sunland, CA 91504, U.S.A.

HAM CLUB LOSES HOG

York North's 'ham' with the unique call of VE3HOG has recently lost his call and is now known as VE3IOH. Dan informs me that there was an error at the DOC and he will try and get the call back.

York North ARC 'Splatter'.

JANUARY EXAM RESULTS

The January examination results show 46% passed the Amateur theory exams, 75% made the regulations and 40% got the code. For the Advanced Amateur ticket, 44% were successful in the theory. Operating apparently improves the knowledge of regulations, however, as 81% passed that part of the test. The next set of exams is on April 16.

NEW SIX METRE BEACON IN TORONTO

VE3RDL joined VE1SIX in mid-December as a Canadian six-metre beacon. It transmits continuously 24 hours-a-day on 50.077 MHz with 10 watts CW output to a Cushcraft Squalo omnidirectional polarized antenna at 130 feet.

The beacon's message is: "VE3RDL VE3RDL Beacon Toronto QSL to VE3WL AR," which is sent at 13 wpm with a five second pause between transmissions.

Tx Nortown ARC 'Nortopics'

[February six-metre propagation, according to 'HR Report', brought some interesting results, with aurora openings permitting contacts between KL7NO in Fairbanks and VY1AU in Whitehorse and VE8BY, Yellowknife, among other phenomena which saw Hawaiian stations working Ohio.]

CANADIAN TEN METRE NET

The Canadian Ten Metre Net operates every Sunday on 28400 KHz at 2000Z coast-to-coast. For traffic handling, Amateurs check in to the west controller starting at 2000Z for the first ten minutes. Then to the eastern controller at 2010Z for the next ten minutes and so on. Operators, after checking in with their call sign, then give their ten metre number and name and make their own call for the station or place required.

VE3AML

Check your Subscription Label for expiry date!

Have you got CB disease?

By J.G. Coulombe VE2HY

The first emanations of this malady appeared about eight or nine years ago. It has several distinguishing features: frustration, accompanied with yellowish stains and/or a blackish residue. Portions have completely or partially vanished, while others have remained intact. The symptoms can also provoke anger. Several remedies are still attempted, but some side effects still remain.

There is a treatment, however, that can be administered in the home; it is available in Canada ... Ontario to be exact. As is said on TV: "Only in Canada you say - pity". I say "Hurrah". So, if any of the above mentioned signs afflict you, perhaps you may want to try this cure.

You may have already guessed what I'm referring to. CBs are circuit boards. Now you understand the frustration part. After being titillated by an article in an Amateur publication, you come to the root of the disease, another circuit board. You pass it up. A good project, but you take up muttering instead. Wire wrap works, but interweaving a large number of connections can sometimes lead to the 'tied up in knots' syndrome.

For a one-time circuit board, I do not believe there is an easier method than the one described here. If you desire to repeat the process, all that is required is time.

The two-part cure is as follows. If you have done any wall papering, you may have used a product called Mactac®. It is sold under many trade names. It has a backing which is peeled off and the remaining portion with the sticky side is pressed over what you're trying to cover up. I use the partially transparent type. Initially it is cut to size and laid over the artwork. The ground foil outline is traced with a pencil or pen. Stick it onto the copper and remove the unwanted portions with an Xacto knife or razor blade. Once this is finished and coupled with the

second ingredient, a professional looking board is the result.

Part Two is called 'Ceresist'. Various patterns can be purchased from their office at 53 Burnett Ave., Willowdale, Ont. M2N 1V2. They will send a small sample, a price and order sheet and other information. Each sheet costs \$1.99 at time of writing and price is lower on quantities.

The individual sheets measure 4x4 inches and are available in 17 different patterns, others may be added in the future. There are IC pads, lines, donuts, curves and so on. From the order sheet you can see the selection available. By rubbing the reverse side with a ball point pen or other small smooth blunt tool, the transfer will adhere to the copper. It is unaffected by ferric chloride. A waxy sheet is used as protection to permit burnishing the transfer. Work areas and sheets should be kept clean, since one side of the transfer is sticky. Corrections are easily made by removing the unwanted portion with a sharp blade. You can also make pads smaller and cut connecting lines to the desired length. You can overlap without fear, which is the biggest advantage.

