

THE CANADIAN AMATEUR

Canada's Amateur Radio Magazine

La Revue des Radio Amateurs Canadiens

July/August 1988

*Breaking a pile-up
with an invisible
antenna*

— Page 8

*Collinear 2 Metre
Antenna*

— Page 39

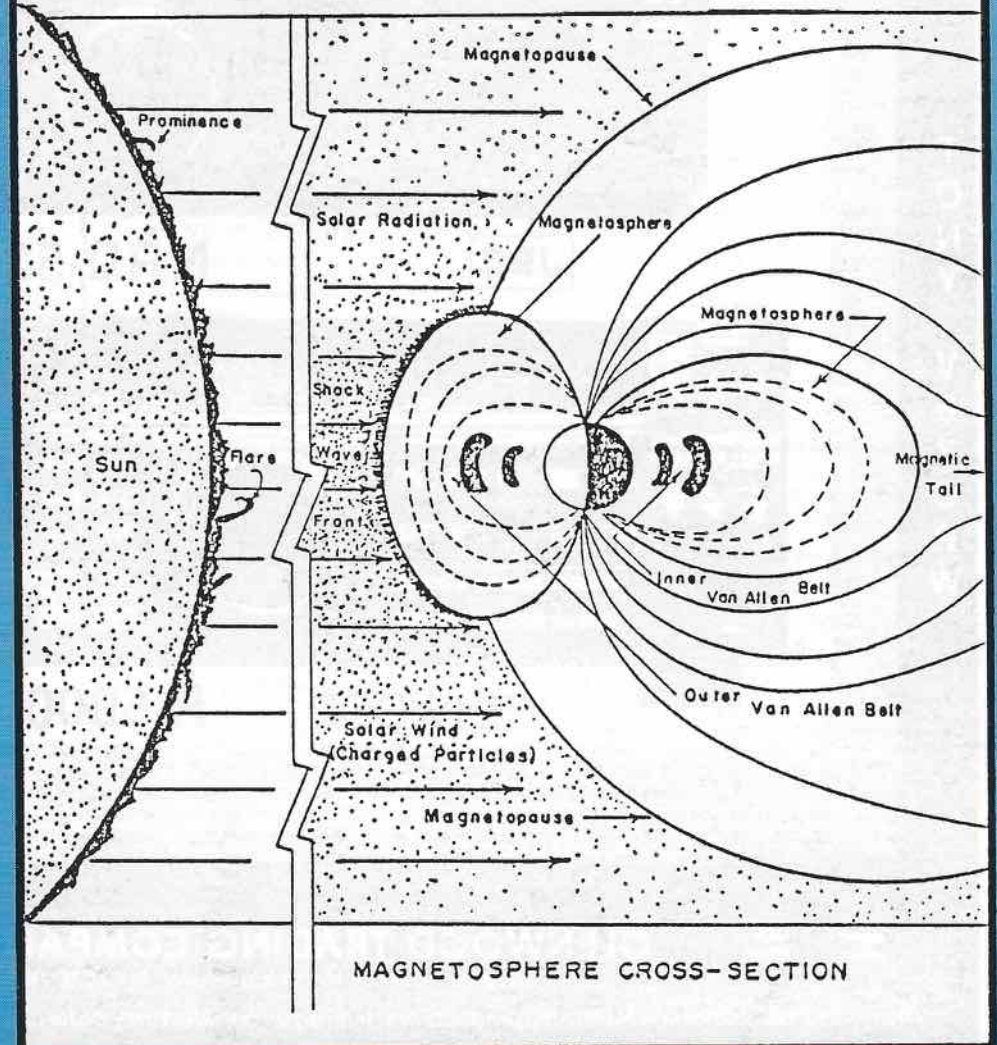
Nybles & Bits

QRP

Contests

and more!

The Sun's Effect on Short Wave Radio Communication — Page 41



We have the finest in Communications Receivers



KENWOOD R-2000



JRC NRD-525



KENWOOD R-5000

BILL VE7CIM

TONY VE7CPW

TOM VE7DQ

ROLAND VE7ACI



GLENWOOD TRADING COMPANY LTD.

278 East 1st St., North Vancouver, B.C. V7L 1B3

ORDER DESK

(604) 984-0405

These, and many other fine Ham radio products are detailed in our latest mail-order catalogue. Write for your free copy today.

CIRCULATION OFFICE
P.O. Box 356, Kingston
Ont. K7L 4W2
613-545-9100 (24 Hrs.)

EDITOR
George Sansom VE3LXA

ASSISTANT EDITOR
Debbie Norman

COLUMN EDITOR
Steve Campbell

TECHNICAL EDITOR
Bill Richardson VY1CW

CONTEST SCENE
John Connor VE1BHA

MICROWAVES
Michael Ross VE2DUB

CROSSWAVES
Ralph Cameron VE3BBM

DX EDITOR
Paul Cooper VE3JLP

QRP EDITOR
Moe Lynn VE6BLY

YL NEWS AND VIEWS
Cathy Hrischenko VE3GJH

VHF/UHF
Walter D. Rawle VE1AWS

ARES
Bob Boyd VE3SV

NYBLES & BITS
Antonio Salvadori
VE3NXQ

TECHNICAL ILLUSTRATOR
Don Jarvis VE2DWG

AFFILIATED CLUBS
George Morgan VE3JQW

LOOKING AROUND
Art Blick VE3AHU

ADVERTISING REPRESENTATIVE
Don Slater VE3BID
RR 1 Lombardy, Ont. K0G 1L0
613-283-3570

PRODUCTION
Steve Campbell,
County Magazine Printshop Ltd.
P.O. Box 30, 71 Main St.
Bloomfield, Ont. K0K 1G0
613-393-3355

Please address correspondence to the Editor at Box 356, Kingston, Ontario K7L 4W2, telephone 613-545-9100.

THE CANADIAN AMATEUR

Canada's Amateur Radio Magazine

July/August 1988

Vol. 16 No. 7/8

EDITORIAL, VE3LXA	3
LETTERS	4
FEATURES	
Memorable Moments in Amateur Radio, VE3NSK	8
Internation Marconi Day, VE1CBF	9
A Detective Story, VE3CES	11
New Germany High School Ham Day 1988, VE1ARN	14
U.S.S.R./Canada Polar Bridge Expedition	17
Shack of the Month	33
SOCIAL EVENTS	18
SWAP SHOP	19
CONTEST SCENE	21
AMATEUR RADIO EMERGENCY SERVICE	23
DX	26
QRP COLUMN	29
LOOKING AROUND	31
YL NEWS & VIEWS	32
CROSSWAVES	34
NYBLES AND BITS	35
REVIEWS	36
TECHNICAL	
Collinear 2 Metre Antenna, VE6ZS	39
The Sun's Effect on Short Wave Radio, VESTX	41

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

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

The contents of this publication are copyright and may not be reproduced without prior consent except by a bonafide Amateur organization which may reproduce them provided the source is acknowledged.

The Advertisement Department of The Canadian Amateur on behalf of the magazine wholly disclaim any responsibility for the content of any advertisement contained herein and make no representations on behalf of The Canadian Amateur as to the truth of any statement contained in any such advertising.

C.A.R.F. Publications Limited and the publisher and editors of The Canadian Amateur hereby disclaim any responsibility for any statement of opinion or other statement that may be contained in any article published by The Canadian Amateur and any such statement of opinion or other statement contained in such article is solely the opinion of the author of the article and not that of C.A.R.F. Publications Limited, the publisher or editors of the magazine unless it is specifically stated to be the case therein.

The Canadian Amateur is published by C.A.R.F. Publications Limited, 370 King St. West, P.O. Box 356, Kingston, Ontario, Canada K7L 4W2. It is recommended by the Canadian Amateur Radio Federation Inc. and its members receive it automatically. Indexed in the Canadian Periodical Index: ISSN 0834-3977.

Second Class Mail Registration Number 5073



Executive

C.A.R.F. President
John Iliffe VE3CES
387 Selby Crescent
Newmarket, Ontario
L3Y 6E2
(416) 898-4875

Past President
Ron Walsh VE3IDW
869 Haverhill Dr.
Kingston, Ont.
K7M 4V1
(613) 389-3301

Vice President
Earle Smith VE6NM
P.O. Box 412,
Grande Prairie, Alta.
T8V 2A2
(403) 532-4279

Senior Vice President
Francis Salter VE3MGY
14 Teresa St.
London, Ont. N6C 3K8
519-439-7779

**General Manager/
Treasurer**
Ollie Schijns VE3LXO
730 Dempster Dr.
Gananoque, Ontario
K7G 2E7
(613) 382-3867

Secretary
Eric Ilott VE3XE,
RR3 Yarker, Ont.
KOK 3N0

**Honorary
Legal Counsel**
Timothy Ray VE2KC
Hughes, Laishley,
Barristers & Solicitors
116 Lisgar St., Suite 600
Ottawa, Ont. K2P 0C2
(613) 236-7333

Mid West Director
Norm Waltho VE6VW
Box 1890
Morinville, Alta.
TOG 1P0
(403) 939-3514

Ontario Directors
Pierre Mainville VE3LPM
23 Chatsworth Dr.
Brampton, Ont. L6X 2L8

Dan Holmes VE3EBI
33 Crownhill St.,
Gloucester, Ont. K1J 7K5
(613) 746-0968

Quebec Director
Michael Masella VE2AM
19 Pheasant Street,
Dollard des Ormeaux,
Quebec H9B 2T4
514-683-7785

Pacific Director
J.F. Hopwood VE7AHB
1209 Kilmer Rd.,
North Vancouver, B.C.
V7K 1P9
(604) 985-1267

Atlantic Director
Nate Penney VO1NP
P.O. Box 10
Shoal Harbour, Nfld.
A0C 2L0

**ASSISTANT
REGIONAL DIRECTORS**
Stewart Harvey VO1OO
Susan Harvey VO1OI

R.G. White VO1RW
Jeannine Côté VE1BWP
Camille Tremblay VE2DNO
Tony Pattinson VE2KM
Ben Cuperman VE2LRB
Antonietta Avanzini
VE2AAV

Gordon Roberts VE3IMA
Mel Brown VE3ACD
Geoff Smith VE3KCE
Barry Baggs VE3IVV
Francis Salter VE3MGY
Hans Zakai VE3ZHM

Cecil Fardoe VE4AEE
Max Geras VE4ACX
Malcolm Timlick VE4MG

Vic Allen VE5AE
Bill Munday VE5WM
Bjarne Madsen VE5FX
William J. Wood VE5EE

Ken Schneider VE6COH
David Roberts VE6XY
Jim McKenna VE6SU

Gene Graham VE7GAS
Vol Riley VE7EYG
Larry Reid VE7LR
George Stephens VE7YF
Ron Banning VE7FFU
Jim Voight VE7CWC
Ron McFayden VY1AD



Committee Chairmen

D.O.C. Liaison
Bill Wilson VE3NR
Art Stark VE3ZS, Retired Consultant

News Service
Bernie Burdsall VE3NB
Box 356, Kingston, Ont. K7L 4W2

Electromagnetic Interference
Ralph Cameron VE3BBM

CSA Committee
Ivor Nixon VE3IHN,
17 Romney Rd., Islington, Ont. M9A 4E9

Canada Winter Contest
J. Parsons VE6CB,
RR#1 Oxford Mills, Ont. K0G 1S0.

Canada Day Contest
John Clarke VE1CCM,
16 Keele Ave., Sydney, N.S. B1R 2C7.

CARF Awards
Garry Hammond VE3XN, 5 McLaren Ave.
Listowel, Ont. N4W 3K1 (519) 291-4813

Reciprocal Licencing & International Affairs
Francis Salter VE3MGY

Affiliate Clubs
George Morgan VE3JQW,
687 Fielding Dr., Ottawa, Ont. K1V 7G6

Publications Committee
John Iliffe VE3CES

C.A.R.F. QSL Service
Jean Evans VE3DGG,
P.O. Box 66, Islington, Ont. M9A 4X1

Government Relations
Dan Holmes VE3EBI,
33 Crownhill St., Gloucester, Ont. K1J 7K5

CARF Head Office
Debbie Norman, Office Manager (613) 545-9100

WHAT IS ?

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

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

EDITORIAL

Article Contest Winners!

BY GEORGE SANSOM
VE3LXA

This month we feature the winners of 'The Great Canadian Article Contest'. Although not overwhelming, we did receive enough articles to make it worthwhile. I had to disqualify one entry from Bernie VE3NB. Sorry Bernie, the CARF Bulletin Editor isn't eligible! It was a great article, though. We'll give you an honourable mention and print it next month. Also deserving honourable mention is Rob Smith VE6ARE. We'll print his entry in an upcoming issue.

I guess the Amateurs of Canada don't like to editorialize since I didn't receive any entries in this category. Everyone must be perfectly happy with all aspects of our hobby and can't think of any ways to improve on it. (THAT should get them out of the woodwork.)

The winners in the 'General' and 'Technical' categories are Robert Kipling VE3NSK and D.J. Kelly VESTX. Mr. Kelly's two-part article entitled 'The Sun's Effect on Short Wave Radio Communication' will be a great source of information as Cycle 22 approaches maximum. Mr. Kipling, in his efforts to 'break a pile-up with an Invisible Antenna' has provided us with a humorous look at the world of DXing, the hard way.

Congratulations to the winners and thanks to all who participated.

SKITREK

By the time you read this, the Soviet/Canadian Ski Trek will be history. To all the hard working guys/gals who gave so much time and effort to make the communications nets work so well, "you did a great job"!

MEMBERSHIP DRIVE

The CARF Membership Drive held between March 15 and May 15, 1987 was successful beyond our wildest expectations. A 20% discount in the form of a rebate to affiliate Clubs was offered for NEW Members brought into CARF by the Clubs. Thanks to all Club Executives who participated and "welcome aboard" to all the NEW members.

TRANSLATOR

CARF Bulletin Editor Bernie VE3NB requires a person who is willing to help translate bi-weekly bulletins for our French speaking members and bulletin stations. The volunteer should be an Amateur, who is familiar with Ham 'buzz-words' in both official languages.

If you're interested, contact Bernie at the CARF Office.

QST CANADA

Congratulations to ARRL/CRRL and QST on the expansion of 'Canadian Newsfronts'. QST Canada takes the form of an insert, to be included with issues of QST destined for Canadian members of the ARRL/CRRL. The Canadian Amateur looks forward to a good working relationship with the staff of QST Canada. ■

ART STARK RETIRES

Art Stark VE3ZS has been CARF's representative to Communications Canada for as long as anyone can remember. (Actually for over 16 years.)

When Art assumed the position, CARF was four years old! There have been a lot of changes in that time both in CARF and in Communications Canada. Things are more complicated now and regulatory changes seem to be a monthly event. Hardly a week goes by that Art does not get another request for information. It was with regret that the CARF Board of Directors accepted Art's retirement request at the Spring Executive meeting.

To Art: please accept our sincerest thanks for a job well done.— The Membership of CARF.

BILL WILSON APPOINTED AS COMMUNICATIONS CANADA LIAISON

CARF is pleased to announce the appointment of W.R. (Bill) Wilson VE3NR as our representative to Communications Canada.

In an organization such as ours, knowing your way around is critical. Bill brings a wealth of knowledge to the job. As retired Inspector General, Regulations Branch, Bill is fully conversant with not only the wording but the intent of the regulations. He has served CARF previously as President, and during the past few years as a backup for Art Stark VE3ZS. He is also a valuable member of the Government Relations Committee.

The Board is confident that Bill will provide high quality representation to Communications Canada on behalf of the CARF Amateur Community.

LETTERS

SHADES OF RAVENSCROFT!

When I returned to Amateur Radio after an absence of 27 years, and read of Jack Ravenscroft's problems, I thought— "could never happen to me".

After happily working the bands for a few months, I got the shock of my life when a neighbour called to ask if I had a "CB radio or something". I was swamping all his TV channels and could be heard on his stereo!

He had just spent several thousand dollars on a new TV, VCR and stereo set-up and was understandably upset. There was little point in explaining that his equipment lacked immunity circuits! He had spent a bundle and assumed that he had purchased the best. He did state that he wanted to cooperate, didn't want any hard feelings and was willing to do anything within reason to achieve that end, but things were sticky.

He had a VCR running his TV and was connected to an outside antenna with a booster on it. The VCR, being primarily designed for CATV, was open to the mid-band frequencies the Cable outfits use to transmit the UHF channels. My antenna was about 30 feet from his and the result was a foregone conclusion.

The local TV appliance store was less than helpful!

We called in the DOC and several meetings and several months later, during which time I went QRT after 1600 hours and on weekends, Bill Walker, our local DOC man, came up with a mid-band filter that neatly solved all the problems.

It makes a difference when one has a neighbour who is willing to see the other side and cooperate!

Dave McMillan VE3MIM
P.S. We used a Midband Trap Part #CBT series at \$20.10 each FST incl. which covered from about 130-175. Another possibility was an Individual Mid Band Trap, C.T. Series, Channel E which covered only 144-150 at \$14.95 FST incl. Both available from Acunet Data Systems, 370 MacKenzie Ave, Unit 5, Ajax, Ont. L1S 2G2 (416-427 0366) (ask for Ken Weaver).

A recent QSO with RI Bill Walker has resulted in a promise of a series of articles on this subject. Being a fine upstanding ex-RCAF type, I know Bill will come through with some excellent material for our readers... Editor.

FROM A CONTESTER

I was going to write you after the July 1st Canada Day Contest to let you know how pleased I was to have won the

previous Winter Canada Day Contest and the 1st of July one but, when I received my certificate for the last winter Canada Day Contest, it really made me feel guilty. Now you have me hooked and I will be trying for four in a row. By the way, my category was single op, all band SSB. I will be putting up a dipole for 160 before July.

I enjoy the contest mostly because of the length and the more sociable atmosphere. I enjoy *The Canadian Amateur*; it has really grown since my first issues. Wish me luck for the July Canada Day Contest and thank you again.

Marty VE7HAM

TCA INFORMATIVE

The May issue of *The Canadian Amateur* surpasses your already high standards in format and content.

You completely fill the needs of Canadian Amateurs for an informative publication and merit their entire support without any need for competition.

Gaston Wagner VE3LBT

ON PUBLISHING AMATEUR NAMES

(A letter from the Special Assistant, Minister of Communications)

Thank you for your letter of Jan. 25, 1988 to the Right Honourable Brian Mulroney regarding the publication and distribution of information about Canadian Amateur Radio operators. Your concern was forwarded to the Minister of Communications, the Honourable Flora MacDonald, for a reply.

As you have noted in your letter, in the past Communications Canada has made available the names and addresses of all licensed Radio Amateurs in the interests of self-policing and spectrum management. Recently, the Privacy Commissioner advised us of receipt of complaints from some Amateurs whose names and addresses had been released and asked us to review our policy of making these names available. Pending completion of that review of this policy, which we expect will be completed within a few weeks, the Department has stopped releasing the names and addresses of Radio Amateur operators.

You may be assured that your views will be taken into consideration as a new policy is developed.

Thank you for taking the time to bring this matter to the attention of the Minister.

Timothy M. Denton
Special Assistant

SILENT KEY

K4GV ex VE3PG— Victor Edward (Ted) Hollinsworth died May 14, 1988, Naples, Florida. First licensed in 1923 as VE300, and in 1932 as VE3PG holding that call until 1981 when he became K4GV. Ted worked as a marine wireless op for the Dominion Observatory, and was active in the Ottawa ARC and R.A. Sailing club. Our sympathies to daughters Joan and Ruth and brother Art VE3WJ.

VE7APF— Clancy Labounty, Oliver B.C., suddenly April 3, at home. Clancy was well-known for his extensive Ham Directory listings for use with the 80 Metre B.C. Public Service Net. A true gentleman who is missed by all his radio Amateur friends.

REPLY FROM CARF DIRECTOR

Thank you for your 8803 22 response to my letter to the Right Honourable Brian Mulroney regarding the publication and distribution of information about Canadian Amateur Radio operators.

I am receiving many requests from Canadian and foreign Radio Amateurs deploring the removal of this very important publication from domestic and world distribution. The delay in resolving this issue to the satisfaction of the majority of Canadian Amateurs is raising the issue of "the competency, good faith and intent" of the present Federal Government. Your expectation of being able to resolve this issue "in a few weeks" has not materialized.

We would appreciate the action of the Minister to expedite its resolution before it becomes a matter of public interest and debate. The current restriction and apparent impasse is giving Canada a very poor image abroad among our sister liberal democracies.

Your assistance and early response would be appreciated.

J.F. Hopwood

Director - Pacific Region

Canadian Amateur Radio Federation

CONDO ANTENNAS

With regards to Orville VE2JTM's antenna problem (*TCA*, Mar. 88, Letters): I live on the 22nd floor of a condominium tower and had an antenna problem. Fortunately, the balcony was sheltered with a steel panel about 25'x 4' (50'x 4' if you include my neighbour's balcony). So I mounted a whip antenna horizontally, operating against this panel as a ground plane. The whip was guyed with a rope (at about 45°) from the balcony ceiling to the feed end of the top loading coils.

LETTERS (cont'd)

At this point, on a short antenna, the voltage is still pretty low and no guy insulators were used. I have used both the Spider and the Hustler. The Spider, of course, accommodates four bands. With adaptors, the Hustler can also be made multi-band. Results have been excellent: with 100 watts, I got 599 from FL on my first QSO. My second QSO was a ZL, on the opposite side of the building! I have 'WAS' and about 80 countries. So it works.

In Orville's case, the aluminum siding should work just as well. Some bonding may be required between aluminum panels. This is more important along a horizontal line from the antenna base than vertically in order to favour lobes which are 'horizontal.' (In my case, the shape of the ground plane favoured horizontal radiation.) Orville should also guy the whip horizontally to relieve strain on the base from wind load. Good Luck, Orville.

Brice Wightman VE3EDR

THE AVERAGE ISRAELI AMATEUR IS YOUNG

According to a survey made by 4X6UN and 4XGF, the average age of IARC members is 26. This includes listeners, mind you, but even if one should count only the licensed hams, he would find that they are in good shape. Bear in mind that the age of the average American ham is in the mid 50s, and that until Novice Enhancement was introduced in the States, the actual number of hams was on the decline.

Here, in spite of the relatively strict licensing policies of the authorities, the numbers have increased greatly. For sure the radio clubs at the various youth centres with their dedicated instructors are to be thanked, but no doubt there are many factors at play. Youth in Israel is technologically oriented, which tides well for the country's future, and ham radio definitely holds an attraction to open up boarders for a country that unfortunately yet justifiably feels claustrophobic!

In less than ten years since the 4 x 6 series of call signs was opened up they're almost finished. What will be the next prefix?

— Israel Ham News

JRSD FUND

Donations to the JRSD Fund should be sent to Box 8873, Ottawa K1G 3J2.

CARF NUMBER

CARF has installed a new phone system to serve you better! The office number is now: 613-545-9100.



Ham It Up, or Else

If all the 'Else' brothers took to the airways at the same time, it would be 'QRM City'. You see, there are five of them, and all but silent key Stan VE3ATJ are still very active. The four brothers: Len VE3OZH, Ray VE3MGC, Frank VE3EML and Walt VE3ATJ live in Hamilton and St. Thomas, Ont.

Featured in a recent *St. Thomas Times Journal* article, brother Ray Else explains that all have succumbed over the years to a curiosity for Amateur radio, beginning with Stan VE3ATJ in 1938. Frank VE3EML, now 70, followed

in 1947 but after that it was 34 years before Ray VE3MGC got the ball rolling again. Walt VE3OED, 72, who lives next door to Ray, is described as being the most serious Ham operator among the operating and emergency communications 'Net' three days a week.

Ray writes that "Five brothers who are, or were, Amateurs may not be a record but maybe the thought will stimulate Amateur activity among other groups." If so, *The Canadian Amateur* would like to hear from you. ■

U.S.S.R. RENEWS RADIO RELATIONS WITH ISRAEL

One of the big surprises of the Israel International Contest was a few stations from the Soviet Union participating. Since June 1967 the government of the U.S.S.R. had declared Israel out of bounds for QSOs as far as the Soviet hams were concerned.

A report reaching one member who had been a ham in a Soviet Republic when the post-Six day War ban had been declared, and had surreptitiously remained in contact with his friends there since moving to Israel, was that during the weekend of the contest the first ever national Amateur Radio Convention of U.S.S.R. Amateurs was held in Moscow. There, good news was announced: Israel, and in fact any country, was no longer out of bounds, and hams in the Soviet Union would now be allowed to give out their

addresses and telephone numbers on the air and print them on their QSL cards. QSL bureau ties between Israel and U.S.S.R. will be renewed.

Many Israeli Hams, hearing the good news, got on the air and worked their first ever pile-up of Russians and other Soviets. They all seemed to be delighted to be making their first QSO with Israel and knew the greeting 'Shalom'.

In general, an atmosphere of euphoria was felt during these contacts. Nearly 21 years had passed since Amateurs in these two countries had been denied contacts with each other, and now the barriers were down not to mention the possibility of confirming 18 new DXCC 'countries'. The implications are great, and hopefully further good things will follow.

— Israel Ham News

Now Available multi-mode data controller



MFJ shatters the 6 mode barrier and the price barrier with the MFJ-1278 and gives you . . . Packet, RTTY, ASCII, CW, WEFAX, SSTV and Contest Memory Keyer . . . 7 digital modes

Amateur radio's newest multi-mode data controller -- the MFJ-1278 -- lets you join the fun on Packet, RTTY, ASCII, CW, Weather FAX, SSTV and gives you a full featured Contest Memory Keyer mode . . . you get 7 modes . . .

Plus you get high performance HF/VHF CW modems, software selectable dual radio ports, precision tuning indicator, 32K RAM, AC power supply and more.

You'll find it the most user friendly of all multi-modes. It's menu driven for ease of use and command driven for speed.

A high resolution 20 LED tuning indicator lets you tune in signals fast in any mode. All you have to do is to center a single LED and you're precisely tuned in to within 10 Hz -- and it shows you which way to tune!

All you need to join the fun is an MFJ-1278, your rig and any computer with a serial port and terminal program.

You can use the MFJ Starter Pack to get on the air instantly. It includes computer interfacing cable, terminal software and friendly instructions . . . everything you need to get on the air fast. Order MFJ-1282 (disk)/MFJ-1283 (tape) for the C-64/128 and VIC-20 or MFJ-1284 for the IBM or compatible.

Packet

Packet gives you the fastest and most reliable error-free communications of any amateur digital mode.

With MFJ's super clone of the industry standard -- the TAPR TNC-2 -- you get genuine TAPR software/hardware plus more -- not a "work-a-like" imitation.

Extensive tests published in *Packet Radio Magazine* ("HF Modem Performance Comparisons") prove the TAPR designed modem used in the MFJ-1278 gives better copy with proper DCD operation under all tested conditions than the other modems tested.

Hardware DCD gives you more QSOs because you get reliable carrier detection under busy, noisy or weak conditions.

A hardware HDLC gives you full duplex operation for satellite work or for use as a full duplex digipeater. And, it makes possible speeds in excess of 56K baud with a suitable external modem.

Good news for SYSOPs! New software lets the MFJ-1278 perform flawlessly as a WORL/WA7MBL bulletin board TNC.

Baudot RTTY

You can copy all shifts and all standard speeds including 170, 425 and 800 Hz shifts and speeds from 45 to 300

baud. **You** can copy not only amateur RTTY but also press. weather and other exciting traffic.

A high performance modem lets you copy both mark and space for greatly improved copy under adverse conditions. It even tracks slightly drifting signals.

You can transmit both narrow and wide shifts. The wide shift is a standard 850 Hz shift with mark/space tones of 2125/2975 Hz. This lets you operate MARS and standard VHF FM RTTY.

You get both the American Western Union and the international CCITT character sets. Autostart for unattended reception and selectable "Diddle".

A receive Normal/Reverse software switch eliminates retuning and Unshift-On-Space reduces errors under poor receiving conditions.

ASCII

You can transmit and receive 7 bit ASCII using the same shifts and speeds as in the RTTY mode and using the same high performance modem. **You** also get Autostart and selectable "Diddle".

CW

You get a Super Morse Keyboard mode that lets you send perfect CW effortlessly from 5 to 99 WPM, including all prosigns -- it's tailor-made for traffic handlers.

A huge type ahead buffer lets you send smooth CW even if you "hunt and peck".

You can store entire QSOs in the message memories, if you wanted to! **You** can link and repeat any messages for automatic CQs and beaconing. Memories also work in RTTY and ASCII modes.

A tone Modulated CW mode turns your VHF FM rig into a CW transceiver for a new fun mode. It's perfect for transmitting code practice over VHF FM.

An AFSK CW mode lets you ID in CW.

The CW receive mode lets you copy from 1 to 99 WPM. Even with sloppy fists you'll be surprised at the copy you'll get with its powerful built-in software.

You also get a random code generator that'll help you copy CW faster.

Weather FAX

You'll be fascinated as you watch WEFAX signals blossom into full

MFJ

MFJ ENTERPRISES, INC.
Box 494, Miss. Statc, MS 39762
601-323-5869 Telex: 53-4590 MFJSTKV

**AVAILABLE AT AUTHORIZED DEALERS
ACROSS CANADA**

fledged weather maps on your printer. Other interesting FAX pictures can also be printed -- such as some news photographs from wire services.

Any Epson graphics compatible printer will print a wealth of interesting pictures and maps.

Automatic sync and stop lets you set it and leave it for no hassle printing.

You can save FAX pictures and WEFAX maps to disk if your terminal program lets you save ASCII files to disk.

Pictures and maps can be printed to screen in real time or from disk on IBM and compatibles with the MFJ-1284 Starter Pack.

You can transmit FAX pictures right off disk and have fun exchanging and collecting them.

Slow Scan TV

The MFJ-1278 introduces you to the exciting world of slow scan TV.

You'll not only enjoy receiving pictures from thousands of SSTVers all-over-the-world but you can send your own pictures to them, too.

You can print slow scan TV pictures on any Epson graphics compatible printer. If you have an IBM PC or compatible you can print to screen in near real time or from disk with the MFJ-1284 Starter Pack.

You can transmit slow scan pictures right off disk -- there's no need to set up lights and a camera for a casual contact.

You can save slow scan pictures on disk from over-the-air QSOs if your terminal program lets you save ASCII files.

The MFJ-1278 transmits and receives 8.5, 12, 24, and 36 second black and white format SSTV pictures using two levels.

Contest Memory Keyer

Nothing beats the quick response of a memory keyer during a heated contest.

You'll score valuable contest points by completing QSOs so fast you'll leave your competition behind. And you can snag rare DX by slipping in so quickly you'll catch everyone by surprise.

You get lmbic operation with dot-dash memories, self-completing dots and dashes and jamproof spacing.

Message memories let you store contest RST, QTH, call, rig info -- everything you used to repeat over and over. **You'll** save precious time and work more QSOs.

You get automatic incrementing serial numbering. In a contest it can make the difference between winning and losing.

A weight control lets you penetrate QRM with a distinctive signal or lets your transmitter send perfect sounding CW.

More Features

Turn on your MFJ-1278 and it sets itself to match your computer baud rate. Select your operating mode and the correct modem is automatically selected.

Plus . . . printing in all modes, threshold control for varying band conditions, tune-up command, lithium battery backup, RS-232 and TTL level serial ports, watch dog timer, FSK and AFSK outputs, output level control, speaker jack for both radio ports, test and calibration software, Z-80 at 4.9 MHz, 32K EPROM, and socketed ICs. FCC approved. 9x1 1/2x9 1/2 inches. 12 VDC or 110 VAC.

Get yours today and join the fun crowd!

FOR YOUR NEAREST DEALER CALL

CANADIAN DISTRIBUTOR

ITEXPRO

SALES CANADA, INC.
5035 North Service Rd., Unit D-16
BURLINGTON, ONTARIO
CANADA L7L 5V2
1-416-332-5944



ALINCO ELECTRONICS INC.

20705 South Western Ave., Suite 104 Torrance, CA 90501 • (213)618-8616

Dual Bander

Now Available

Tiny, Tough, & Terrific

2m/70cm Dual Band Mobile Transceiver

ALD-24T



Cross Band Full Duplex!

140mm (W) x 50mm (H) x 164mm (D)
5 1/2" (W) x 2" (H) x 6 1/2" (D)
Smallest Dual Band Transceiver Available

With ALINCO's advanced engineering and technology, the ALD-24T 2m/70cm Dual Band Mobile Transceiver is designed to be the ultimate in compact size with an impressive array of features, allowing maximum flexibility in installation and ease of operation.

- 140-147.999 Mhz/440-450 Mhz
- CAP and MARS compatible
- 25 Watt High - 5 Watt Lower Power both bands
- 21 Memory Channels
- Dual VFOs
- Large LCD
- **CTCSS Encoder/Decoder: Standard**
- 16-Key Autopatch Microphone with Up/Down Buttons
- Programmable Band Scan
- Memory Scan and Memory Lockout
- Ultra Compact & Light Weight
- Simple to Operate
- Programmable Standard and Non-Standard Repeater Offset

*Many features, see your Dealer!
Also now available:
25WATT 2m, 45 WATT 2m
and 25 WATT 450 MHZ.

CANADIAN DISTRIBUTOR



SALES CANADA, INC.
5035 North Service Rd., Unit D-16
BURLINGTON, ONTARIO
CANADA L7L 5V2
1-416-332-5944

**AVAILABLE AT AUTHORIZED DEALERS
ACROSS CANADA**

Contest Winner/General Memorable Moments in Amateur Radio

Breaking a pile-up with an invisible antenna

BY ROBERT W. KIPLING
VE3NSK

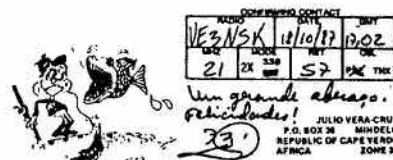
Most hams have operated at one time or another with an antenna system that left a lot to be desired. Some of us who live in apartments never have experienced the satisfaction of using a high-gain antenna or linear; we must be content with simple wire or mobile antennas on our balconies. We are very pleased to be able to work any station, not to mention DX stations!

Since getting my licence in 1982, I have exclusively used temporary antennas clamped to the railing of my third floor balcony, or random-length wires stretched down to a tree (at night,

of course), which would be removed after shutting down. Recently, I put an 'invisible' antenna made with #28 steel wire, extending it about 50m from the balcony to a tree. I leave it up all the time; I sometimes have great difficulty in seeing if it is still there! It doesn't work too badly—I can make the occasional contact, but as everyone who has a poor antenna system knows, we are the last ones on the air when the band opens, and the first off when it closes, and sometimes we don't get on at all.

It is possible, however, to hear extremely strong signals with the poorest of antennas, and often they are caused by 'pile-ups', I seldom can hear

Republic of Cape Verde
D44BC



the rare or not so rare DX station that is causing great interest to many of my colleagues. If I can copy the DX station, sometimes I send a few calls. It always ends with it answering another station, usually giving a '5 by 9' or better signal report. Frustrated, I soon leave the frequency.

A couple of months ago, while scanning the bands on a Saturday afternoon, I came across an enormous pile-up, with D44BC working hard to pull call signs out of the racket. He contacted one K/W station after another, giving them all at least '10 over 9' reports.

"I might as well join the mob and see what happens," I thought. After ensuring my invisible antenna was still out there, checking the SWR while adjusting the MFJ-989B antenna tuner, activating the speech compressor on the IC-751A, and increasing the RF output power to the maximum 100 watts, I depressed the transmit button on my SM-8 desk microphone.

"Victor Echo Three November Sierra Kilo, VE3NSK."

The noise of hundreds of stations calling was overwhelming.

"Victor Echo Three November Sierra Kilo. D44BC returning."

"How is this possible," I thought, as I nearly fell out of my chair!

"Only VE3NSK! please! Only VE3NSK!" pleaded the voice from the IC-SP3 external speaker.

That jolted me into action, I gave my name and QTH, and a '5 by 9' signal report.

"Thank you very much Robert for the 59 report from Toronto. Your report is 57, 57, QSL?"

"QSL Julio, Muito obrigado pelo um bom contacto. Setenta e três meu amigo." As a courtesy, I answered in Portuguese.

"Setenta e três Roberto. QRZ QRZ. Delta 44 Bravo Charlie." The roar from the pile-up increased in volume once more.

Hams like myself who operate with wire antennas from apartment balconies are no strangers to disappointment and frustration. Nevertheless, occasionally we do have memorable moments, like the afternoon I broke the pile-up with my invisible antenna!

Status Report on Ravenscroft-Houghtby Case

Jack Ravenscroft VE3SR of Kanata, Ont. was the Radio Amateur ordered by the Supreme Court of Ontario in a ruling handed down Jan. 29, 1988 to "arrange for the suppression of his neighbour's appliances." He was given 90 days to arrange this.

It took some two months of discussion between the parties to come to an agreement as to how the suppression would be handled. Since the Court laid no foundation for doing this nor provided direction as to what constituted an acceptably suppressed appliance, it took a considerable amount of time to determine which appliances were affected, to determine the role of DOC, to restrict liability to the suppressed appliances and avoid further litigation. It has by no means been easy.

The suppression has been 100% successful on all original appliances affected. There are two new, entertainment type appliances that are under warranty and require suppression. We are attempting to deal with these now and expect an early resolution. We have also obtained a mutually agreed extension to the 90-day period. The extension has been made indefinite and we fully expect to have the suppression

completed within the next two weeks. It will then be necessary for the two solicitors to meet before a Judge to determine final costs to be borne by Jack.

The original estimate provided by Jack's law firm, for the cost of the Appeal has, in effect, doubled. Our expectation prior to the Appeal was that we had collected sufficient funds to cover any anticipated expenses or "awards for inconvenience".

We anticipate a Fund shortfall of \$15,000-\$20,000, assuming no further litigation develops. We are therefore beginning another appeal for funds.

Although the Court ruled that the suppression was to be done to "a standard approved by the Dept. of Communications"; the DOC was not a party to the proceedings and their official response has been that they are not bound by the Court's decision.

Litigation costs money— Please lend your support to cover this shortfall. We have currently received over 1500 separate donations, from all corners of the world. Your donation is needed now— any amount.

Send donations to: JRSD FUND, Box 8873, Ottawa, Ont. K1G 3J2.