The first step, of course, is proper preparation of the copper. Use either 00 or 000 grade steel wool. If you use a coarser grade, grooves will be left on the copper face. The etchant can then get into these grooves and eat away portions under the transfer, leading to mixed emotions.

I prefer to clean the board with a kitchen cleanser or copper cleaning compound. Once it is ready, try not to touch the cleansed surface. Secretions from your hands can accumulate to a point where the chloride will not remove some copper. Also, the waxy, oily residue may prevent the transfer from sticking properly. Use the original artwork to position IC pads and donuts.

Connections are then made with either

straight lines or curves. You can cut them to whatever length you need. Check for errors or omissions and then re-rub the board. Use the waxy sheet as protection. Once you are sure everything is in place, on to the etchant.

Etching time will depend on the thickness of the copper, whether you warm the solution or not, and how often you agitate the etchant.

Use a **plastic** container that will handle the size of the board. Lay it copper side up. Cover the board from $\frac{1}{4}$ to $\frac{1}{2}$ an inch with ferric chloride. You can heat the solution either outdoors in the sun, with an old heating pad, or a light bulb and stand. Gently rock the container back and forth every two or three minutes. This will bring fresh solution into contact with the copper as well as redistributing the copper residue. I've tried the board face down, but insufficient solution gets between the board and the bottom of the container. Examine the board after about 30 minutes by lifting one edge with a wooden or plastic stick. **Do not use anything metallic.**

Once all the unwanted copper has

dissolved, pour the etchant down a drain or cement laundry tub with running water. **Be careful, the solution stains.** Place the container and board under running water to stop the etching action. After three or four minutes, remove the board and strip off the Mactac. Begin rubbing the board with fine steel wool, again under running water. You will notice the Ceresist is stuck, but it will come off with rubbing leaving you a nice shiny board ready for drilling.

Drill the board from the copper side with a small sharp bit. I use a 67 gauge, and then enlarge various holes as required when mounting the parts. Some IC pads may come off during the drilling, especially pads that did not have a connection. Also recommended is a low-wattage iron, this will help in not having small donuts or an IC pad coming loose due to too much heat. Small diameter solder is also helpful in preventing solder bridges. Don't use too much solder and also make sure no strands of steel wool adhere to the board.

This is how I've cured myself of the CB disease. Perhaps it may also work for you!

Adding Incremental Tuning

TO THE HEATHKIT HW-101 RECEIVER

By John Scott VE3EZX

The Heathkit HW-101 seems to be a very popular rig, but it suffers from the usual problem of transceivers when the station calling does not come back exactly on the calling frequency. You tune him in, moving your transmit frequency in the bargain. He then tunes you in again and so the process continues. You may find yourselves leap-frogging right out of the band if you are close to the edge.

The solution to the problem is Receiver Incremental Tuning (RIT) - the ability to tune the receiver a small amount while leaving the transmit frequency alone. RIT is particularly useful when working CW with a narrow filter. While most factory built transceivers seem to have RIT installed, Heathkit does not provide it on any of their gear.

The circuit shown in the diagram and adapted from QST, Oct. 1974, allows the receive frequency of an HW-101 to be moved about 3.5 kHz on either side of the

transmit frequency. The circuit consists of an RCA SK 3126 tuning diode connected in parallel with C950B, the main tuning capacitor of the HW-101 VFO. Reverse bias on the diode provides a small amount of capacitance to change the frequency of the VFO by a small amount.

Regulated 12V DC is available within the VFO at lug 1 of terminal strip FF. (See Pictorial 7-2 fold-out from page 43 of the HW-101 manual). Essentially we have two voltage dividers, one connected to pin 6 of RL1 (the one closest to the antenna terminal) and used on transmit and the other connected to pin 2 of RL1 and used on receive. The pot R1 is mounted on the front panel along with the switch. The RIT feature is disabled by effectively removing the relay from the circuit by means of S1A. S1B allows the use of a front panel mounted red LED to indicate that the RIT is on. (This is optional, but highly recommended.)

CONSTRUCTION

1. Remove the VFO from the rig following the instructions on page 154 of the HW-101 manual.

2. **Carefully** drill two additional holes in the rear wall of the VFO below the three existing holes. (The size of these holes depends upon the feedthroughs which you use.) Install insulated feedthroughs in these holes. (If you get them from Heath, the part number is 75-87.)