International Marconi Day

A Commemoration

BY WM. DEAN MILNER
VE1CBF

April 25. A day which most of us consider just another day of the week. Few of us realize that on that day, in 1874, a man was born in Italy whose work was to have a profound effect on our daily lives. His name was Guglielmo Marconi, his invention—the wireless. Born of an Italian father and Irish mother, Marconi took the studies in electromagnetics of Hertz and Maxwell and, in 1896, applied them in a practical manner to develop wireless telegraphy, the forerunner of all modern electronic communication. To honour his outstanding work, he was awarded the Nobel Prize in Physics in 1909 and was made Marquis in 1929. This talented scientist and engineer, the FIRST Amateur Radio Operator, died in 1937, after having changed the world forever.

To celebrate this man's unique achievements, it was decided to hold a special International Commemoration on April 23.

Known as International Marconi Day,

CANADIAN AMATEUR RADIO HALL OF FAME

The Canadian Amateur Radio Hall of Fame was announced in the February issue of *The Canadian Amateur*. While sponsored by CARF, the Hall operates as an independent body and the choices Members elect to the Hall are completely at the discretion of its Trustees.

Trustees have been nominated from Newfoundland and British Columbia. The Chairman of the Board of Trustees is resident in Nova Scotia. Nominations are needed from all other provinces.

The Hall is separate from CARF and one need not be a CARF member to be nominated as a Trustee. One must, however, be a licensed Amateur. Complete details are in February *The Canadian Amateur*.

Please apply in writing to the CARF office, attention Geoffrey Smith.

Geoffrey Smith VE3KCE/VE1
Windsor, N.S.
Chairman

the six countries in which Marconi carried out his initial and final research into 'wireless' participated, via Amateur Radio, in an on-the-air celebration of his work. Six special event stations were activated on the 10 through 80 metre Amateur bands, during the 24 hour period 0000-2400 UTC, from the original transmitting and receiving sites used by Marconi in his experiments.

The six stations used special call signs to indicate their participation in the event—GB4IMD, Cornwall, England (where Marconi established the European end of his trans-Atlantic link); EI2IMD, Cork, Ireland (on the site of some early experiments); VO1IMD, Signal Hill, Newfoundland (where Marconi established his first base of operations in North America but was later forced to close due to a cable telegraph company monopoly in Newfoundland); VE1IMD, Tablehead, Nova Scotia (which was the site of the first trans-Atlantic wireless message in 1902); K1VV/IMD, Cape Cod, Massachusetts (where the first wireless station in the United States was located) and IY4PGM, the Italian Marconi Memorial Station (operating from Marconi's old home, now a museum, in Bologna Italy, and from which Marconi's daughter read a special five minute commemorative message).

While the Cornwall station was having trouble staying on the air due to the weather (wind kept blowing down both antennas and tents), all six stations were heard at the Tablehead location in Glace Bay, Nova Scotia. This station, manned by members of the Sydney Amateur Radio Club, was situated on the original Marconi site where the first trans-Atlantic message was received over 85 years ago.

This is also the location of the future Marconi Memorial Museum whose construction should begin sometime this summer. Among the static exhibits will be an extensive and fully operational Amateur Radio station operated by the SARC using the call sign VE1VAS, an Amateur version of Marconi's commercial call sign VAS—Voice of the Atlantic Seaboard.

This is the second time the Sydney Amateur Radio Club has activated a station in Glace Bay in celebration of Marconi's achievements. In 1982, a

station operating under the call sign CG1MCS was established at the Miners' Museum in commemoration of the 80th anniversary of the first trans-Atlantic wireless message. The International Marconi Day celebration, a once-in-a-lifetime project, has perhaps been the most elaborate in which the Sydney Amateur Radio Club has been involved to date.

The Tablehead station, VE1IMD, was one of the first on the air primarily through the efforts of Bill Appleton VE1DM, Dick Foote VE1HK, George Beresford VE1CEH, Mike Butler VE1CYO and Bob Mills VE1CEI. They had obtained and erected a 40-foot utility pole at the site. They mounted the rotor and installed the antennas four days before the event, and they obtained the use of a 40-foot moving-van trailer from Moffat Moving & Storage to serve as a 'building' for the duration of the celebration. They ensured it was in place four hours before operation was to commence.

With kitchen and sleeping facilities ready, emergency power on site, three separate radio station setups available, and VE1DM, VE1HK and VE1CEH taking the night shift in the cold (below 0 degrees Celsius in spite of the kerosene heaters), VE1IMD was active for the entire 24-hour period and logged over 600 contacts.

Other operators at the station included VE1CBF, VE1AKO, VE1CJL, VE1ARI, VE1AWI, VE1ALZ, VE1AZ, VE1XQ, VE1DN, VE1CS and VE1JZ. The station was visited by numerous non-Amateurs and members of the media.

A commemorative certificate is available to those stations who worked any five of the six special event stations. Log data on the contacts should be sent to: Cornwall Radio Amateur Club, P.O. Box 100, Truro, Cornwall, England. Do not send log info for the certificate to the individual stations worked. QSLs for the individual stations should be sent according to instructions received from the station concerned.

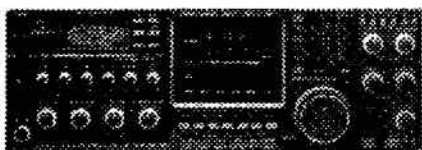
The organizers and operators at VE1IMD and the Sydney Amateur Radio Club were pleased to be able to participate in such a celebration and would like to thank all those around the world who helped to make this event so successful. To all, our heartiest 73's. ■

ICOM

YAESU

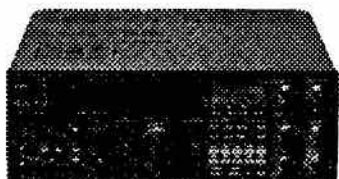
KENWOOD

HF TRANCEIVERS



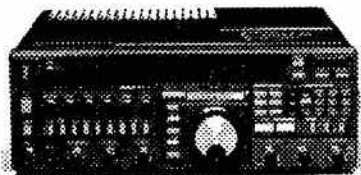
ICOM

IC781	7995
IC761	3699
IC751A	2199
IC735	1599



KENWOOD

TS940SAT	3399
TS940S	3099
TS440SAT	1899
TS440S	1699
TS140S	1449
TS680S	1549

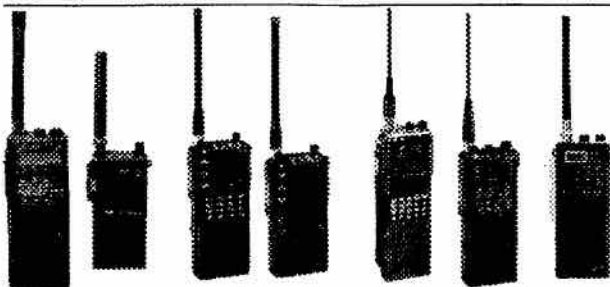


YAESU

FT767GX	2999
FT757GXII	1749
FT747GX	1249

We are a **Factory Authorized** dealer
for Icom, Kenwood and Yaesu!

VHF/UHF TRANCEIVERS



ICOM

IC275A	1769
IC275H	1899
IC475A	1979
IC475H	2279
IC900	879
IC3210	T.B.A.
IC228A	719
IC228H	729
IC32AT	T.B.A.
IC2GAT	569
IC02AT	539
ICu2AT	459

KENWOOD

TS711A	1349
TS811A	1589
TM721A	999
TR751A	949
TM2570A	799
TM2550A	699
TM2530A	649
TM421A	599
TM221A	549
TH215A	529
TH205AT	399
TH25AT	489

YAESU

FT736R	2599
FT212RH	679
FT727R	769
FT23R	399
FT73R	429

Hobbytronique

8100-H Trans Canada Hwy,
South Service Rd.
St. Laurent, Que. H4S 1M5
(514) 336-2423

Hobbytronics

Applewood Village Shopping Center
1077 North Service Rd. #34
Mississauga, Ont. L4Y 1A6
(416) 897-7125

A Detective Story

BY JOHN ILIFFE
VE3CES

A detective story in *The Canadian Amateur* you say? How odd!

Well this one is thanks primarily to Ralph Day VE3CRK, who noted an unusual item in CARF bulletin #33 for Feb. 15, 1988. Seems we had carried a story from *Westlink Report* about contact lenses. Specifically the report stated that under conditions where a contact lens wearer was exposed to bright sparks, for example a welder or in one case a worker who closed a sparking switch, you could damage your eye because the microwave radiation generated by the spark would dry up the fluid in the eye and bond the lens to the cornea. Removal of the lens would then also remove the cornea, causing blindness.

Ralph, in his position at GM, has access to extensive occupational health and safety information.

He didn't think this should be the case but he was curious about the source and whether the alleged accidents had really taken place.

Ralph was able to trace the source of the story to a 'Safety Alert' issued by Genstar Building Materials of Lockport N.Y. on Feb. 10, 1983. This alert contains substantially the same material contained in the *Westlink Report* and gives the location of the two incidents as Dequesne Electric (arcing switch) and UPS (welder). It was subsequently carried in the safety bulletins of a number of companies, apparently.

Response was immediate and the *Baltimore Sun* for March 17, 1983 contains a response from UPS: "We have had no problem whatsoever" and Dequesne Electric: "It's a complete lie. Nothing like that has ever happened at our company." A doctor is quoted in the article as saying: "It is a complete impossibility to dry up the fluid in your eyes. You'd have to stick your head in a blast furnace to do that. (Removing the cornea) would be like pulling off your ear."

Perhaps the best and last word on the topic comes from a publication of the Canadian Centre for Occupational Health and Safety: 'Contact Lenses in the Workplace - The Pros and Cons' dated October 1985. Section 3 of this report is devoted to the problem as discussed above and is quoted here in full:

"III. A Special Case: Contact Lenses and Welding

"For many years, reports have surfaced and resurfaced in one form or another that exposure of contact lens wearers to electric arc flashes, or sparks from the welding process, can cause eye injury and even blindness. Most recently it was alleged that workers exposed to welding arcs had suffered eye injury, resulting from drying of fluid between the eye and the contact lens, which caused the contact lens to be bonded to the cornea. When the contact lenses were removed, it was claimed, the cornea was damaged. The hypothesis was that the contact lenses caused the injury by concentrating rays or heat from the arc. According to the basic laws of physics, it is impossible. Heat from a welding arc or electrical spark is not intense enough to dry up the eye's tear fluid. Nor could a contact lens concentrate rays to intensify the heat.

"All workers in proximity to welding procedures must wear appropriate eye protection, whether they are using contact lenses or not."

We are thankful to Ralph Day for the research, and to the several other Amateurs who brought this error to our attention.

**FROM VE3HRA— HILLCREST
RADIO AMATEURS**

I was both surprised and amused to see the 'contact lens alert' surface again, this time in the March issue of *The Canadian Amateur*. So you can see from the enclosed copy of the bulletin from the Construction Safety Association of Ontario, dated June 1983(!), this is not a recent concern nor have the cases cited been substantiated by any evidence. A call to the local office of the Construction Safety Association turned up no changes to the general recommendation that contacts not be used in any construction site environment unless "definite reasons have been specified by an ophthalmologist or optometrist". While there are many reasons for being cautious about the use of contacts that any user should be aware of, particularly in hazardous environments, the alert, as published, is usually referred to as a hoax. I think it is important to verify such safety concerns before publishing them as fact.

Frank Pianka VE3OTZ

**EXCERPTS FROM
CONSTRUCTION SAFETY
ASSOCIATION**

What exactly happens when a person is exposed to an intense welding flash?

Welding flash releases ultraviolet light that can strike the cornea or front layer of the eye. The flash produces an ultraviolet burn which can be compared to a sunburn on the cornea. A person who suffers a flash is usually not aware of any visual discomfort until several hours later. The burn causes the cornea to swell and the cells composing the very thin surface layer of the cornea begin to fall off. Because the cells of the cornea are constantly regenerating, the cornea will heal itself usually within 24 to 36 hours. Until the cornea heals, the person experiences a sensation of grittiness and pain in the eye and a reduction in vision.

As reported in the safety alerts, can the cornea come off when the contact lens is removed after a welding flash?

No. What happens is that only the damaged, superficial layer of cells on the cornea falls off. This occurs whether or not a person is wearing contact lenses. If there are no contact lenses, tears will remove the damaged cells; if contact lenses are worn, the damaged cells will adhere to the lens because of the tightness of the lens on the swollen cornea. Lack of proper contact lens lubrication may also contribute to the peeling of cells from the cornea.

After exposure to welding flash, it is recommended that contact lenses be carefully removed under the supervision of an ophthalmologist or optometrist, if possible, so as to prevent any further damage to the cornea. The cornea should also be examined for any secondary infection.

**FROM THE CANADIAN
ASSOCIATION OF
OPTOMETRISTS**

Recently, one of our members drew to our attention an item which appeared in the March, 1988 issue of *The Canadian Amateur Radio Magazine* under the heading 'Contact Lens Alert'.

Unfortunately, contrary to your first paragraph, the 'recent incidents' cited

Continued on next page

DETECTIVE (cont'd)

are neither recent nor even real incidents. Both these stories, in fact, have been circulating in various forms in various publications (of varying degrees of respectability) for perhaps a decade.

Yet nowhere have either of the stories ever been accompanied by anything resembling documentation. Both this Association and the American Association of Optometrists have tried to find the source of these stories and the path only leads to one more repetition, i.e. "I heard it from/read it in..." etc. But no 'victim' is ever named, nor are the so-called concerned 'federal safety and health agencies' ever identified.

By printing the story as fact, without checking its validity, you unfortunately are contributing to its perpetuation and I cannot tell you how many letters similar to this one

we have sent, as a result, in the past decade (and expect to send in the next).

If you have sources and data to confirm the story beyond the 'Two recent incidents', 'later investigation' and 'federal safety and health agencies' referred to in your version, we would very much appreciate your providing the information to us to add to our own file on this particular story. Otherwise, we would ask that you please advise your readers that this particular story is just that— a story, unsubstantiated, and, so far as ten years of research has been able to determine, just plain false.

Michael J. DiCola
Director of Communications

ASSOCIATION CANADIENNE DES OPTOMETRISTES

Monsieur le Directeur

L'un de nos membres vient d'attirer

notre attention sur un article paru dans votre numéro de Mars 1988 (p.42) sous le titre "Alerte aux verres de contact".

Malheureusement, contrairement aux affirmations du premier paragraphe, les 'incidents récents' rapportés ne sont ni récents ni même véridiques. En fait, ces deux allégations ont circulé sous diverses formes dans diverses publications (de fiabilité variable) depuis une dizaine d'années peut-être.

Aucun de ces deux rapports n'a jamais été toutefois étayé par quelque information ressemblant à une documentation réelle. Aussi bien notre Association que l'Association américaine des Optométristes avons tenté de découvrir la source de ces rapports pour n'aboutir qu'àux mêmes répétitions, telles que "Je l'ai entendu dire par..." ou "j'ai lu ça quelque part..." etc.. Aucun nom de 'victime' n'a été avancé pas plus que les prétendues "agences fédérales d'hygiène et de sécurité" soi-disant inquiètes n'ont jamais été identifiées.

En publiant cette information comme factuelle sans en vérifier la véracité, vous contribuez malheureusement à la perpétuation de cette fable. Je ne saurais vous dire combien de lettres de mise au point similaire nous avons déjà envoyé depuis dix ans à ce sujet ni combien nous en enverrons au cours des années à venir.

Si vous disposez de sources et de données confirmant cette information au-delà des 'deux incidents récents', de 'la dernière enquête' et des 'agences fédérales d'hygiène et de sécurité' auxquels votre article fait allusion, nous vous serions très obligés de bien vouloir nous les communiquer pour notre propre dossier sur ces allégations. Dans la négative, nous vous prions de faire savoir à vos lecteurs que cette information n'est que pure invention, sans aucun fondement. Dix années de recherches ont abouti à cette conclusion: l'histoire est tout simplement fausse.

Je vous prie d'agréer, Monsieur le Directeur...

signé: Michael J. DiCola
Directeur des Communications
Association canadienne des optométristes

ON THE NEW CSG

The 1988 CARF Certificate Study Guide is clearly the most up-to-date and best study text available on the market today.

Quote: Vol Riley VE7EYG, Assistant Director, B.C.



Aspiring Amateurs at Algonquin

Some aspiring Amateurs are shown in this picture of the recently completed Amateur Radio Course at Algonquin College in Ottawa. Taught by Dan VE3EBI, 20 students completed the course and are presently anticipating their bout with the DOC Examiner.

There are two ways you can operate an amateur dual band UHF/VHF radio: you can go through the extra expense and bother of using two antennas... or, you can install the new Larsen 2/70—the single antenna that brings you both bands.

The Larsen 2/70 blends a half-wave element for 2-meter (144-148MHz) amateur band and collinear elements for 70cm (440-450MHz) amateur band. One antenna serves both bands, and is available with three different mounts for any mobile needs.

The self-resonant design of the Larsen 2/70 allows mast

applications for vessels and base stations outfitted with standard Larsen BSA-K hardware. With or without a ground plane, the Larsen 2/70 gives you the highest performance attainable, whether you are using a dual band radio or two separate radios.

If your radio does not have a built-in band splitter, we can even provide that.

Performance... savings... convenience... and a no-nonsense warranty—four great reasons for banding together with the Larsen 2/70. See your favorite amateur dealer or write for a free catalog today.



BAND TOGETHER



Larsen Antennas
The Amateur's Professional™

See your favorite amateur dealer or write for a free amateur catalog.

IN USA: Larsen Electronics, Inc. / 11611 N.E. 50th Ave. / P.O. Box 1799 / Vancouver, WA 98668 / 206-573-2722
IN CANADA: Canadian Larsen Electronics, Ltd. / 149 West 6th Ave. / Vancouver, B.C. V5Y 1K3 / 604-872-8517

LARSEN® KÜLROD® AND KÜLDUCKIE® ARE REGISTERED TRADEMARKS OF LARSEN ELECTRONICS, INC.

New Germany Rural High School Ham Day 1988

BY BOB COMEAU
VE1ARN

On April 20, 1988, in conjunction with Education Week in Nova Scotia, the Lunenburg County Amateur Radio Club set up a complete ham station and shortwave listening post at New Germany Rural High School. The purpose was to show that ham radio is alive and well in this area, and to show the advantages and enjoyment of both hobbies. We adopted the same approach that the N.S. Amateur Radio Association used with their display at 'Lifestyles 88' earlier this year. That is, Amateur radio wasn't displayed as just a hobby in itself, but was shown how it may be used to enhance other hobbies as well (backpackers, hikers, cross country skiers, etc.).

The big day started at 0730 in typical Nova Scotia fashion. Strong winds—sometimes rain—sometimes hail—sometimes snow. And every once in awhile all four! Fortunately, it didn't deter people from attending to any noticeable degree. Two HF rigs and a two-metre all-mode transceiver along with a handheld provided communications. Antennas for HF consisted of a three-band dipole on the school roof.

We also had a very strange four-band (mobile?) whip mounted on my ½-ton truck. Actually, it was a four-band vertical fastened to a 2 x 4 and shoved into one of the stake pockets in the truck box. Booster cables made the ground connections between the antenna and the truck. Conditions were far from good that day, but we still managed to make some contacts.

The SWL post was set up and manned by Pearson Friars of Halifax. He is an avid SWLer and prospective ham whose display was outdone only by his enthusiasm with the students. His display, covering one entire wall of the classroom, proudly boasted QSLs, pennants and other items from stations all over the world. A nine-foot table was covered with handouts, brochures, reference material and magazines, and a smaller table held four different shortwave receivers. Students were encouraged to sit down and tune in the world!