3. Install the 5 pF capacitor, the varactor and the 470k resistor as indicated and connect to one of the feedthroughs. Connect the other feedthrough to lug 1 of terminal strip FF. (See Pictorial 7-2, fold-out from page 43 of HW-101 manual.) Make note of which feedthrough is which.

4. Re-install the VFO in the rig.

5. Assemble the 3900 ohm, 1000 ohm and one 10k variable resistors on a small piece of perforated board and attach to the right side of the VFO using two of the screws that hold the VFO together.

6. Drill two holes in the front panel, one on each side of the meter and level with the holes on the left side of the frequency readout. (Those who do not wish extra holes in the panel may use a minibox and attach it to the outside of the rig in some fashion.) Drill an additional hole if you are using an LED to indicate that the RIT is on.

7. Mount the 4700 ohm resistor on the centre and right hand terminal of R1 and

install R1 and the switch on the front panel.

8. Complete the remaining connections using RG/174U miniature coax where indicated. The 6V AC for the LED can be obtained at one of the panel lamps; D2 and the LED must be oriented in the same direction. You may have to change the value of the 200 ohm resistor to suit your LED.

9. Set both pots to about the middle of their rotation and then realign the VFO as per page 121 of the HW-101 manual.

10. Adjust R1 so that it is halfway through its rotation and place a knob on it so that the pointer is straight up.

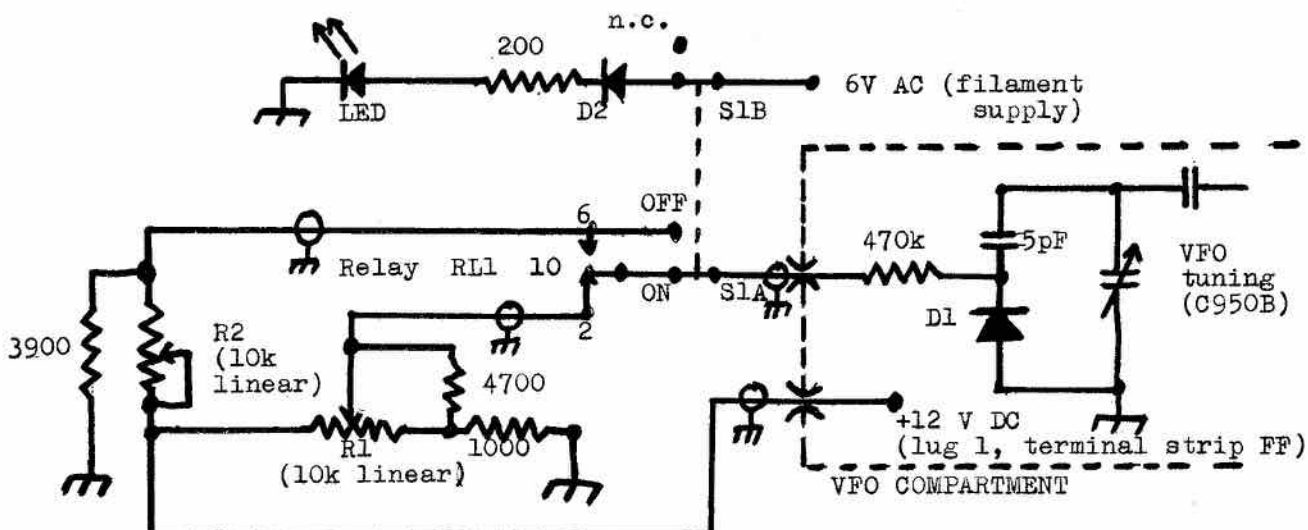
11. Tune a steady carrier signal (the calibrator) and adjust R2 so that the note sounds the same with the RIT switch on or off.

12. Check any signal. You should be able to move it with the RIT pot when the switch is on, but not when it's off.

13. The new controls on the front panel can be labelled with some rub-off lettering which can be protected with a coat of clear lacquer.

This RIT modification has been in use at VE3EZU for nearly a year now with no problems and greatly increased enjoyment. □

John Scott VE3EZU
1059 Avenue Road
Toronto, Ont.



Schematic for R.I.T. circuit for Heathkit HW-101

Fixed resistors are 1/2 watt composition

R1 and R2 are 10k linear carbon pots.

D1 RCA SK 3126 Varactor diode.

D2 50 PIV 1A rectifier diode (1N4001 suitable).

S1 DPDT switch, rotary preferred.

Wire Antennas

PART FIVE

Feeding Longwire Antennas

By Bob Eldridge VE7BS

Before showing the effect on the horizontal radiation pattern when the feed point is moved to various points along a long wire antenna, we should first talk briefly about the general pattern of a center fed long wire an odd number of half waves long, or an end fed long wire of any number of half waves. (We covered in Part 4 the reason why a center fed antenna with an **even** number of half waves is an exception, because the two halves are then put into phase with each other.)

A long wire two wavelengths long has a pattern like this:

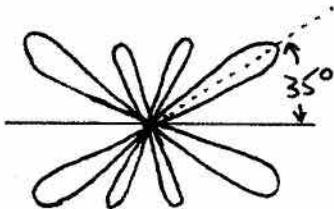


Fig. A

The four major lobes are at an angle of about 36° from the direction of the wire, each lobe has about 1.5 dB gain over a half wave dipole, and the radiation resistance of the antenna is about 110 ohms.

An antenna three wavelengths long has a pattern like this:

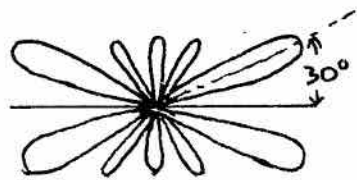


Fig. B

The four major lobes are at an angle of about 30° , each lobe has a gain of about 2.3 dB over a dipole, and the radiation resistance is about 120 ohms.

An antenna four wavelengths long has a pattern like this:

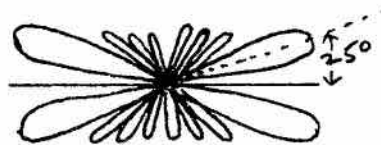


Fig. C.

The four major lobes are at an angle of about 25° , each has a gain of about 3 dB over a dipole, and the radiation resistance is about 130 ohms.

Going on from there, as the antenna is made longer the major lobes move closer and closer to the line of the wire, and the number of minor lobes increases. The gain in the center of each major lobe increases too, but following the principle that 'you can't get something for nothing' they also become narrower. When we reach 10

wavelengths, each lobe is about 17° , with a gain of about 7.5 dB, and the radiation resistance is about 160 ohms; in practice, the null off the ends is pretty well filled in.

Remember that these lobes are not firing off just the sides of the wire in a horizontal direction, they leave the wire in a three-dimensional pattern up, down and sideways if the antenna is in free space. When it is close to the ground, the effect of reflection from the ground reinforces the lobe at certain vertical takeoff angles and cancels it at others, just as it would with a half wave dipole.

Asymmetrical Feed

If, instead of feeding the antenna in the center, the feedpoint is moved progressively towards one end, interesting things happen to the horizontal pattern.

1. Less radiation occurs from the short end, in a line with the wire;

2. The angle of the lobes on the short end becomes greater;

3. The angle of the lobes on the long end becomes smaller;

4. At some feedpoints, the antenna has a pattern very much like a dipole, with

broad lobes at right angles to the wire.

Figure D contains a set of examples to illustrate the effect, taken from an article by John Schultz in the May 1969 73 Magazine.

If you sit and look at these, you can see some very interesting possibilities, especially if you overlay the patterns on a great circle map centered on your QTH. Here in VE7, it is useful to have a null to the south, where there are thousands of W6's but nothing much beyond them unless you specialize in

finding tiny islands in the South Pacific.

It is not difficult to find a pattern which covers several desired directions while preserving the null to the south. If you are really keen on playing with the idea, you can select two feed points, and bring a feeder down from each one, each feeder being a number of electrical half-waves long. If you put a short across the unused feeder, the short will be reflected to the antenna connection.