Assorted lapel pins and other items were given away as prizes for receiving distant stations and locating them on a world globe set up by the post. My heartfelt thanks to Pearson for all his



Bruce Crouse VE1ALT at the controls tuning the bands with Bun Sheffman VE1AGD assisting.

help, as well as to the good folks at IGA for making his visit possible.

Thanks also go to Bruce Crouse VE1ALT who arranged for Pearson to attend and for taking the day off from his busy schedule to assist us in our project. Rounding out the SWL post was my R-600 & COCO 3 hooked up for RTTY, FAX, and CW monitoring.

Another feature of the display was a code practice station equipped with a straight key and electronic keyer for people to try their hands at sending CW. Everyone who successfully sent his/her name in morse received a Certificate of Achievement. A total of 83 certificates were given out and, happily, everyone commented later that it was not as hard as they had thought it would be.

One of the ways we helped to spread the word around in the school was by making as much use as possible of a video tape, *The New World of Amateur Radio*.

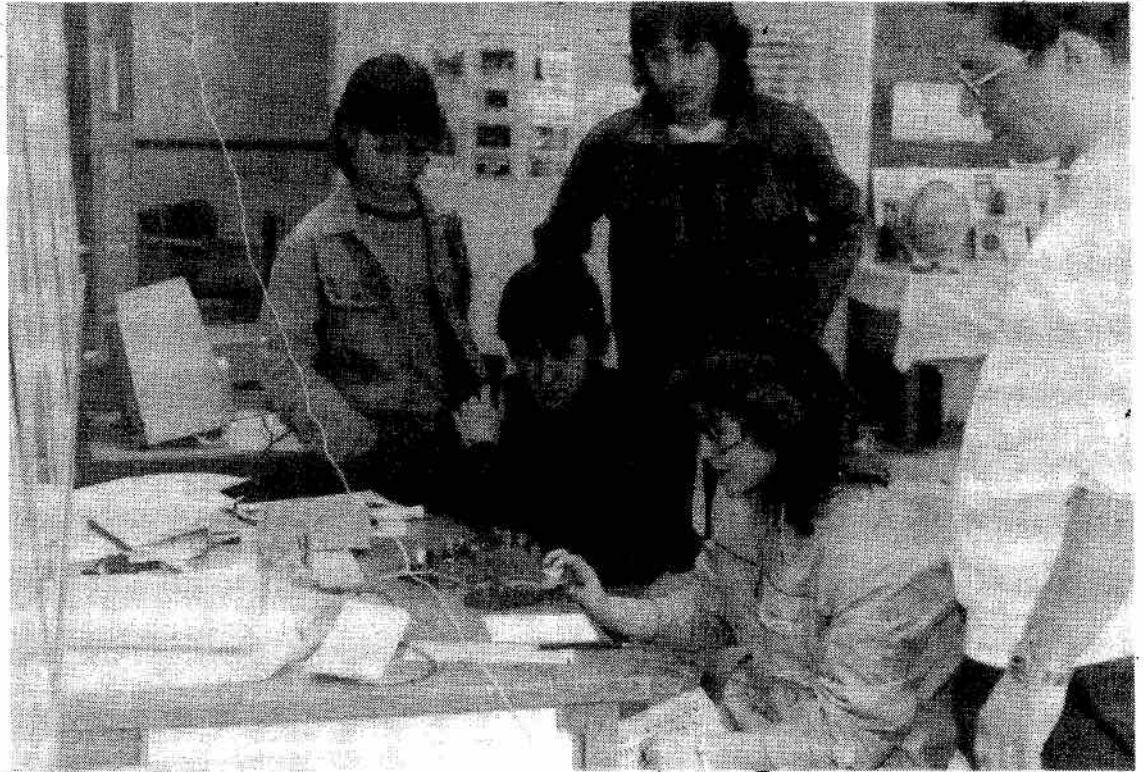
Classes in the school were given the opportunity to view the tape in advance, and any questions were then answered on Ham Day.

All in all, we had about 400 students visit us as well as a large number of adults during the open house at the school that night. The evening closed with a draw for five copies of Radio

Shack's *Getting Started in Electronics*. Six copies were purchased by the club, with the sixth copy being donated to the school library. As well, a video was donated to the school's tape library.

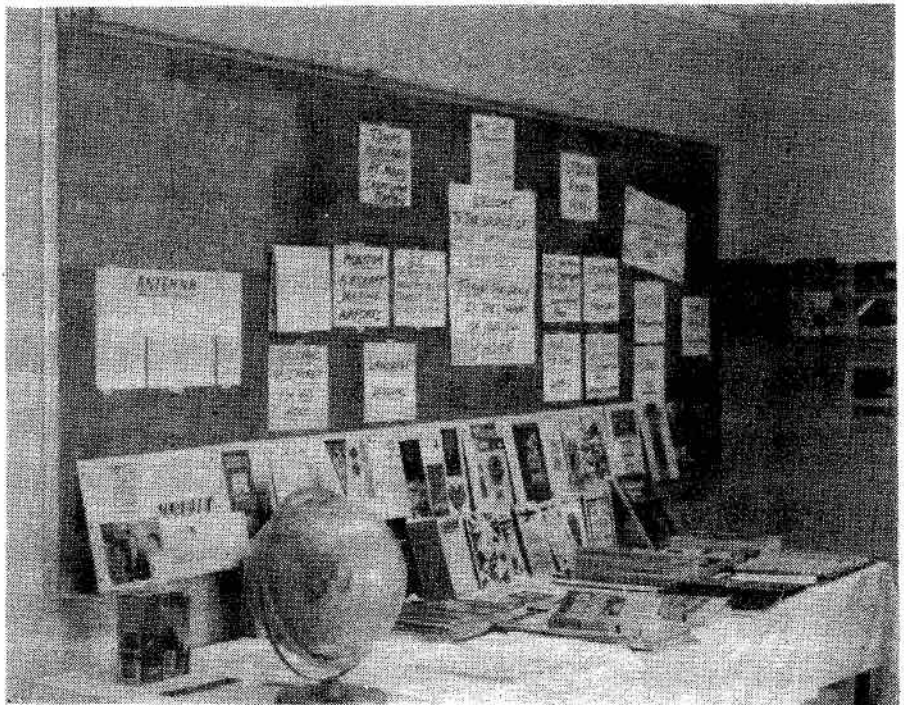
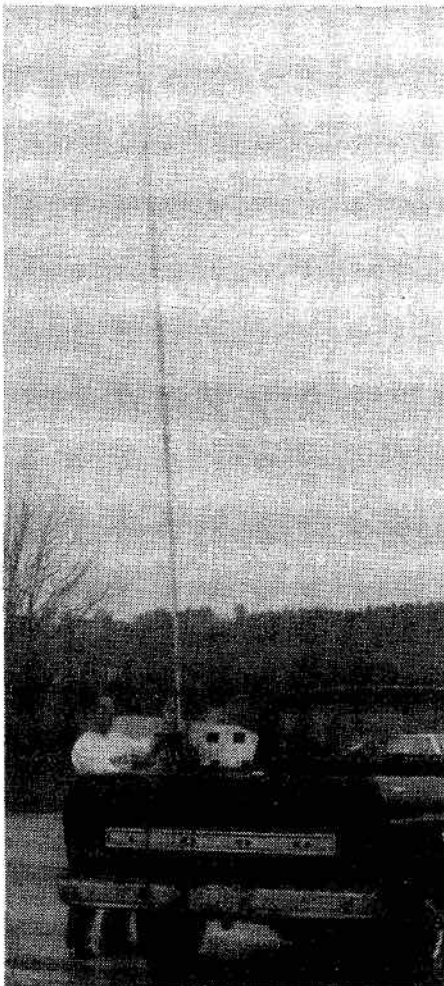
Finally, to update the results, the school would like to go one step further. To begin with, they wish to start a school radio club for both SWLs and Amateur Radio, with our assistance. They have purchased a surplus Heath receiver. Al Johnson VE1IM has donated a CSR-5 general coverage receiver. The Lunenburg County Club already has a ham course scheduled for the Fall, and for those who do not wish to go for their licence at that time but are still interested in radio, I will be giving a course in shortwave listening. We will be repeating the whole process at other schools until we have reached all the county high schools!

My thanks go to all who helped to make Ham Day successful Peter Bowers VE1BZI, John Brown VE1CZC, Barry Colp VE1CCD, Pearson Friars SWLer, Bruce Crouse VE1ALT, our photographers, the Sheffmans, Bun VE1ATGD and Roxanne VE1VCC, and finally, to the staff and students of New Germany Rural High School for their help and hospitality. ■



Above: Grade 9 student Joy Daniels goes for the Morse Code certificate while fellow students Darrel Ramey, Kevin Churchill and Patrick Walters look on. Yours truly is behind Joy supervising (Hi!).

Left: Checking out the mobile whip.



Above: Just part of the SWL post set up by Pearson Friars.



TALK IS CHEAP! We put our promises in writing for you...

Lowest Price Guaranteed!

It is our policy to provide the very best value for your purchase dollar. You will **never** pay more at Century 21 Communications! If within 30 days of your purchase anyone else in Canada advertises for sale the same equipment under similar conditions of sale at a lower price, we will cheerfully refund the difference in full, with proof of lower price. Guaranteed **lowest** price at Century 21 Communications!

Customer Satisfaction Guaranteed!

Century 21 Communications intends to be Canada's largest independent supplier of amateur and commercial communications equipment. It is the aim of every employee to ensure that you are completely satisfied with your purchase. If you have any problems or questions please inform us and we will be glad to assist you in any way possible.

Service You Can Count On!

Century 21 Communications has an on-premises service facility for service of amateur, commercial, cellular and marine communications equipment. We are an authorized dealer and service centre for most major lines. We also have drive-in installation bays for in-vehicle installations. We service what we sell! And we do it well!

"No-Hassle" Extended Warranty!

We believe in the quality and reliability of the equipment we sell. We provide a no-cost extended warranty on all amateur equipment which covers needed repairs long after the manufacturer's warranty expires. And if your equipment legitimately needs service more than three times under warranty we will gladly replace it with a new piece of equipment, free of charge! You can buy with confidence at Century 21 Communications!

Before You Pick Your Rig— Pick Our Brains!

We are all radio amateurs — some with 20 years of experience. All of us keep up with the latest technology and we enjoy talking about it! So, whether you are an experienced amateur, or just a beginner, you'll find that we will be happy to take the time to explain anything you want to know. **AND**, since we carry **ALL** major lines of amateur radio equipment you will get an unbiased opinion! Pick our brains before you pick your rig!

Free Delivery!

In keeping with our policy of offering the very best values to hams across Canada we will deliver your purchase of any transceiver, anywhere in Canada, free of charge! (Some remote destinations excepted).

Why Settle For Less?

Authorized Dealers for

KENWOOD **YAESU**  **ICOM**

PLEASE SEND
68¢ IN STAMPS
FOR CURRENT
FLYERS



STORE HOURS:
Tuesday-Friday
10 a.m.-6 p.m.
Saturdays
10 a.m.-2 p.m.
Closed Sunday
and Monday

4610 Dufferin Street, Unit 20-B, Downsview, Ontario, M3H 5S4 • Telephone: (416) 736-0717
(Just north of Finch Avenue. Take the Allen Expressway from Hwy. 401)

North Pole Reached

BY AL D'EON VE3AND

Some 55 days after leaving Cape Arctic on Severnaya Zemlya, the four Canadian and nine Russian skiers reached the North Pole. Having travelled almost 1000 km, they reached this important and significant first major objective on their way to Cape Columbia, a further 750 metres distant on Ellesmere Island.

Throughout this long and harardous journey they were constantly in touch by Amateur radio which provided the safety and logistical lifeline to the outside world.

Control station for the first part of the journey was located on Sridny Island where it was jointly manned by Leonid Labutin UA3CR and Rick Burke VO1SA/UA0.

As the expedition neared the North Pole, control then passed to North Pole 28, the floating Soviet scientific ice station near the Pole where Barry Garratt VE3CDX using the U.S.S.R. call sign 4K0DX worked together with his fellow Amateur, Piotr 4K0DOC.

On the second part of their journey to Cape Columbia, the main Canadian

base station C18C at Resolute Bay assumed the prime communications responsibility.

This station was staffed by shifts of Canadian Amateurs including the following: VE3CDM, VE3CDX, VE3HO, VE1ASJ, VO1QF, VE3XN, VE3ICR, VE3CKP, VE3LVW, VE3CPU, VE3MFT, VE7HQ and VO1SA.

Each day a considerable amount of traffic was handled by all elements of the Polar Bridge Amateur radio network including stations in Ottawa, Toronto and Moscow. For the regular daily communications between the skiers, the 'moving group' and the base stations, a Soviet built 10-watt sideband transceiver was used. It is crystal controlled and works on two selected frequencies in the 20, 40 and 80 metre Amateur bands. It is powered by a 50 ampere hour lithium battery pack and the dipole antennas are supported by aluminum ski poles.

The two call signs used by the moving group were EX0VE and C18UA.

EXPEDITION COMPLETED

At 1435 UTC June 1, 1988 13 Soviet

and Canadian skiers completed their 90-day, 2000 km journey from Cape Arctic in the Soviet Union, via the North Pole, to Ward Hunt Island in Canada. They were all in good health and walked ashore, alongside one another in one line, thus personifying the spirit of co-operation between the two groups which has made it possible to complete this first time crossing of the Arctic from Russia to Canada.

Word of their safe arrival was passed from the expedition by Amateur radio to the Canadian base station C18C at Resolute Bay, which then relayed the good news to Ottawa and Moscow and the other participating stations of the Polar Bridge Amateur radio network.

This has been very much a team operation, with the Amateur radio component providing the safety and housekeeping lifeline for the skiers.

Sincere congratulation to Dr. Dmitry Shparo UA3AJH, Chief of the expedition, and his four Canadian and eight Soviet companions on their impressive achievement. Amateur radio operators are proud to have been a part of this most exciting enterprise. ■

WIND PROFILER

The Spectrum Allocation Advisory Committee (SAAC) has produced a video entitled 'The Amateur Radio Community Position on Wind Profiler Frequency Allocation'. It was shown to Communications Canada Officials in Toronto on May 19, 1988.

This 16-minute video outlines all Amateur Radio activities within the 70 cm portion of the Radio Spectrum and the effects that high power broadband wind profilers will have on Amateur Activities within the 430-450 MHz band.

The video was professionally produced on a 1-inch master. Available in VHS or BETA format, this video would be ideal to show at an upcoming club meeting. It is being distributed through CARF for \$15 plus \$2.50 to cover postage and handling.

LETTERS TO THE EDITOR

All signed letters to the Editor are eligible to be printed, space permitting. The Editorial staff reserves the right to omit libelous and slanderous material and make spelling and grammatical corrections. Please make an effort to type, print or write very neatly. Thank you... Editor.

Donations to CNIB Amateur Radio Program

Have you ever wondered how the Canadian National Institute for the Blind Amateur Radio Program has been sustained during the past two decades? How, for example, apart from all the volunteer effort involved, the Program could afford to purchase and lease to blind Amateurs, on extremely favourable terms, in excess of 200 HW12 and HW32 transceivers with accessory devices, and, more recently, a quantity of 60 Ten-Tec Argosy II transceivers with voice read-outs and other accessories?

The answer can be stated in one word— Donations!

The CNIB does not fund the Program but, from the beginning, it has provided invaluable guidance and administrative support. In addition, a number of manufacturers have generously donated components and materials, and there have been cash grants and assistance from charitable and other organizations. However, the most meaningful sustaining financial support over the years has come from hams and other individual donors.

There are three ways in which you may make an income tax deductible charitable donation or gift in favour of the 'Amateur Radio Program, The Canadian National Institute for the Blind':

1. A memorial donation. The CNIB will inform the next of kin of your thoughtfulness.

2. A donation of cash and/or Amateur radio equipment.

3. A gift or bequest in your will of cash and/or Amateur radio equipment. Your lawyer can advise you regarding the wording of such a testamentary disposition.

In all three cases, the CNIB will issue an income tax receipt for the amount of the donation. Amateur radio equipment will be given a fair market value for purposes of the receipt, and, unless the equipment is usable by the blind, it will be sold for the benefit of the Program.

Donations and enquiries should be directed to: The Manager, Amateur Radio Program, The Canadian National Institute for the Blind, 1929 Bayview Ave., Toronto, Ont. M4G 3E8.

Social Events

VE3CNE

VE3CNE will be in operation again at the 1988 Edition of the Canadian National Exhibition. This premier display of Amateur Radio will be held in conjunction with Canada's largest annual exhibition Aug. 17-Sept. 5 at Exhibition Place in Toronto.

If you are in Toronto please feel free to visit the booth located in the arts and crafts building at the west end of Exhibition Place just south of the Dufferin Gates. VE3CNE is easily reached via public transit. All sites at exhibition place are accessible to the handicapped.

VE3CNE will be in operation 1000-2200 daily and many facets of our great hobby will be demonstrated to the public including HF operation on all bands 10 through 80 metres and VHF activity on two metres. There will also be facilities for RTTY and Packet. You are most welcome to come along and play with the 'Toys'— we will have lots to entertain you. We invite you to spend some time operating. Better still, talk to our 'non-ham' visitors about Amateur radio.

Our motto this year is 'Amateur radio: THE Hobby!'

For further information write to VE3CNE, P.O. Box 307, Station 'H', Toronto, Ont. M4C 5J2, or contact Thelma Woodhouse VE3CLT at (416) 757-5593. And, if you cannot visit us in person, then please look for us on the air. A special QSL Card will be sent to all stations making a contact with VE3CNE. See you at 'The Ex'.

CHARLOTTETOWN FLEA MARKET

The Charlottetown Amateur Radio Club will be sponsoring an Amateur Radio Flea Market on Sat, July 16. The location will be announced on all the nets and by mail-out when this is confirmed.

Time will be from 9 a.m. to 2 p.m. Admission \$3. Display tables may be reserved no later than Sat. July 2. After that they will be available on a first-come first-served basis. The table rate will be \$4 plus admission.

Refreshments and light snacks will be on hand. Door prizes throughout the day. Visitor talk-in will be on VE1HI repeater (146.340 MHz input, 146.940 MHz out).

To reserve a table or for further information drop a note to Island Fleamarket or contact VE1GB at 902-566-4993, or Robin Creelman VE1VAR at 902-368-2023.

If you are contemplating a July holiday, why not take in our get-together and meet many of the Island

Amateurs! The club also has a weekly Coffee Break and get-together every Saturday morning beginning at 10 o'clock.

The coffee break location is at Gentleman Jim's restaurant located in the K-Mart Plaza and usually lasts until 1 p.m. or later. There is no dress code so come as you are! ANYTIME you are in the area on a Saturday morning please drop in, even if you can stay for just a few minutes!

24TH SEOUL SUMMER OLYMPIC GAMES

Special Stations (Sept. 1-Oct. 5, 1988)
6K24SO: Olympic Village in Seoul, 24 hours a day

6K88SO: Olympic Stadium in Seoul, daytime only

6K88BYC: Yacht Centre in Busan, daytime only

Special Prefix (Sept. 1-OCT. 5): HL88: For individuals and club stations.