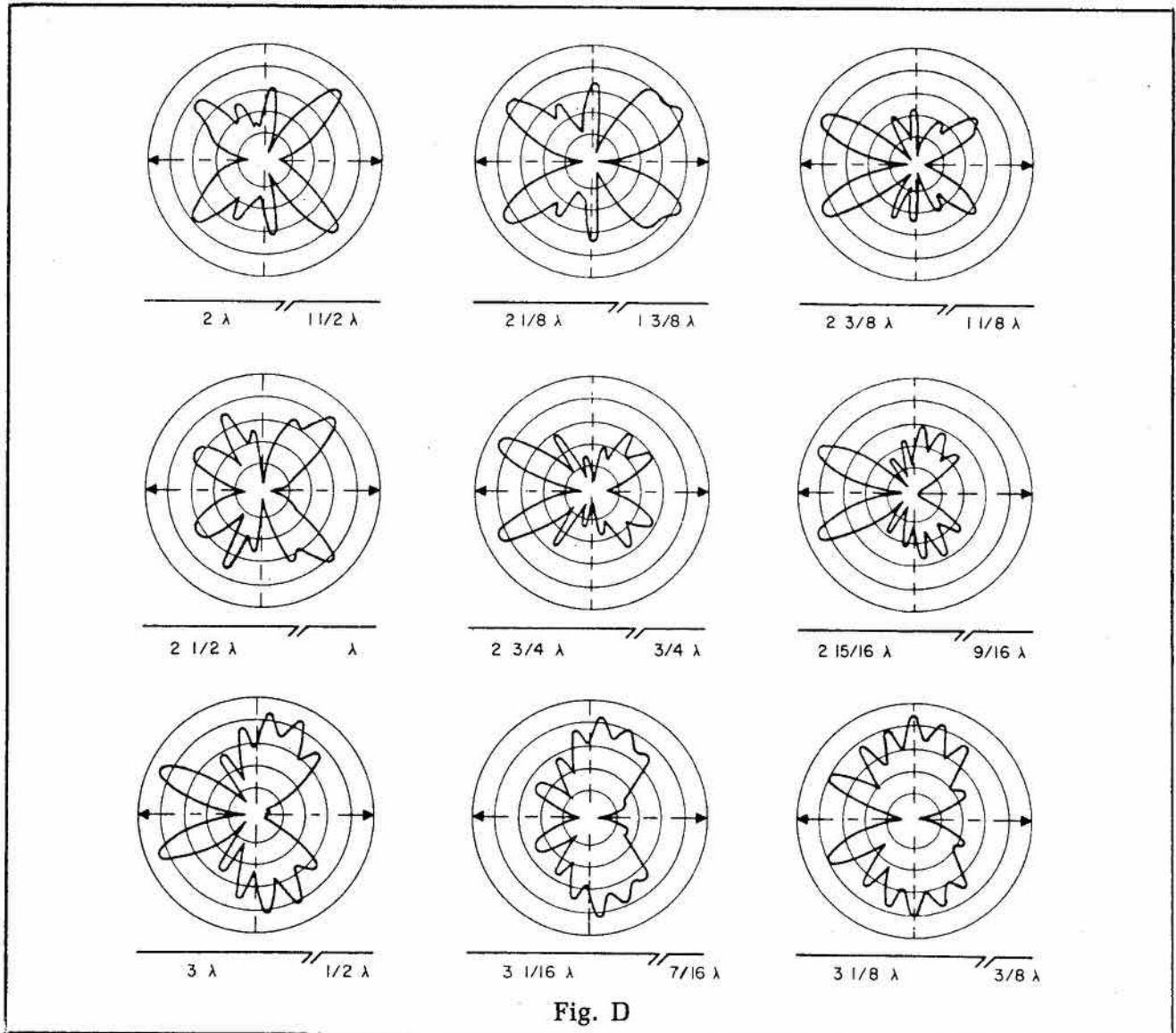
If you are now asking "and what if I put a tuned circuit at the end of the

unused feeder?", I am sure the editor would love to have from you an article on what results you got when you tried it.

The Infinitely Variable Feedpoint

Now here is an idea awaiting exploitation. I have used it with some success, but it was in the days when I placed some value on flat (VSWR 1:1) transmission lines, so I adjusted it just to achieve a match between the feeder and the antenna.

Using a pair of those wheels sold for use with



clothes lines (the XYL can use a fixed line for a while, with a forked stick to hold up the middle, just during the experimental period, you know -- if you are satisfied with the results, you can buy her a brand new pair), build a folded dipole with a tuned feeder fed from a transmatch. You need a couple of plastic wheels to support the weight of the feeder, or you'll end up with a shallow loop!

Now you can slide the feedpoint to any place you like. The impedance will change of course, but if the antenna is several wavelengths long it doesn't go up and down anything like a short antenna, so you don't

have to make much of a change in the transmatch settings when you change position. It looks something like Fig. E.

There are some snags, but they are not unusual. Most people have illusions about the position of the major lobes of their antenna; with this antenna it is difficult to predict the pattern once you move away from center. But one thing is certain: as you move the feeder along the folded top, the direction of the lobes will change, and the effect on signals from a given direction will sometimes be remarkable (like two or three S-points when you shift a lobe from a null to a maximum).

Nulls are often much sharper than maxima, and I remember very vividly that when I played with an antenna like this I had an unexpected bonus -- the power line noise from a utility pole could be knocked right down, an effect sometimes much more important than any effect on the amplitude of any incoming signal.

I have never seen anything in print about the Infinitely Variable Feedpoint antenna. If anyone has seen an article, I would appreciate the reference, or better still, a copy.

VE7BS
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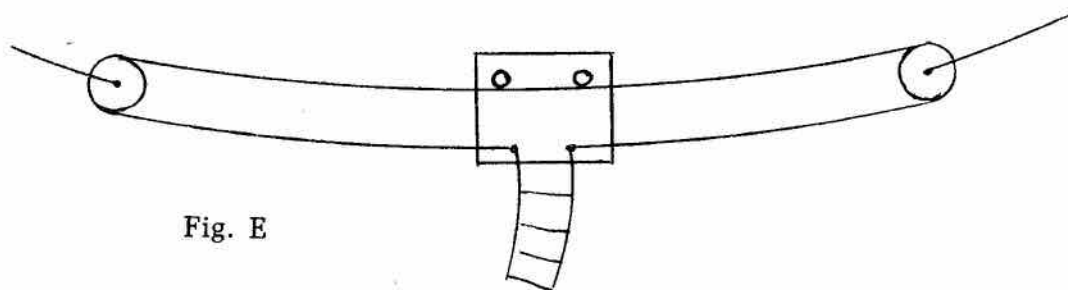


Fig. E

TCA on Tape

Rowland, VE3AML has been involved for several years now in a project to tape record issues of The Ontario Amateur and The Canadian Amateur for distribution to the handicapped.

The operation commenced with two recorders and twelve 'subscribers'. Rowland's XYL provided mailing containers made from materials scrounged from a local supermarket, and assistance in procurement of additional tapes came from RSO and CARF. Such technical problems were soon overcome

except for one -- each taping session took three days to complete, and got longer as new subscribers were added to the list.

A shining knight at SWRLS was finally located to support the project and

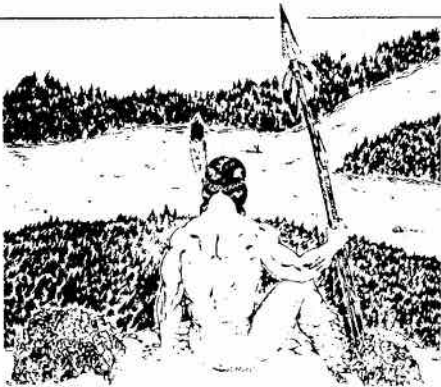
presto -- one tape duplicating machine arrived on the scene. Since then, more than 28 white caners have been benefiting from Rowland's generosity. Well done! (The 'Dog-Ear', Southwestern Library System)

DOC WELCOMES SYMPOSIUM INPUT

CARF President Bill Wilson VE3NR recently was informed by a senior DOC official that the Department will especially welcome input from the regional and national CARF symposium this year,

as DOC is preparing a paper on proposed post-WARC '79 domestic frequency allocations.

The paper is slated for release and public comment in June.