Special Awards—

Class A: Contact One 6K special station plus 5 different prefixes— HL1, 2, 3, 4 and 5.

Class B: Contact HL stations including one 6K or HL88 station whose last call letters spell 'SEOUL'.

Class C: Contact one 6K, HL88 or HL station and other 5 different DXCC countries whose call letters spell 'Seoul Olympics'.

Application:

Application form, GCR plus 10 IRC's or \$5 U.S. plus your QSL Card, Contacts valid from Jan. 1 to Oct. 5, 1988, Send to K.A.R.L. by Oct. 5, 1989: Korean Amateur Radio League, c/o Seoul Olympic Awards, C.P.O. Box 162, Seoul, 100, Korea.

— Robin Lee VE3PXP

HAM HAPPENINGS 88

Sidney, British Columbia Sept. 10-11. Sponsored by the Victoria Shortwave Club. 10 a.m. at Saancha Hall on Beacon Avenue. Dealer Displays, Auction, Seminars, Pot Luck Dinner, Swap-n-Shop, Auction, Operating Stations, Contests, Refreshments, Forums, Vancouver Island Club Conference. Talk in: Dup 147.320 UP 6 SIM. 146.520 VHF bottom of 20M & 80M. Official station: VE7EZ. Admission: \$5 per family, students \$1. Wheelchair access. Contact: Larry Michaels VE7GBY, 975 Tattersall Dr., Victoria, B.C. V8X 2X1. Tel: 385-3237.

VE7EZ

Sidney, B.C., Canada— Sept. 5-10. Ham Happenings 88 and Amateur Radio Week brings the Victoria Shortwave Club VE7EZ to life on the bottom of 20M and 80M. Time: 0200 to 0500 UTC. Special certificate send QSL SASE.

CALENDAR

July 8-10: Okanagan Valley Hamfair Society Hamfair, Summerland, B.C.
July 15-16-17: Glacier-Waterton International Hamfest, Montana.

July 16: The Charlottetown Amateur Radio Club Amateur Radio Flea Market.

Aug. 17-Sept. 5: VE3CNE, CNE grounds, Toronto.

Sept. 3-4-5: Smithers Hamfest, Smithers, B.C.

Sept. 10-11: Shuswap Mini-Hamfest, Sunnybrae Park, Tappen, B.C.

Sept. 10-11: Ham Happenings 88, Sidney, British Columbia

Sept. 17: Packet Radio Symposium, Georgian College, Barrie, Ont.

Sept. 17: Calgary Flea Market, Parkhill Comm'y Centre, Calgary.

HAMFAIR

Presented by Okanagan Valley Hamfair Society at Summerland, B.C. at the Illahie Beach and RV Park (11 km North of Penticton, B.C. on Hwy 97N.) July 8, 9, 10.

Friday from 6 p.m. to Sunday at 3 p.m. Flea market, ham videos, code contest, lectures, messiest shack contest (bring photo of shack), best mobile installation. Commercial displays and used gear too. Pancake Breakfast, Flea market. Prizes. Details from: Okanagan Valley Hamfair Society, P.O. Box 477, Penticton, B.C. V2A 6K6.

PACKET RADIO SYMPOSIUM

Sept. 17, 1988, Barrie, Ont. Sponsored by Hex-9 Group of Barrie Amateur Radio Club for the fourth year at Georgian College, Barrie. This year's theme is 'Educate for 88', and we will concentrate on basic packet operation. Doors open 9 a.m., special talks for beginners start at 9:30. Anyone with a special interest is cordially invited to submit a short paper. Talk-in 146.25/146.85 VE3LSR. Inquire Hex-9 Group, Box 254, Barrie, Ont. L4M 4T2. Pre-register via packet VE3FJB-1, \$5 registration.

MINI-DX EXPEDITION

QUEBEC ZONE 2, October 1 & 2. CALL: VE2UMS/2, QTH: 50:10 N. 66:40 W. (outskirts of Sept-Iles). Date & Time: From 00:00Z Oct. 1 to 24:00Z Oct. 2 '88. Bands: 20M: 14.185/phone 14.025/CW, 40M: 7.085/phone 7.025/CW & 7.185/phone to N.A., 80M: 3.785/phone 3.685/CW, 15M: 21.185/phone 21.025/CW, 10M: 28.525/phone 28.025/CW.

Primary band will be 20 metres, others will be used according to conditions. Modes will alternate every two hours. If more than one band is in use, alternate mode will be used on each band (e.g. CW on 20 & phone on 15 or

Continued on next page ▶

► SOCIAL (cont'd)

40). Bands in operation will be announced on 20.

QSL Info via Bureau. Sponsor: Union Metropolitaine des Sans Filistes de Montréal, 7000, rue Marie-Victorin, Montréal (Qué.) H1G 2J6.

FOURTH ANNUAL CALGARY FLEA MARKET

Saturday, Sept. 17, 1988 from 0900 to 1300, at the Parkhill Community Centre, 4013 Stanley Road S.W., Calgary, Alberta. Admission: \$2, Tables: \$2.

To reserve tables send name and call and \$2 to Novatel Amateur Radio Club, P.O. Box 7578, Stn. E., Calgary, Alberta T2E 3M3.

Meet your friends, clean out your shack, and perhaps find just what you have been looking for! Talk-in on 146.52 Simplex or 146.25/85 (VE6RYC)

VE4R

The Red River Community College Amateur Radio Club used special call sign VE4R for the period April 15-May 15. This was in commemoration of the 50th anniversary of the College (1938-1988). Students of the Radio Operation and Electronic Communications course were very active communicating with local and DX stations on 20 metres. QSL cards may be directed to Red River Community College, Winnipeg, Man. The complete QTH is listed in call book as VE4RRC. ■

CORRECTION — WARC BAND ANTENNA

In the June issue of *The Canadian Amateur*, page 43, Fig. 3 shows the overall quarter wavelength as being for 40 metres. It should be corrected to 30M. As mentioned in the text, I did make a 30M trap for insertion into a 40M dipole but did not install it. I therefore don't know the actual measurement for 40M after the trap is installed. Incidentally, someone told me that a U.S. ham built such a trap with 174/U and it failed with 200 watts on it. I suspect perhaps there was some melting of the coax during soldering. Of course there is also a possibility that U.S. watts are larger than ours!

— George VE3OZW

CERTIFICATES OF THANKS

Do you know an Amateur who has contributed to our service in some special way? If you do, send Debbie his name and the name of his club. The CARF Certificates of Thanks should be presented formally, with due ceremony, at a club meeting. Debbie's address is Box 356, Kingston, Ont. K7L 4W2.



Photo — VE7TG

The Radio Club meeting in Bandung, Indonesia, attended by Roy Parrett VE7TG last year. All of the members were young people, shown here. Seated is Andi YC1GEZ; holding the book is Untari YD1VNJ. Standing (l to r): Iwan YC1GCP, now at University in Hamilton, Ont., Gatot YC1EOB, Oyis YD1OXN, Liliek YD1OWR, Arief YC1DDR and Harya YC1HCE/VE7FMB. Harya attended Lester Pearson College, Victoria, B.C. and obtained his first licence on VE7LPC there.

SWAP SHOP

FOR SALE: HOME in Nakusp, B.C., 733 Columbia Crescent. Nine yrs. young, 1450 sq. ft. plus 325 sq.ft. court-yard-sundeck. Beautifully fenced and landscaped. Double garage, Sauna with pool. Underground wiring, sewer, street lights, side walks. EXCELLENT DX-Location. Curling, fishing, golf, Hot Springs, Ski Hill. Contact VE7EHD, 604-265-3175.

WANTED: Wireless set no. 19 equipment and accessories. Especially looking for power amplifier and pocketwatch. I am willing to buy and/or trade equipment. Please write to Chris Bisailion VE3CBK, RR#1 Old Carp Road, Kanata, Ont. K2K 1K7.

FOR SALE: FOXF transceiver kits are available from Frank Hughes VE3DQB, RR 2 Green Lane, Hawkesbury, Ont. K6A 2R2. Diode tuner kit \$40, variable capacitor tuning \$50. Either kit \$5 postage and packing.

FOR SALE: HF Linear Amp. Late Model Amp Supply LA1000A. 4 New GE 6MJ6 Tubes as spares. Originals still FB. Used only a few hours. Replaced by home made PR 813's. Barrie Coates VE7AQK, Box 3463, Langley B.C. V3A 4R8 (604) 581-0924.

FOR SALE: Kenwood SM 220/BS8, SP940 Speaker, MC85/3 mic. leads, TS711A 2M all mode, TS811 all mode UHF/IC 10 interfaces, RS 232 interface, Drake TR 4310 transceiver loaded/ PS7 supply, Uv3- 3 band 144-220-440 transceiver with trunk mounting kit, Cushcraft 230WB VHF Boomers. All above equipment is new or demo. Barry VE3ADA, 416-253-0708.

FOR SALE: Inexpensive electronic kits— 12/24 hr. clock module, transistor tester, audio amp. and more. Send SASE for

complete list. Dan Giles VE7QM, RR3 Harrison Ave., C-6, Ganges, B.C. V0S 1E0. **FOR SALE:** Delhi 6 section tower with mast bearing. Excellent condition. \$250. Six excellent Mosley TA36 Ant. also in excellent condition \$250. Jeff VE3JEF, 60 Chipwood Cres., Willowdale, Ont. M2J 3X7. 416-498-6364.

FOR SALE: Drake FS-4 Frequency Synthesizer in excellent condition. With manual. B. Collins VE3GVH, (705) 522-2158. RR 3 Site 2, Box 14, Sudbury, Ont. P3E 4N1.

TRADE: War Surplus never used (vintage 1943) U.S.A. S/CRT 71/TPN-2 transceiver and test set. Collector's items. What have you? John Valteau VE3OVA, 27 Weichel St., Kitchener, Ont. N2M 2A7 519-576-4067.

FOR SALE: Communications Test Equipment. One Cushman CE-3 Communications Monitor s/n 2156 c/w Model 303 Broadband Mixer Plug-in c/w Model 302 Deviation Meter Plug-in covers: 20-80 MHz/120-180 MHz/450-512 MHz/910-1010 MHz (on Harmonics) \$3,000. One Cushman CE-3 Communications Monitor s/n 3055 c/w Model 303 Broadband Mixer Plug-in c/w Model 301 Scope Plug-in covers: 20-80 MHz/120-180 MHz/450-512 MHz/910-1010 MHz (on Harmonics) \$3,500. One Cushman Model 305 VHF Pre-Selector Plug-in \$350. One Bayly AC (Audio) VTVM Model 111A \$75. One Measurements Model 1418 FM Signal Generator covers: 25-32 MHz/32-41 MHz/41-54 MHz/130-175 MHz/400-470 MHz/890/960 MHz (on Harmonics) \$1,000. Contact Norm Freidin VE3CZI, 2129 Larabee Court, Burlington, Ont. L7P 3S3 (416) 637-3427 (work).

AN AWESOME FOURSOME FROM KENWOOD

R-5000



Superb Communications Receiver

TM-2550A



Feature packed for 2 Meter FM

TR-751A



2 Meter All-Mode Transceiver

TS-440S



General Coverage HF Transceiver

Bencher

- BY-1 paddle \$94.50
- BY-2 chrome paddle \$109.00
- ZA-1 super 1:1 balun \$37.00



DELHI

AND TRYLON HAM TOWERS

**SUPER SPECIAL ON
ALL ALINCO
PRODUCTS!**

CALL FOR QUOTE.

Rotors

CD-45 11 CALL FOR
HAM IV. LATEST
T2-X- PRICES



PRE-INVENTORY CLEAROUTS

SAVINGS UPWARDS OF \$200!

- Kenwood TS-780 dual bander 2M & 70 cm base
..... Reg. \$1599 SPECIAL \$1399.
- Yaesu FT-726R Deluxe all mode 2M base
..... Reg. \$1795 SPECIAL \$1595.
- Ameritron AL-80A HF Linear 1000 watts P.E.P.
..... TO CLEAR \$1395.
- Mosley S-402 Deluxe 2 element 40M beam
..... Reg. \$839 SPECIAL \$639.
- Telex/HyGain 18T Hy-Tower 10-80M vertical
..... Reg. \$1099 SPECIAL \$899.
- Yaesu FT-757-GX HF transceiver, full warranty \$1349.
- CLUB SPECIAL
- RG-213 NCV 50 ohm coax, 300 metres..... 595.
- Telex T"-X, Ham IV & CD-45LL rotors. Call for latest prices.
- Large shipment of TELEX/HYGAIN & CUSHCRAFT
antennas arriving soon. Give us a call for your requirements.
- Trylon & Delhi Towers our specialty.**
- All sizes available. Inquire about our 75-foot Trylon
with 32 square feet windload.**

H.C. MacFarlane Electronics Ltd.

**CHECK OUR
SPECIAL PRICES
ON USED GEAR**

R.R. #2 Battersea, Ont. K0H 1H0, Phone 613-353-2800 VE3BPM
IN BUSINESS SINCE 1958
Open Monday to Saturday 7:30 a.m. to 9 p.m. Closed Sunday.

YOUR ONE-STOP HAM SHOP

ANTENNA SYSTEMS INSTALLED WITHIN RADIUS 150 KM; EXPERTISE FREELY GIVEN ANYWHERE!

Dealer for Delhi Towers, CDE Rotors, Hy-Gain, Mosley, Cushcraft and Hustler Antennas, MFJ and B&W products.

**SPECIFICATIONS AND PRICES
SUBJECT TO CHANGE**

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

CONTEST SCENE

I stopped in to see Bob, one of the local Big Guns, the other day and found out that he had a new rig.

"Yessir, just got it," he said proudly. "One of the first in the country. Made by a new Japanese outfit, International Communications Equipment. It's their new INCOME 60K."

I looked at the rig, stretching a foot and a half across the operating desk. It was covered with blinking lights of every colour, and sat beeping and clicking softly to itself.

"Impressive," I said. "What's this screen in the middle for?"

"Ah," said Bob. "That's the heart of the system. It's a high resolution graphics display that's connected to the microprocessor in the rig, a Yamaguichi 786XY5-2, 128 bit LISP processor. It can display all the signals on the band, or a spectrum analysis of your outgoing signal and the incoming signal. Of course, it also shows information from the computer."

"Wow, neat. I've never seen a rig with a mouse and a joystick before."

"Well, the mouse is used for the pull-down menus, and with the joystick, you can play Space Invaders when the band is dead."

Suddenly, the rig beeped several times, clicked once, and the display changed.

"Aha," said Bob. "The rig just changed bands. It continually monitors WWV propagation information, so that it is always on the best band for DX."

"Wow."

The rig chimed three times. A voice said, "DX alert. 5U on the band." The volume on the receiver came up, and we heard, "Roger, VE2ZP, thank you. This is 5U7XX, up ten."

"Whoa, I need this one. Hang on a minute."

Bob grabbed the microphone, and worked the 5U with one call. After he signed, the rig said, "Good job! Country total on 15 now 292, 305 overall." It then whirred softly, and an envelope popped out of a slot on the side.

"Nice feature, eh? It's optional, but I figured what the heck. It automatically prints a QSL, puts it in an envelope, and addresses and stamps it using the built-in postage meter."

"How does it know the address?"

"The callbook is on an optical disk, plus the QSL managers' lists are updated weekly on the 40M hard disk."

"Well, I am impressed."

"Hey, you should see it when you work someone else with a 60K. The rigs exchange all the standard info in a 30 mS databurst. Saves a lot of time."

"Gee, what will they think of next. Hey, what's that thing in the corner that

looks like a counter?"

"It's a counter for QSOs. I've got 5963 QSOs on this baby already. Pretty soon, I'll have to take it in for its 10,000 QSO checkup."

"Gee, it sure does make my rig look primitive. Oh, well, I like my HW101 anyway. Hey, by the way, did you work that expedition to Baffled Island last week?"

"Uh, no. I was at work. This thing's not cheap, you know."

"Oh, yeah, sure," I said. "I understand. Anyway, I better get going. Got to try the Fiendishly Difficult Contester's Quiz in *The Canadian Amateur*. See you."

As I left, the rig went Bong! and a voice said, "BY on 80. Changing bands. Stand by."

FOURTH ANNUAL FDCQ

Well, if it is summer, it must be quiz time. After the silliness above, I won't waste any time. Ready? Set. Go.

1. What year as the first CQ WW DX Contest held?
2. What was noteworthy about the 1979 ARRL DX Contest?
3. Which zone has the lowest population?
4. Who sponsors the trophy for top VE single operator all band in the CQ WW Phone Contest?
5. Having completely abandoned your sanity, you decide to enter the Connecticut QSO party. How many counties can you work?
6. It's late in the contest, and you are desperate for multipliers. You decide to telephone 9N1MM. What's the international direct dialing code?
7. Who sponsors the Worked All Europe contest?
8. Everybody knows the first names of these testers. But can you match the last names to the calls?

VO1SA	Hammond
OH2BH	Slater
G3FBX	Burke
N6TJ	Laine
VE3XN	Neiger

9. Which episode of Star Trek begins with Lt. Uhura receiving a CQ in Morse Code?

10. The new Portuguese prefixes are very confusing to anyone who has been DXing for a while, since they all sound like exotic DX. What countries did the following prefixes used to stand for? What is their present prefix? CR4, CR5, CR6, CR7, CR9.

Well, maybe we better quit before everyone's blood pressure gets too high.

WPX RESULTS

The results for last year's WPX CW Contest were published in May CQ

CONTEST CALENDAR

July 1 Canada Day Contest
July 2-3 Venezuelan SSB Contest
July 2-3 Colorado 6 Metre Contest
July 9-10 IARU HF World Championship
July 10 ARCI QRP CW Sprint
July 14-17 Los Monjes Is. Expedition
July 16-17 CQ WW WPX VHF Contest
July 16-17 Colombian Contest
July 30-31 Venezuelan CW Contest
July 30-31 FADCA HF Packet QSO Party
July 30-31 Florida QSO Party
Jul. 30-Aug. 1 MARC County Hunters CW
Aug. 6 YLRL YL/OM SSB Sprint
Aug. 6-7 ARRL UHF Contest
Aug. 13-14 European CW Contest
Aug. 14 ARCI QRP SSB Sprint
Aug. 20-22 New Jersey QSO Party
Aug. 27-28 All Asian CW Contest
Sept. 7-9 YLRL 'Howdy Dads'
Sept. 10-11 European SSB Contest
Sept. 24-25 CQ WW DX RTTY Contest
Sept. 25-26 Classic Radio Exchange
Oct. 1-2 VK/ZL/Oceania SSB Contest
Oct. 1-2 Fernand Raoul F9AA Cup
Oct. 8-9 VK/ZL/Oceania CW Contest
Oct. 8-9 IRSA Radiosporting Contest
Oct. 8-9 Pennsylvania QSO Party
Oct. 29-30 CQ WW DX SSB Contest
Nov. 11-13 Japan International DX
Nov. 12-13 European RTTY Contest
Nov. 26-27 CQ WW DX CW Contest

-Courtesy Frank Anzalone
& CQ Magazine

Magazine. The Canadian results are shown below. Top single op all band went to VE7UBC, operated by JM1CAX, with just over 1 million points. On ten metres, VE2AEJ/3 was the only entrant, and so comes up with first place on that band.