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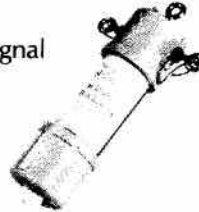
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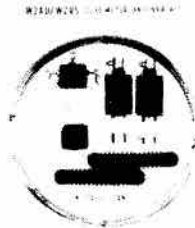
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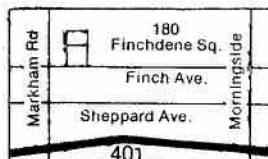
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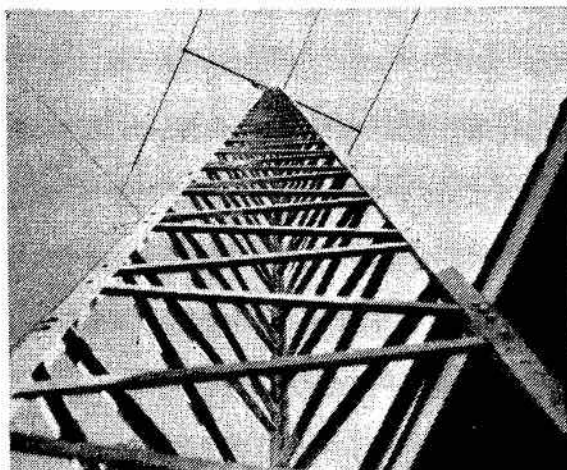
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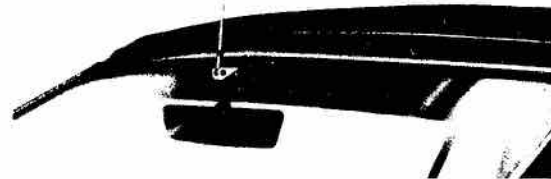
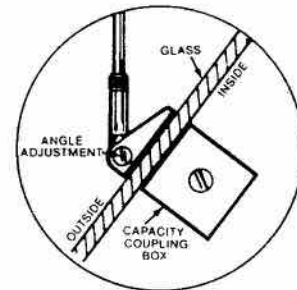
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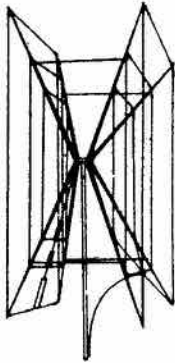


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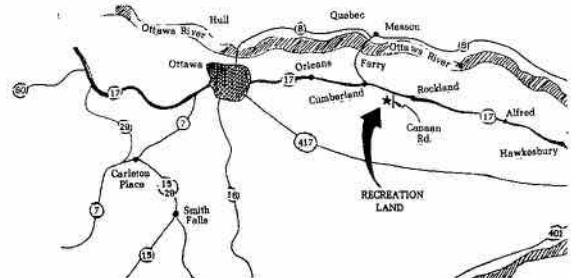
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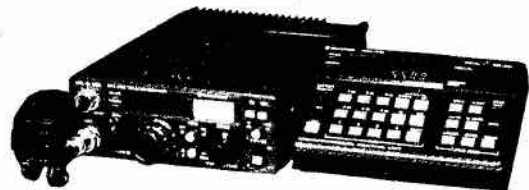
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1. To act as a coordinating body for Amateur radio organizations in Canada;
2. To act as a liaison agency between its members and other Amateur organizations in Canada and other countries;
3. To act as a liaison and advisory agency between its members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

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Iraq, Khmer Republic**, Libya, Somalia, Turkey, Viet-Nam, Peoples Democratic Republic of Yemen.
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 Note: The calls 7OA to 7OZ are assigned to the Peoples Republic of Yemen.

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CARF News Service Radio Bulletins are heard from its key station VE3TCA every week, using the facilities of Ottawa's Carleton University Amateur Radio Club station VE3OCU. Here is the sked:

Sundays:

1745 Z	14.140 MHz	SSB
1930 Z	14.077 MHz	CW 15 wpm
(approx.) 2130 Z	14.077 MHz	RTTY
(After CARFNET; first in 5 level Baudot at 45.5 baud, then 8-level ASCII at 110 baud.)		
2300 Z	3.755 MHz	SSB

Tuesdays:

0100 Z	3.590 MHz	CW 15 wpm
0130 Z	3.610 MHz	RTTY (as above)

(Note that times shown will be Sunday p.m. and Monday evenings in North America.)