Twenty metres saw a battle between VO1QU and VD1ASJ. Forty-three QSOs and 20 multipliers proved to be the edge for QU, who topped Andy by 300k. As well, they nailed down the number 2 and 4 positions worldwide on 20M. Not too shabby.

Meanwhile, over on 40M, VE3EOQ was keying his way to 97 QSOs and 33k, number one of one.

There were no multi operators, and no Canadian records were broken.

Well, that's about it for this month. Now for a brief vacation, and see you all again in the Fall. Err, autumn. I try to avoid the 'Y' word. It reminds me too much of antennas.

FDCQ ANSWERS

1. 1948
2. It was the year that the contest changed from two weekends per mode to one.
3. Zone 2, of course.
4. Aha! There isn't one!
5. Eight
6. 977
7. The DRAC, the national organization in West Germany

Continued on next page

CONTEST (cont'd)

8. In the same order as the calls, Burke, Laine, Slater, Neiger, Hammond.
 9. 'Space Seed', the episode with Ricardo Montalban as guest star which was used as the basis for the first Star Trek movie.
 10. Cape Verde D4, Sao Thome S9, Angola D2, Mozambique C9, Macao XX9. ■

CANADIAN RESULTS 1987 CQ WPX CW CONTEST

CATEGORY	CALL	SCORE	QSOS	MULTS
Single op	VE7UBC	1,186,220	998	370
All Band	VE3KP	682,696	704	334
	VE6OU/3	550,656	512	288
	VE7QO	531,732	655	292
	VE7ETW	26,404	114	92
	VE3OHU	13,578	76	62
28 MHz	VE2AEJ/3	3,072	43	32
14 MHz	VO1QU	1,878,240	1442	516
	VD1ASJ	1,536,485	1399	487
	VE7CPA	133,224	310	183
	VE3XIQ	52,197	134	137
	VE6APN	23,970	114	102
	VE6DZ	12,220	73	63
7 MHz	VE3EOQ	33,200	97	83

Contest Information

—Courtesy Frank Anzalone
& CQ Magazine

IARU HF CHAMPIONSHIP 1200Z Sat. to 1200Z Sun., July 9-10

This is the third annual IARU World HF Championship. All six bands, 10 through 160 metres, and the full 24 hours may be used by both single and multi-operator stations. (No WARC bands.)

Categories: Single operator, CW only, phone only and mixed modes. Multi-operator, single transmitter, mixed mode only. Must remain on a band for at least 10 minutes at a time. (Exception: Only IARU member-society HQ stations may operate simultaneously on more than one band with one transmitter on each band/mode.)

Exchange: RS(T) and ITU zone. HQ stations, RS(T), and official society abbreviation.

Points: Contacts within own zone or with an HQ station, 1 point. Contacts within own continent but different zone, 3 points. Contacts with different continents, 5 points.

Multiplier: Total number of ITU zones plus IARU HQ stations worked on each band. (Note: HQ stations do not also count for zone multipliers.)

Final Score: Total QSO points from all bands times the sum of the multiplier from each band.

Awards: Certificates to the top scorers in each category, in each state, each ITU zone, and each DXCC country. In addition, achievement awards will be issued to those making at least 250 QSOs or having a multiplier of 50 or more.

Entries with more than 500 QSOs are required to include a dupe sheet with

their log. A three QSO reduction will be assessed or each duplicate QSO for which credit has been taken. Disqualification may occur if the overall score is reduced by 2% or more.

A large SASE with 2 units of first-class postage or 2 IRCs will get you official forms and a ITU zone/prefix/continent map.

Mailing deadline for entries is Aug. 10 to: IARU Secretariat, Box AAA, Newington, CT 06111 U.S.A.

COUNTY HUNTERS CW CONTEST

0000Z Sat. to 0200Z Mon., July 30-Aug. 1

The MARAC County Hunters Net is again sponsoring this year's contest. Mobile and portable operation from less active counties is welcome and encouraged.

The same station may be worked on each band, and mobile and portables from each county change for QSO credit. Mobiles operating on a county line give and receive one QSO number, but each county is valid as a multiplier. (Mobile and portables must identify by signing M or P after their call).

Exchange: QSO no., category (M or P), RST, county and state for U.S., province or country for others.

Scoring: QSOs with fixed stations are worth 1 point, with mobile and portables 3 points. Multiply total QSO points by the sum of U.S. counties worked for final score.

Frequencies: 3575, 7055, 14060, 21060, 28060. On 20 and 40 mobile and portables should call CQ below the suggested frequencies. Fixed stations above the suggested frequencies.

Awards: Certificates to winning stations as follows:

F— Fixed or fixed portable in each state, province, and country with 1000 or more total score.

P— Portables in each state operating from a county other than its normal location with a score of 1000 or more.

M— Mobile in each state operating from 3 or more counties with a minimum of 10 QSOs from each county.

Plaques to the top-scoring mobile, portable and fixed station in the U.S. meeting the above requirements.

Mobile and portables who change states calculate their score for a state certificate, and total score for a plaque.

A summary sheet showing the scoring is requested and a check sheet of counties worked is a must for entries with 100 or more counties.

Mailing deadline for logs is Sept. 5 to: Jerry Burhead N6QA, 7525 Baltic St., San Diego, CA 92111. (Include a large SASE for copy of results.)

CQ WW VHF WPX CONTEST

0000Z Sat. to 2400Z Sun., July 16-17
This is the fourth annual World-Wide

WPX VHF Contest.

Bands: All VHF bands, 6 metres through 23 cm, may be used. And 50, 70, 144, 220, 432, 902 and 1296 MHz.

Classes: 1. Single Operator (a) all band, (b) single band, (c) all band low power, (d) single band low power (30 watts PEP). 2. Multi-operator (a) all band, (b) single band. 3. Portable (temporary power source only). 4. FM only.

Exchange: Call sign and grid square (4 digits— e.g. FN20). Signal report optional.

Scoring: One point per QSO on 50, 70 and 144 MHz. Two points on 220 and 432 MHz. Four points on 902 and 1296 MHz. Stations may be worked once per band regardless of mode.

Multiplier: Number of prefixes worked, additive on a band-to-band basis.

Final Score: Total QSO points times the sum of different prefixes worked on each band.

A prefix is considered to be the three letter/number combination which forms the first part of the call sign— i.e., N1, W2, W83, AA6, 4X4, Y32, etc. A station in a call area different from that indicated in the call is required to sign portable. The location of the portable determines the prefix.

Awards: A large selection of certificates and plaques will be awarded in each class in all major geographic areas, North America, Europe and Japan. (U.S. states, Canadian provinces, European countries and Japan call areas.) Additional areas will be considered as returns justify.

Logs must be posted no later than Aug. 31 and this year go to: CQ VHF WPX Contest, c/o SCORE, P.O. Box 1325, Eatontown, NJ07724. They can also be sent to: CQ, 76 N. Broadway, Hicksville, NY 11801. ■

WESTLINK DEFENCE FUND

A legal defence fund has been set up by well-known Amateur Joe Schroeder W9JUV to assist the 220-Spectrum Management Association of Southern California and the Westlink Radio Network (Bill Pasternak WA6ITF). They are being sued by a group called the 220-MHz Frequency Coordination Commission. The suit claims that remarks made by 220-SMA President Karl Pagel N6BVU to the *WSYI Report* and others... and aired over the Westlink Radio News were libelous and slanderous to them and their organization. Contributions for The Westlink Legal Defence Fund go to P.O. Box 406, Glenview, Illinois 60025, U.S.A.

-WSYI

Bob Boyd VE3SV
P.O. Box 356,
Kingston, Ont. K7L 4W2

ARES AMATEUR RADIO EMERGENCY SERVICE

It is hoped that this column, which is being submitted to both The Canadian Amateur and to QST Canada, can become an ongoing source of news and information for members of both organizations on ARES activities across Canada. ARES members and particularly ECs are invited to send along information on what they are doing and on any developments they would like to share with other ARES groups. Yours truly will pull this together in future columns, all with the objective of increasing our collective ability to serve our community and our nation, should disaster strike.

According to the Ontario Emergency Plans Act, each municipality should have "an Emergency Plan governing the provision of necessary services during an emergency, and the procedures and manner in which... persons will respond to the emergency." The requirements of the other provinces are similar. By the same token, each ARES group should have an Emergency Communications Plan to cover its *modus operandi* in emergencies.

Such a Plan should set forth the things that each ARES member should know, in order to carry out his responsibilities in an emergency. The contents of the Plan will depend completely on the local situation. The Plan for a small ARES group oriented towards 2-metre voice communications only will be very different from that for a large metropolitan area where high speed message handling using packet and RTTY is an essential component.

It is a good idea, before the final Plan is issued, to review a draft copy at a meeting of ARES members. This discussion will likely lead to useful suggestions for improvement and will certainly create a better understanding of its contents. Let your members feel they had a hand in the Plan's development. A good Plan will serve as a ready reminder in an emergency, of information that may have become hazy in their minds with the passage of time. A good Plan can be an important training and exercise tool.

Since emergencies come in different shapes and forms, the Plan should not be too rigid— it should cover the essentials, but should permit sufficient flexibility to enable the ARES group to adapt its operations to the communications demands of the particular disaster. While the Plan is intended primarily for the guidance of the ARES members, it should be suitable for distribution to the emergency response agencies that may be served, such as Red Cross or the Municipal Emergency

Control Group. The finished Plan will carry more authority if it is neatly typed and provided with a suitable cover. A word processor is the best storage device, since revisions can be readily incorporated.

Any Emergency Plan should include such items as:

- the duties and responsibilities of the EC, the AECs and the members.
- how the Plan is activated and ARES members are mobilized, including a telephone tree.
- operating instructions such as net procedures, use of tactical call signs, use of the standard message form, and operating frequencies.
- information on drills and test alerts.
- a list of ARES members, including their addresses.
- the names and telephone numbers of key individuals in other emergency response organizations who may need to be contacted quickly.

My file of Emergency Communications Plans is far from complete— the only Canadian Plans I have are for Ontario municipalities. I'd appreciate receiving Plans from other parts of our vast country, and will pass on any novel features I find in them.

The Quinte ARES Plan, prepared by John Lester VE3MB, has, in addition to the above basics, a very useful glossary of terms, and a list of prowords for voice communication. The Plan effectively stresses that the function of the group is to provide communications, and not to offer opinions or interpretations or to carry out rescue work.

Jack Strangleman VE3GV's Plan for London and the Counties of Middlesex and Oxford contains maps showing the dependable coverage of each of the eight available repeaters. There is also a section on weatherwatch procedures dealing with what and how to report. A copy of the agreement with the Ontario Division of the Canadian Red Cross Society is also included.

Metro Toronto, whose EC is Gord Fraser VE3HSF, has, as you might expect, a quite sophisticated Plan. It includes emergency repeater assignments, digital traffic formats, and the digital transmission formats of the Red Cross enquiry and registration cards. The duties and responsibilities of Amtor, packet and National Traffic System gateway operators are included. It is noted in the Plan that Metro ARES is not a first response organization— it is visualized that four to 24 hours will be required before the group is fully operational.

The Plan for Chester County, Pennsylvania includes a checklist of the things that each ARES member will need in an emergency. This covers equipment, writing gear, personal gear, tools, and other items, the lack of which will seriously impair the ability of the operator to do his job.

Does your ARES group have an Emergency Plan? If not, you may wish to develop one, incorporating some of the features that others have considered necessary. In an emergency, a Plan will be a big help because after all, IT CAN HAPPEN HERE! ■

Radio Crime Stoppers

"The Hamwatch"— Amateurs are helping the police with crime prevention in California, with spectacular results. Forty-five Amateurs in the Los Angeles area are staking out some of the community's worst crime areas on weekends, with the blessing of law enforcement agencies.

Hamwatch members spend their Friday and Saturday nights looking out high-rise windows, on rooftops, and in cars and vans, watching for car thieves, muggers, robbers and dope peddlers.

Organized in the Van Nuys area, a high-crime neighbourhood, the group maintains tedious surveillance that the police does not have the manpower to undertake. If a break-in or mugging is observed from the hidden Amateur observation post, a patrolman or prowler car is alerted

and the police take over. The Hamwatch has been operating successfully for nearly six years.

In three months, the citizen stakeouts led to 45 felony arrests, 25 misdemeanor arrests, and the recovery of a great deal of stolen property and a number of cars.

Lieut Al Durer, head of the Van Nuys detectives, was skeptical when the Hamwatch was started. "I thought that the boredom would discourage them," he said. "But these people have the patience and enough success to keep them interested."

"What they have saved us in stakeout manpower is incredible," Lieut. Durer told the Los Angeles newspapers recently.

Perhaps Hamwatch is an idea which could find favour in Canadian cities where crime is a problem.

—From UPDATE

KENWOOD

KENWOOD TRANSCEIVERS and RECEIVERS ARE NOW AVAILABLE FROM
FROM : ATLANTIC HAM RADIO LTD.

Affordable DX-ing!

TS-140S

HF transceiver with general coverage receiver.

Compact, easy-to-use, full of operating enhancements, and feature packed. These words describe the new TS-140S HF transceiver. Setting the pace once again, Kenwood introduces new innovations in the world of "look-alike" transceivers!

- Covers all HF Amateur bands with 100 W output. General coverage receiver tunes from 50 kHz to 35 MHz. (Receiver specifications guaranteed from 500 kHz to 30 MHz.) Modifiable for HF MARS operation. (Permit required)
- All modes built-in. LSB, USB, CW, FM and AM.
- Superior receiver dynamic range Kenwood DynaMix™ high sensitivity direct mixing system ensures true 102 dB receiver dynamic range.



- **New Feature! Programmable band marker.** Useful for staying within the limits of your ham license. For contesters, program in the suggested frequencies to prevent QRM to non-participants.
- **Famous Kenwood interference reducing circuits.** IF shift, dual noise blankers, RIT, RF attenuator, selectable AGC, and FM squelch.

- **M. CH/VFO CH sub-dial.** 10 kHz step tuning for quick QSY at VFO mode, and UP/DOWN memory channel for easy operation.
- **Selectable full (QSK) or semi break-in CW.**
- **31 memory channels.** Store frequency, mode and CW wide/narrow selection. Split frequencies may be stored in 10 channels for repeater operation.
- **RF power output control.**
- **AMTOR/PACKET compatible!**
- **Built-in VOX circuit.**
- **MC-43S UP/DOWN mic. included.**

TS-940SAT HF Transceiver
TS-440SAT HF Xcvr & Tuner
TS-440S HF Transceiver
TS-140S New HF Transceiver
TS-680S New HF 7.6M Xcvr
PS-430 Power Supply
PS-50 Heavy Duty Pwr Supply
R-5000 New Receiver Gen Cov
R-2000 Gen Cov Receiver
TM-721A Deluxe 2M/440 Dual
TH-25AT New Mini Handheld
TH-215A New Deluxe Handheld



TS-680S

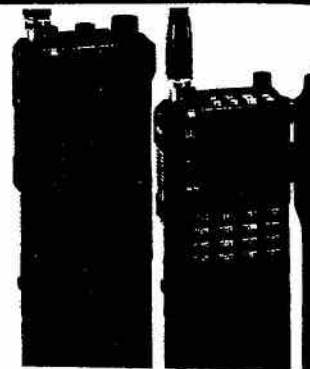
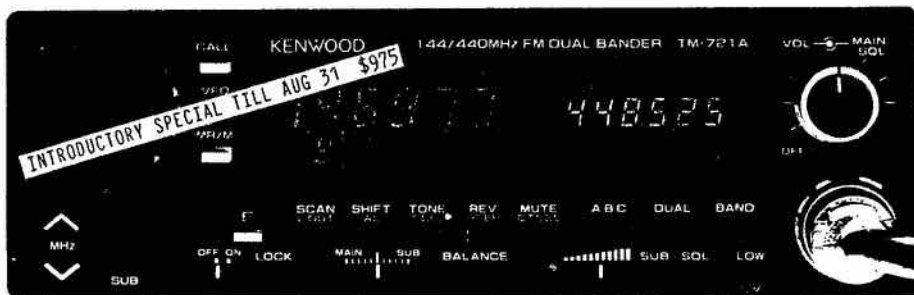
All-mode multi-bander

- 6m (50-54 MHz) 10 W output plus all HF Amateur bands (100 W output).
- Extended 6m receiver frequency range 45 MHz to 60 MHz. Specs. guaranteed from 50 to 54 MHz.
- Same functions of the TS-140S except optional VOX (VOX-4 required for VOX operation).
- Pre-amplifier for 6 and 10 meter band.



KENWOOD PRODUCTS ARE IMPORTED INTO CANADA BY ATLANTIC HAM RADIO LTD. (AHRL) and CARRY A FULL 90 DAY WARRANTY FROM ATLANTIC HAM RADIO LTD ONLY.

TM-721A
Deluxe FM dual bander



IC-32AT
2 Meters and 440MHz

IC-2GAT
2 Meters

IC-2GAT: 7 Watts Rx 138-174MHz
IC-4GAT: 6 Watts 440-450MHz
IC-32AT: 5 Watts Rx 138-174MHz
Tx 140-150MHz

A New Generation of Powerful!
Select a new "G Series" or dual band enjoy full base station luxury in a portable for you!

- **Maximum Frequency Coverage.** receives 138-174MHz, including 140-150MHz to include CAP and 140-150MHz. The IC-4GAT operates 440-450MHz and operates 440-450MHz.
- **Most Powerful Handheld!** The IC-4GAT is six watts! The IC-32AT is five watts! One watt = 100 local QSO's.
- **20 Memories.** Store any frequency, subaudible tone in any memory.
- **Programmable Scanning** of bands, easy lockout and instant memory.
- **Additional Features.** Battery save, subaudible tones, multi-function DTMF pad.
- **Compatible Accessories.** All IC-32 series battery packs, headsets and interchangeable.
- **Optional UT-40 Beeper** silent channel for your calls. When the subaudible tone is received, the LCD flashes.

Closeouts & Specials on

BUTTERNUT HF-2V 40/80M Vertical---
YAESU FV-700DM Digital Memory VFO
YAESU YP-150Z Dummy Load Wattmeter
YAESU 726 Band Modules-----VA
ICOM IC-27A 25W 2M FM Mobile & Voi
ICOM IC-27H 45W 2M FM Mobile & Voi
ICOM IC-471H 430-450 All Mode 75 W
A.E.A. CP-100 The Best Interface a
KANTRONICS UTU-XI/P CW RTTY AMTOR
ICOM GC-5 World Clock Large Dial--
KENPRO KT-220ET 2M Handy (Santec S
A.E.A. MP-64 Interface & Software
BEARCAT BC-100XL 16ch Scanner with

Pick A Packet: MFJ-1270B-\$269; MFJ-
AEA PK-232 \$539; Kantronics KPC-2-
AEA PC-Packratt with FAX \$65; COM-
Kanterm PC\$65; Kanterm C-64\$50; We

ICOM

IC-3210A

2 METERS AND 70cm — IN A MOBILE TRANSCEIVER!

TWO BANDS IN ONE RADIO

Icom is proud to present our newest dual band transceivers — IC-3210A and IC-3210E. 2 meters and 70cm in a compact mobile.

NEW!

FULL DUPLEX CAPABILITY

IC-3210A and IC-3210E have been designed with the most advanced VHF and UHF technology the electronics industry can offer. Simultaneously transmit on one band and receive on the other — and you're operating full duplex! Full duplex makes operating as easy as talking on the telephone.