OTHER CARF NEWS STATIONS

- VE7TCA:
 Mondays 0230Z 3.618 MHz RTTY
 5 level
 0245Z 3.755 MHz SSB (After BC ARPS Net)
 VE5WM: nightly 0100 Z 3.785 MHz SSB
 (Sask Phone Net)
 Sundays 1530 Z 3.780 MHz SSB (ARES Net)
 VE5GG
 Thursdays 1830 Z 14.077 MHz RTTY
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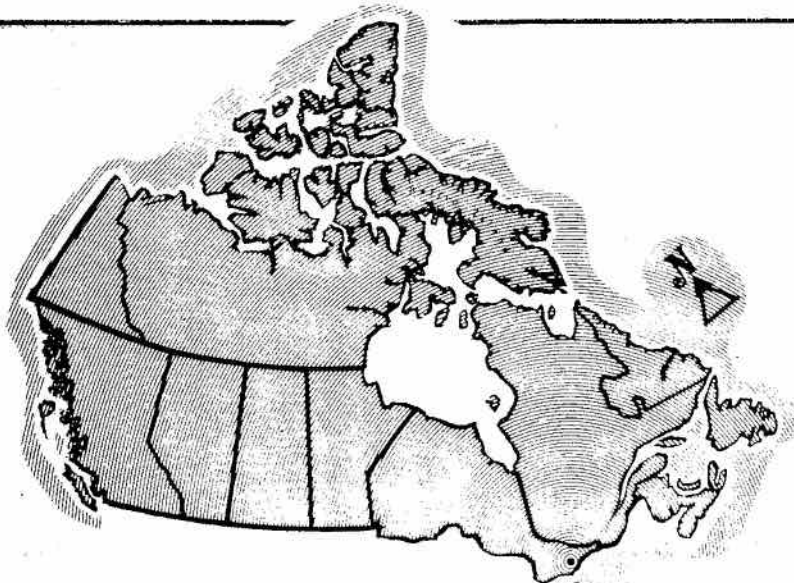
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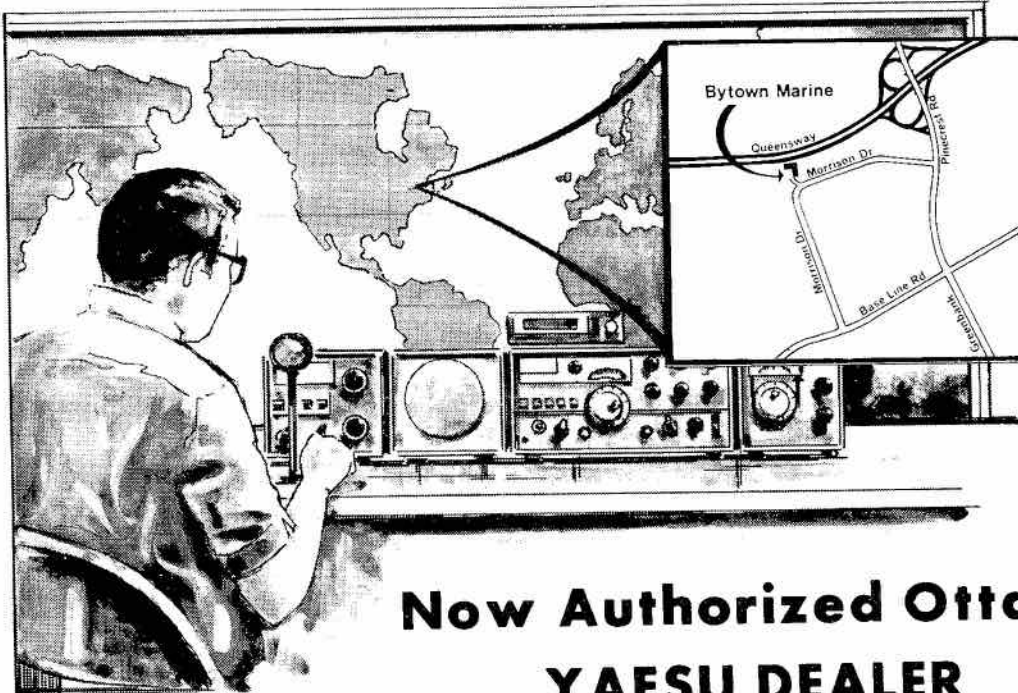
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