HIGH OUTPUT POWER: YOU WILL BE HEARD!

Using a custom designed power module as the final amplifier, these transceivers provide your signal with 25W of power on 2 meters and 70cm. You'll never be at a loss to make that repeater.

20 MEMORY CHANNELS FOR YOUR CONVENIENCE

There are 20 double-spaced memory channels for 2 meters and 70cm! Each channel stores a lot of information, such as the operating frequency, offset frequency, etc.

PROGRAMMED SCAN AND MEMORY SCAN

The Programmed Scan function scans all frequencies between two programmable scan edge frequencies. The Memory Scan function scans all memory channels in succession, except those you lock out. Scan all channels; scan just 2 meter channels; or scan just 70cm channels.

POCKET BEEP — NEVER MISS A SKED!

When the UT-40 TONE SQUELCH UNIT (sold separately) is installed, the transceiver functions as a pager. When the frequency of a received tone equals the tone frequency you've set, a 30 second alarm is emitted over the speaker.

MONITOR THE REPEATER INPUT FREQUENCY INSTANTLY

It's so easy to monitor the input frequency when working a repeater. Push the MONITOR switch on the front panel to open the squelch and check the frequency.

PRIORITY WATCH

Every five seconds, Priority Watch monitors the Call Channel, a memory channel or all memory channels in succession — while you operate! You needn't flip back and forth between frequencies. What a convenience!

VHF 138-174MHz UHF 440-450MHz



New

IC-4GAT
440MHz

IC-140-150MHz

IC-450MHz
IC-450MHz

Portable Handhelds.
ICOM transceiver and
designed especially

The IC-2GAT
AA, and transmits
ARS frequencies.
c. and the IC-32AT
40-150MHz/

IC-2GAT delivers
ats and the
selectable for

Tx offset and
flexibility!

and memories plus
recall.

er, call channel, all
CD readout and

M IC-2AT/02AT
speaker mics are

monitors a busy
e-programmed
beeps and the

MULTI-COLOR LIQUID CRYSTAL DISPLAY (LCD)

Icom introduces a color LCD for easy viewing. Orange, red and green highlight the numbers and letters displayed in black. Light up your 2 meter life!

IC-228H

NEW

45W OUTPUT POWER

You'll never be at a loss to make that distant repeater! Using a custom designed power module as the power amplifier, this transceiver puts out 45W. 25W model also available.

EXTRA LARGE HEATSINK

In any radio, high output power increases the internal temperature of the final amplifier. But you are assured that this transceiver does not get too hot — an extra large heat-sink is built-in for continuous thermal dissipation.

20 MEMORY CHANNELS FOR YOUR CONVENIENCE!

Each of the 20 memory channels stores all the information required to work a repeater. Throw those frequency lists away!

PROGRAMMED SCAN AND MEMORY SCAN

The Programmed Scan function scans all frequencies between two programmable scan edge frequencies. The Memory Scan function scans all memory channels in succession, except those you choose to skip.

PRIORITY WATCH

Priority Watch monitors the Call Channel, a memory channel or all memory channels in succession every five seconds — while you operate!

POCKET BEEP AND TONE SQUELCH

When the UT-40 TONE SQUELCH UNIT (sold separately) is installed, this transceiver functions as a pager. When the frequency of a received tone equals the tone frequency you've set, a 30 second alarm is emitted over the speaker. Never miss a sked!

MONITOR THE REPEATER INPUT FREQUENCY INSTANTLY

It's so easy to check the input frequency when working a repeater! Simply push the squelch control on the front panel to open the squelch and check the frequency.

COMPACT, LIGHTWEIGHT AND EASY TO OPERATE

This transceiver provides you with so many features! But it's so light and compact that it fits under your dashboard. The front panel is designed for convenient operation.

138-174MHz.



the Month ..

--- WAS \$219 NOW \$169
-707/77 \$449 NOW \$199
B-150 6/30/150W \$149
ED UP TO \$699 NOW \$399
e Syn WAS \$639 NOW \$499
e Syn WAS \$689 NOW \$539
s WAS \$1769 NOW \$1499
und WAS \$529 NOW \$349
CKET WAS \$529 NOW \$349
--- WAS \$139 NOW \$ 99
-20T) NOW \$439
M-64 WAS \$369 NOW \$199
IR WAS \$489 NOW \$299

274-\$329; MFJ-1278-\$429
79; Kantronics KAM-\$519
ckratt with FAX/64-\$109
ex PC or C-64 \$40

NEW Cushcraft



TRYLON TOWERS NOW AVAILABLE !!

A4S The PREMIUM 10-15-20M Beam
The A4S is the true high performance tri-band. Precisely tuned high power traps, carefully selected element lengths and proper spacing combine to make A4S the preferred antenna. It has pinned boom sections and formed aluminum brackets to keep elements straight under all conditions. All hardware and clamps are stainless steel.

Forward Gain	excellent 8.9dBd
Front to Back Ratio	excellent 25dB
SWR	1.2:1
Boom Length	18 ft (5.5 m)
Longest Element	31 ft 4.5 in (9.6 m)
Turning Radius	18 ft (5.5 m)
Wind Surface Area	5.5 R ² (.51 m ²)
Weight	37 lb (16.8 kg)

A-3 3 element Triband	\$619 Special \$489	R-4 No Radial Vertical	\$499 Special \$399
A-4 4 element Triband	\$749 Special \$569	AP-8 New 8 Band Vert.	\$379 Special \$299
A-4S NEW 4 el Triband	\$829 Special \$659	ARX-28 Ringo Ranger II	\$105 Special \$ 79

Insured Shipping & Handling -- Please add 2% (\$5.00 Minimum) to all orders. Some heavy or long items are subject to freight collect. ONTARIO RESIDENTS ADD 8% SALES TAX AFTER ADDING SHIPPING. All prices are subject to change without notice. Please send 2 first class stamps for catalogue and info requests. Special prices are based on cash or cheque with order. Credit Card orders add 2% to discount prices only.

ATLANTIC HAM RADIO LTD.

Tues.-Fri. 10 a.m.-6 p.m. 378 WILSON AVE.
Saturdays 10 a.m.-2 p.m. DOWNSVIEW, ONT.
After 7 p.m. Call (416) 222-2506 CANADA M3H 1S9
For Orders. (416) 636-3636

Paul Cooper VE3JLP
RR 2 Metcalfe Ont.
K0A 2P0

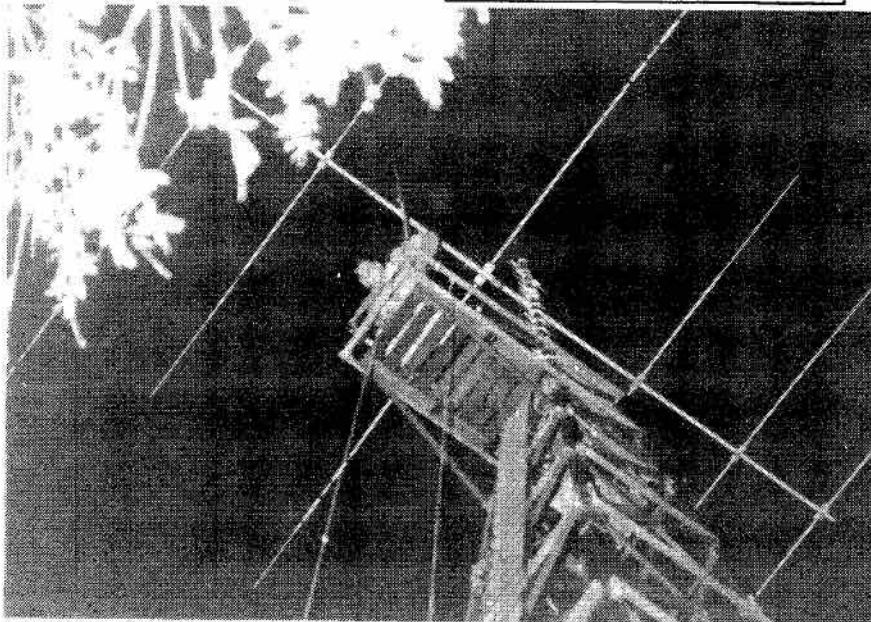
A VE3 NORTH AMERICAN CHAMPION!

It's not too often that I find myself in the company of a local ham who turns out to be a North American champion of something. So it was a real pleasure to chat with one of our Ottawa DXers and find that he has just recently gained a coveted award which is so rare that he is only the 57th, worldwide, to be recognized. Most of the other members of this very exclusive group are East Europeans and just why they have such a keen interest in this particular aspect of Amateur radio is not clear. Anyway here are the facts.

Our local champion is Bryan Crook VE3CRG, one of the most active Ottawa DXers with a call sign that is known literally worldwide since Bryan spends a great deal of time on the air. He has always been interested in CW since he was trained as a professional operator in the RAF, and got his Amateur ticket 30 years ago. As the years of operating passed, his speed increased steadily until he left most of us far behind. Curious to see just how fast he could communicate on the key, he started to try for the various high speed CW awards that are sponsored by some of the European clubs. Recently he has been admitted to their exclusive 'Extremely High Speed' category after two half-hour QSOs with SP9DBA and HA8LKE, who are both already at this level.

Each QSO lasted 30 minutes and the question-and-answer nature of the exchanges allowed the examining stations to judge whether Bryan was really understanding the text he was receiving. Naturally, no keyboard or decoding devices could be used although electronic keyers were, of course, acceptable. The speed necessary to join this group of operators? Sixty words per minute!

I asked Bryan how he copied at this speed, assuming he was using a typewriter. Not so, Bryan can't type, he reads the text in his head just as you or I would listen to an SSB transmission, writing down only the key facts. Intrigued by the thought that Bryan was reading code at almost three times my comfortable copying speed, I wondered just what it sounded like. I cranked up my AEA keyer in 10 wpm steps using a short text I had put in memory. The code was certainly recognizable up to 50 wpm (remember I knew what was being sent) but at 60 wpm I couldn't even recognize my own call sign! Congratulations, Bryan, from all the readers of this column. I wonder what you will be planning for an encore?!



Dave Goodwin VE2ZP mounting the VE3XDX DX repeater antenna on the VE3JLP tower. That's your columnist's TH6DXX at 76 feet.



VE2ZP and Ron Swartz VE3VN doing some delicate soldering work on the VE3XDX antenna feeder.

PROPAGATION PRIMER PART 2

Last month we took a quick look of all the main factors that affect communications on the HF bands, between two points on the earth's surface. You will recall that there were quite a few things that had to be favourable before you stood a chance of reaching some distant part of the world. Looking at the list I thought a logical starting point for our

review would be to try to answer the question, just how *does* an HF signal get round to the other side of the world?

Most of us will remember from our basic science that all forms of electromagnetic radiation travel in straight lines, unless acted upon by some external element or force. (It occurs to me that this statement is the electromagnetic equivalent of one of Newton's laws of motion which talks of *bodies* moving in straight lines, etc.) This

straight line motion of radio waves is very obvious at the VHF, UHF and higher frequency bands, but not quite so obvious as the frequency drops and we consider those bands known as HF, the frequencies between 3 and 30 MHz. What is happening to our HF transmissions that allows them to reach out half-way around the globe when we know that the energy radiated by our antenna only travels in straight lines? Well, we all know the general answer to that question, don't we? It's all to do with the ionosphere.

Starting about 50 km above the earth's surface and stretching up to beyond 500 kms are a series of layers of ionized gas collectively known as the 'ionosphere'. They are there because the ultra-violet radiation and slow moving particles form that body, all disassociate or 'ionize' the atoms of gas in these layers turning them into positively and negatively charged ions.

Depending on the density of these ions and the frequency of the RF that attempts to penetrate the layer, radio frequency energy is either absorbed, refracted back to the surface of the earth, having lost some of its energy in the process, or the energy passes straight through and is lost in space.

Over the 80 years that we have been aware that the ionosphere existed, we have learned that it consists of many layers and that they behave in a complex manner depending on the levels of radiation, from the sun, to which they are exposed. Measurements from satellites have greatly expanded our knowledge of the layers and strongly suggested that they reach much further into the stratosphere than originally thought.

It's worth pausing at this point to stress that all the propagation variables are directly or indirectly the result of solar activity. This fact will be particularly important when we start to discuss ionospheric storms which, unfortunately, are often referred to as 'geomagnetic storms'. This gives the impression that the earth's magnetic field is somehow affecting propagation, which is not the case at all. However, more on this later!

What about those layers? We could spend quite a long time talking about their different characteristics, how they move and change in their ability to reflect or absorb RF throughout the 24 hours of the day and between the extremes of winter and summer.

I think for the purposes of our primer we will limit our review to the basic facts that the layers owe their existence to solar radiation; that their ability to refract or absorb RF varies from night to day and with the seasons and that they are subject to fairly rapid changes, usually adverse from the point of view of RF propagation, during periods of

ionospheric (geomagnetic) storms.

QSL CARDS AGAIN

A recent welcome visitor to my shack was Antonio Salvadori VE3NXQ. Tony has just started a new column in *The Canadian Amateur* covering the fascinating world of computers and he also provided me with that definitive analysis of the 'Perfect QTH' which I know many of you found interesting. What I did not know about VE3NXQ is that he has been very active in the CARF QSL bureau. His comments on the workings of the bureau were most interesting and two of the points he made I thought I should pass on to readers.

Many of us have been complaining for years about how slow the bureau system is. We all assume that the cards move from bureau to bureau at a snail's pace and this is why it takes such a long time to get a card back through the system. Tony hotly refutes this, explaining how fast he and his fellow workers sort and send out cards after they arrive at the VE3 bureau. Many of the other bureaus are equally rapid in their handling of cards. He cited the example of Box 88, Moscow, which only last week sent a bundle of cards to the VE3 bureau for QSOs made in the first three months of 1988!

If the bureaus are doing such a good job in handling the cards quickly, why does it often take such a long time to get a card back through the bureau system? Tony says the culprits are individual hams who frequently take a very long time before getting around to answering cards that have come in through the bureau. He went on to say that it was his opinion that only about 20% of Canadian hams do their duty when it comes to answering QSL cards!

That's a pretty staggering thought, isn't it, but I believe Tony is uniquely able to assess our performance in this area. I guess there is a lesson here for all of us. I know I looked in my QSL drawer, after Tony had left, at a fairly fat pile of cards I have received from the bureau over the last few months. I've been meaning to get around to replying to them for some time, but the weeks have slipped by and the pile has grown! Tony's visit has provided a useful stimulus, to this ham anyway, to get those reply cards back to the CARF bureau as soon as possible. I hope many of you will do likewise. Don't forget when you receive a card through the bureau with the notation 'Pse QSL' it means there is somebody waiting at the other end for *your* card.

BITS AND PIECES

4W Yemen— There was an exciting announcement at the Visalia DX Convention in April when the 'Lynx DX Group', which put the Western Sahara SORASD on the air, reported that they

have received permission to operate from the Yemen.

Apparently a call sign has already been issued, 4W7EA, and a group of five hams are planning a five to seven day operation scheduled to begin on the last weekend of June. This is before you are scheduled to receive this copy of *The Canadian Amateur* so I can't, unfortunately, give you any advance warning of the operation. However I think the interest will be such that you will not be able to switch your rig on, around the end of June, without hearing some talk about 4W. I shall be looking out for this one myself and I hope that many of you will successfully snare him!

FR/J Juan De Nova, FR/G Glorioso— Look for Bruno FR4FA/J on the Indexa DX Net on 14.236 MHz about 0330 UTC. Apparently a list is taken for him at the start of the net at 0300 UTC. *QRZ DX* reports that Bruno is expected to be active from Glorioso Island for about a month beginning June 22. No information, so far, on frequencies or times so I should keep checking the Indexa net around that time. Of course both Juan de Nova and Glorioso enjoy separate DXCC status.

5W Western Samoa, ZK3 Tokelau Islands, ZK1 South Cook Islands— Bing VK2BCH is currently to be envied. He seems to be taking a very leisurely swing through some of the more exotic South Pacific islands and operating wherever he can.

At the moment (June 1) he is operating from Rarotonga, in the South Cook Islands with the call ZK1XV. After a stay of six weeks he will visit Western Samoa in July signing 5W1GY. From there he will move to Tokelau Islands where his call sign will be ZK3RVC for six or seven weeks. QSLs should go to his call book address.

5A Libya— Remember all the excitement last year when Hubert SAOA put Libya on the air again, albeit with only a QRP rig? Well, the rumours indicate that he is a fairly frequent visitor to 5A and may well operate from there again with his little rig. Keep looking for a big pileup on a tiny signal! **BG/BT/BY/BW China**— Towards the end of the summer we should be hearing some new prefixes from China. They will signal a more liberal attitude towards Amateur radio and they will be used as follows: BG— Individual station, BW— Foreign operator, BT— Commemorative or special event, BY— Club station.

Apparently at least one U.S. Amateur, NS7Z, who regularly travels to China, already has his call— BW1Z!

Thanks are due to the following sources for some of the material appearing in this column: VE3CRG, *The Short Wave Propagation Handbook*, *QRZ DX*, VE3NXQ. ■

LAND/MOBILE CRYSTALS

Fast, Reliable Delivery
No Minimum Order



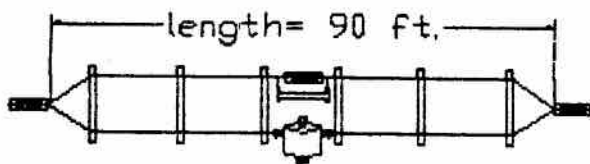
Amateur Crystals
\$8.50 Each

LESMITH CRYSTALS

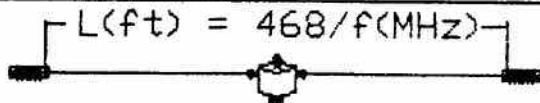
....People and Precision

LESMITH LIMITED

P.O. Box 846, 54 Shepherd Rd., Oakville, Ont.
Telephone: (416) 844-4505 Toll Free 1-800-387-4090
Envoy 100: Lesmith Telex: 06-982348



broadband folded dipole
2-30 MHz; complete: \$198.



standard dipole antenna
1.8-30 MHz (specify) \$60.

Separate Antenna Parts

1:1 Balun 2-30 MHz 1000 W \$20.00 ea.
Stranded copperweld wire #1410 ft
Stranded copperweld wire #1020 ft

For parts and service on all Marconi Products:
HF-VHF-UHF-Please contact us.

COM-O-PAC INC.

2264 Montee Gagnon, Blainville, P.Q. J7E 4H5
(514) 435-2739



TRYLON ABC TOWERS

FEATURES:

Rugged
Triangular Construction

Self Support
to 96 feet

Triangular
Construction

Engineered
for Heavy Loads

Up to 60 sq. ft.
Wind area and
800 lbs. wind load

Our Guyed Model
1500 to 160 ft.

Dealer Inquiries to:

Trylon

Manufacturing Co.

P.O. Box 186, 21 Howard Ave.,
Elmira, Ont. N3B 2Z6
(519) 669-5421 Telex 069-55282

Atlantic Ham Radio

378 Wilson Ave. Downsview, Ont. M3H 1S9
(416) 636-3636

H.C. MacFarlane Electronics Ltd.

RR 1 Battersea, Ont. K0H 1H0
(613) 353-2800

Southwest Amateur Communications

Box 34, 231 Oakwood Place,
RR 3 Dorchester, Ont. N0L 1G0
(519) 268-7579

(formerly Scarborough Amateur Supply)

E.B. Distributors

365 Whitmore Drive, Waterloo, Ont. N2K 1X5
(519) 885-3972

D & L Towers

4 Dividale Drive, Toronto, Ont. M4G 2N8
(416) 467-1235

R & S Electronics

157 Main St., Dartmouth, Nova Scotia B2X 1S1
(902) 434-5235

Moe Lynn VE6BLY
10644-146 St.
Edmonton, Alta. T5N 3A7

QRP

This time we look back at an old copy of *XTAL* Vol. VI Oct.-Nov., 1945 No. 3 published by the Canadian Amateur Radio Operators' Association in Leaside, Ont., price 10 cents. Membership cost a dollar in those days and, as of November 1945, the total paid up across Canada was 979 with 191 new members including VP1AA listed in this issue alone. One begins to wonder at this stage if we have actually made any progress or been subjected to electrical anesthesia in the use of friendly RF. Maybe a little Quaint Relaxing Pleasure would help change our attitudes?

The British Journal *The Lancet* mentions RF-induced hyperthermia and the developing use of electromagnetic energy for therapeutic purposes. How does this latter differ from use of permanent magnets which in my case dates back some 15 years. Would magnets accomplish the same results as tri-monthly injections of cortisone in my shoulder? After experimenting for a month, it was possible to enjoy a full night's sleep once again. Used regularly, they still keep the nagging pain under control and also contributed toward healing my recent broken bones more quickly. Kevin Lowe of *Edmonton Oiler* fame was recently fitted with an electromagnetic device to speed up healing of a broken thumb. Not to digress, this is supposed to be QRP instead of a treatise on the body and electronics but what could be lower powered than a magnet?

GLEANINGS

Earle VE6NM, a life member of SOWP, CARF V.P., and no doubt other attributes has phoned on numerous occasions just to say hello and ask about recovery progress. Would help if we could get him back on QRP, two 50C5s in 1948 is a long time to be away, but he did sell his linear some years ago which is a start.

Was good to hear from Bob NM7M again, giving me a report on MaryLou NM7N (his XYL & Pres. of YLRL) having won the ARRL Golden Jubilee of DXCC Award with her mighty 5 watts. Her 100th country came through Dec. 29 which must have caused considerable relief in the Brown Shacks. He also got me back in front of my computer running the propagation programs he had earlier arranged to have sent from Henry N4UH just before my accident. Feels good to be back tickling a keyboard again... thank you, Bob.

Elmer VE6BLO has also been great trying to get me back to normal when he dropped off his CW TRAINER C64 disk during one of his many visits. The disk was mentioned in March *The Canadian*

Amateur for those of you who are wondering and my review has gone forward for consideration toward early publication. Tony G4FAI you remember as editor of *Morsum Magnificat* and other writings, also dropped a line enquiring of my progress.

Al VE6AXW drops in quite often before 9 a.m. for a chat or to leave me a copy of his latest endeavours. He is encouraging everyone to write their Member of Parliament expressing concern that much electronic equipment being sold in Canada is not immune to RFI. More particularly the influx of VCRs seems to be the most prone—to as little as five watts or less. His first two-pager was addressed to the Hon. Flora MacDonald. Yesterday (May 16) he dropped off a three-pager written to the Consumer's Association of Canada. Both make interesting reading and suggests anyone would accomplish something just by writing their own thoughts. The letters may well be long, as Al said, because the subject is somewhat cumbersome.

Bill AD9E, editor of the Morse Telegraph Club *Dots and Dashes* wrote a nice letter just before SFBM celebrations slated for April 30. The *Jackson County Mail Tribune* front page shows Dave WB7VSN at the operating position of the Jacksonville Museum replica of a railway depot. Dave wrote me a two page rundown of their club activities using their official *Telegram* form.

Carlos VE3JPW wrote another long letter about acquiring a new QRP rig complete with a 250 MHz CW filter. He is delighted with all his QRP activity even though his operating time is

confined to early morning and weekends. His other hobby is photography which he hopes to pursue when he retires in a year from now. VE3IC wrote 'thanks' in a recent issue of the *Kilowatt* from Kitchener-Waterloo which tells us someone else is reading this QRP column. Now if we could receive some suggestions on how to expand, it would help considerably.

Dave VE3MIM sent a nice letter to say thanks for his start in QRP. His first CQ QRP using 4 watts on 21060 brought an answer from G8IB who gave him 569. Copying through YU, etc. QRM reminded him of his days on board ship using a straight wire between masts when all signals were faint but traffic quality or else! He feels sorry for those chaps with their kW's, huge beams, and using no skills to get through.

Stan VE6AMB phoned from Grande Prairie to say hello and ask if the VE QRP net was still in operation. Invited him to call CQ QRP whether he heard anyone or not at 1900 UTC Sunday, then check in to the ARCI net at 2300 on 14060, too.

Wally VE3KTZ, another SOWP Life member wrote about his QRP activities with an Argonaut 509 beginning in 1978. His best so far is a ZL on 21 MHz CW for which he received the ARCI 1000-mile-per-watt certificate of 4330 miles per watt output. He credits his listening training during WW II for much of his QRP success and also recalls 47 years ago May 20, their ship *Jo. P. Pederson* (a Norwegian tanker) was 16th or 17th torpedoed in a 20 hour span. They arrived in Iceland aboard a British Corvette just a few hours ahead of the three survivors from *HMS Hood*.

Continued on next page ▶



Tower and shack of Jim VE1AEQ/QRP as described in his letter on the next page.

QRP (cont'd)

Another letter from Jim VE3AEQ is reproduced here plus a picture elsewhere of his beam and shack on a hill.

END OF AN ERA

This is more for those who chase DX than QRPers, but is mentioned in case Paul VE3JLP, our DX editor, does not have room. Jim VK9NS has sent Bob NM7M the story of how their supply ship *Nella Dan* went to the bottom at Macquarie Island. She was under charter from a Danish company and had made 91 voyages 'South' during 26 years, covering 910,000 km serving the Australian Antarctic Research Establishment. Bob had been on Macquarie 27 years ago yet had never worked them from his mainland location until about the time the *Nella Dan* had to be scuttled Christmas Eve, 1987. Many Amateurs will have worked Macquarie or Head Island over the years (even QRP?) and may be interested in this story as my copy is passed along to the DX editor.

TIPS FROM THE WORKBENCH

These all but seem to have disappeared, but here is one many of you may be interested in for doing PCBs. It is a film type process using a photocopier to transfer the pattern which should be ultra black. You then use a clothes iron set at cotton/linen (265°-295°) to transfer the pattern from film to copper clad board. Use a cotton cover or muslin pressing cloth, paper towel or napkin between iron and film. Some touching up with an etch resist pen may be necessary before sending the board to your etching tray. Remember, the finished product is only as good as the original pattern and its transfer to film via photocopier.

The product is called TEC-200 Image Film and came from the Meadowlake Corp., 25 Blanchard Drive, PO Box 497, Northport, N.Y. 11768. The name given for their Edmonton distributor is not in our phone book nor listed with directory assistance service. Prices start at \$3.95 plus \$1 postage for 5 sheets 8½ x 11 inches. Up to 100 sheets, that works out to \$.53 cents per sheet including postage all in U.S. funds. The film is not light sensitive and has a long storage life when properly stored (avoid moisture) and will withstand temperatures of up to 320°F according to their Technical Bulletin.

NET & OTHER ACTIVITY

Dick K4BNI sent his QSL confirming reception RST 449 during my CQ VE QRP on Sunday, May 15. He reported sigs being clobbered by the QRO gang doing their CQ TEST weekend but says he will try again. Am wondering if Dick is using any of the equipment shown in

November 1976 QST where WICER pictured a lot of QRP gear built by K4BNI then.

Rick WL7BDK is always active and still about the only one on each Sunday. Roger W5LXS who runs the ARCI TCN on Sunday spends up to 2 hours or more listening to all who QNI. Then he goes back through the list for any comments and still finds time to talk to non-

members as well. To quote Bob NM7M on this subject, "TCN is just TOO successful." Wonder how we could get some of it to rub off on this side of the border? As someone else wrote in *The Canadian Amateur* recently, "Maybe when Parliament decrees a 200 watt maximum," a trend toward QRP may develop.

Continued on next page



VE1AEQ/QRP

Jim Thompson.
Crapaud RR#1, P.E.I.
Canada, COA 1J0



16 May, 1988

Moe, nice to see you back in print. I am using a new toy to let you know what has been going on with my QRP activities. I am using "News Master" on an IBM XT clone.

The tower was put up before the snow flew and has withstood several storms with winds gusting to 90 km/h and ice up to one cm. thick. I had to re-tighten some bolts and fix the rotor, but it is still up, even though the boom has turned and the driven element shifted. It looks awful but works well. Since the beam is fifty-six feet up in the air I will wait for warmer weather and maybe one of the local boys will go up and have a go.

Putting the TA-33-Jr up to 17 meters was the best investment I ever made in ham gear. Pointing from South-West around to South-East, I have the advantage of a downhill slope which adds another 17 meters to the height. From the North around to the West, There is an up-hill slope, with the highest part in the direction of VK7 land. Moxon explains how this can deflect low angle radiation to cancel at higher angles and let the signal skim over the hill. It must work as I have worked two VK7's. The first time I worked VK7RN I thought he was a DK7 and he gave me a report off the back of my beam! (Who wants a F/B ratio?) I have talked to him three times. The other was VK7AE. This one was fun as two other P.E.I. stations had worked him. When I signed, one of them said "Can you copy VE1ART?" The answer was "Yes, you're not very strong, only 5/3". Wif then told him he was running one watt with his old Heath rig in the tune position.

I entered the Canada Day contest last July and told them I was QRP with five watts. I placed thirteenth in the country and first in P.E.I. in the twenty meter mixed class. My certificate shows my score as "8832/QRP" but no mention of the QRP was made in TCA. I have also joined the QRP ARCI. My number is 6464.

Following is a selection of log entries going back to Jan. 1988, CALL-BAND-MY RPT:

KL7ISO-21mhz-5/4
V3IPC-21mhz-5/5
4X6TW-21mhz-5/1
LZ2KSQ-21mhz-5/6
5N9/KC7RD-21mhz-5/4
VP8BKK-28mhz-5/1
T77U-21mhz-5/5
VK7AE-14mhz-5/5
SORSD-21mhz-5/7
HK0HUE-21mhz-5/9
KH6XX-21mhz-5/9
3A8E-21mhz-5/3
VK7RN-14mhz-5/3
C18CW-14mhz-5/8
CN8VE-14mhz-5/3
VK3MO-14mhz-5/8
YCOEAQ-21mhz-5/3
TA3A-28mhz-5/7
YCOLOG-21mhz-5/4
4Z4ZW-28mhz-5/7
ZS6PT/QRP-28mhz-5/5
RA9FCB-21mhz-5/8
A22CL-21mhz-5/5
SV1FH-21mhz-5/3
SV0FG-21mhz-5/3
VK2DON-14mhz-5/2
9V1TJ-21mhz-5/5
9V1WO-21mhz-4/1
YC5BJP-21mhz-5/3
TR8JLO-28mhz-5/9
YCOBAQ-21mhz-5/4

All this was done with five watts output on SSB.

In another area, I took the job of teaching the theory for the Charlottown Amateur Radio Club. I am not an expert in the field but have taught elementary school for several years and there was no one else to do it. We had about fourteen starters and nine of them wrote the exam. They all passed along with three advanced people. Some of them are still working on their CW but we have five new calls on the Island and hope for four more soon.

That's enough for now. Glad you are feeling better and hope to see more QRP reports in TCA. Best regards from Spud Island.

J.M.

Art Blick VE3AHU
P.O. Box 356,
Kingston, Ont. K7L 4W2

LOOKING AROUND

Your National Federation will shortly be calling for nominations of candidates for the positions of Regional Directors, with elections held early in 1989. I must say that the members of CARF do respond to this request with considerable apathy and rarely is more than one candidate nominated for each position.

The six Regional Directors, together with the President, form the Board of Directors and are responsible for setting the policies, annual election of the Officers and overall management of CARF affairs. There is an annual meeting of the Board with provisions for calling special meetings if the need arises. All expenses incurred by Directors, while conducting CARF business, are paid by the Federation—such as attending Board meetings, regional conventions, hamfests, etc. Not an onerous position, the duties can readily be performed in the Director's spare time.

Possibly this year, more candidates will be nominated as, judging from letters received, and those appearing in *The Canadian Amateur*, many members are concerned over CARF policies toward such items as Restructuring the Amateur Radio Service; possible formation of a new, independent, unified national Canadian Amateur Radio society by the merging of CARF and CRRL; the outcome of the Ravenscroft case; possible problems with high power meteorological stations in the 450 MHz band; the possible loss of Amateur frequencies to commercial use; etc. Strong opinions have been voiced on all these items and, possibly, there will be several Amateurs who will desire to play a role in overcoming these problems by becoming a CARF Director and helping to form CARF's policies on how best to proceed. Amateur radio clubs can play an

important part in this by discussing the issues, getting a consensus of opinion on how best to proceed, and nominating the Amateur they consider to be the best candidate for their Regional Director.

Comments received on various subjects lead me to believe that there are many Amateurs who do not know how their National society conducts its affairs. In brief, CARF is governed by a board of Regional Directors who are elected, every two years, by the members of each region. The Board is responsible for policy and for overall management of CARF affairs and, annually, meets and elects the members of the National Executive who are responsible to the Board for conduct of day-to-day affairs.

The National Executive consists primarily of the Officers, with the President being the titular head of CARF, Chairman of the Board and responsible for executive action; the General Manager directly responsible to the Board for administration; and the Treasurer directly responsible to the board for conduct of financial matters. How the Proposed Restructuring came about and was handled demonstrates how your Federation handles affairs of national importance.

In early 1980, checking with figures supplied by DOC, the Executive of your National Federation realized that growth in Canadian Amateur Radio had virtually ceased since 1978 when new requirements, examinations and procedures were introduced. This was brought to the attention of the Board and approval was given for CARF to make a presentation to the DOC on the need for stimulating growth. This was done in 1980, with recommendations for change, and this was well received with some minor changes subsequently implemented.

Further meetings with DOC, attended

by representatives of CRRL, were held in 1981, '82 and '83 and led to the publication of a new TRC-24, which gave details of depth and scope of knowledge required, and a review of the existing question bank used for Amateur and Advanced Amateur examinations. In late 1985, a further meeting saw the introduction of the Proposed Restructuring, the request for publicity of its content, and the need for comment. The full details of the Proposal were published in the January 1986 issue of *The Canadian Amateur* with a request for comment to DOC and to the Federation.

Hundreds of comments were received by CARF and an analysis of these indicates that about 40% approved the Proposal as given, 40% approved the Proposal but desired some changes and/or additions and 20% did not approve any Restructuring. As could be expected, the Editor of *The Canadian Amateur* noted that many letters of approval had been received and printed a couple of typical letters, printed more of those that desired change, and several of those that were against the proposal.

Unfortunately no article appeared that gave details of the work of your Federation prior to the Proposal and the position of CARF regarding the proposal details. (Many Amateurs were convinced, by the comments printed, that CARF would be against its terms.) However, draft submissions on the Proposal were prepared by CARF and CRRL, found to be in general agreement and a meeting, held in early 1986, resulted in the joint submission forwarded to DOC with its content appearing in the September 1986 issue of *TCA*. This clearly demonstrates that both organizations were in full approval of the need for Restructuring and, it could be noted, have continued to press for action in its implementation.

Your National Federation is not a small group of Eastern Ontario Amateurs trying to force their views on the rest of Canada but a broadly-based, well-administered and financed, National society of Amateurs dedicated to the representation of all Canadian Amateurs on the National level and to the provision of valuable services to its members.

If you are unhappy with some of the policies and actions of CARF, express your concern to your Regional Director; if you want to play a role in future discussions, etc., volunteer your services for official positions or stand for the position of Regional Director when nominations are called later this year. Help develop CARF into the organization you desire. ■

► QRP (cont'd)

Bob W3KW, also a Life member of SOWP, sent a card asking about mutual acquaintances from NWT&YRS. He is an active member of the AACCS (Army Airway Communications Services) net on Saturday about 1700 UTC on or near 14060 kHz, and net control is usually Mac K4QN.

While pouring 5 watts in to my G5RV one evening, Stan SP2JS came back with a 559 but never said what power he was running. Another 599 for 5W from UR2QD the last weekend in May when another TEST got under way, but he was only 579 on my meter. Y3HL dumped the proverbial 599 on me but he was less than 559.

Jack VE6BOX drove Lois and I out to see Alex VE6CE and his wife Nancy

VE6YG in his spiffy new white Plymouth Reliant he bought for his 87th birthday. Peter VE6PM, first harmonic of CE & YG was also there with his youngest son Trevor, who is 18, which reminded us we are not standing still. The trip on May 25 was my first that far out of town since last November and really felt good to just sit and watch the scenery. Hubert VE6AMY dropped by with his supply of anti sieze paste used to assemble the Butterfly Jack and I are testing.

REMEMBER the QRP QRGs 1810, 3560, 7030/40, 10106, 14060, 18060, 21060, 24960, 28060, 24 hours per day and Sunday at 1900 UTC on 14060 plus or minus QRM for VE QRP net followed by ARCI TCN at 2300 UTC on or near the same 14060 kHz slot. ■

YL News & Views

Cathy Hrischenko VE3GJH
2 Dalmeny Rd.
Thornhill, Ont. L3T 1L9

Time marches on—the years pass and here are a few interesting pics I thought of interest.

Iris ZS2AA— the first YL licensed in South Africa in 1937. Her #1 hobby is Amateur Radio, but Iris has a wide scale of interests. She enjoys gardening, music and stamp collecting. She's been very involved with public affairs over the years and was president of the local Red Cross for 22 years. She was on Board of Directors for Maderia Home for the Aged. She was the first President of the SA YL Club which has been in limbo for awhile.

Iris became first licensed because of a letter she wrote. When her children were young she was 'house bound' on the farm. She became an SWL and one day she was tuning across the 40 metre band and heard a couple of OMs chatting. One said they would welcome a report from anyone who might be listening. Iris wrote and said she'd heard them. She didn't know anything about formal signal reports.

One of the men contacted her and later suggested that she should learn the CW, etc., and become the first YL in South Africa. And so she did. She learned the Code from a scout book and would sing her children to sleep with lullabies made up of di das. I had the pleasure of meeting Iris a few years ago. She's a real doll. ▽



The picture of Iris was taken in 1987. The dress she wore for the fashion show was the dress she wore to a Bill Ball in 1946. The way she was and is!

▷
My good friends Aola ZL1ALE and Dane ZLIAMN celebrated their 40th Anniversary and were able to have a picture taken 40 years after their wedding with their complete wedding party— Best man, Bridesmaid and flower girl.



This couple looks like Hollywood's finest. Windsor Jct., 1932. Wes Street VE1EK and then Helen Hubby. In 1933 Helen received her call VE1YL. The now picture is a few years old. Helen held her VE1YL call from 1933 to 1972. The Maritime Sparkettes use that call now as their Club Call.



YL NETS

A reminder about YL nets: CLARA 20 metre 14.120 Tues 1700 Z; CLARA 40 metre 7.070 Tues 1400 Z. (There might be a change.)

YL ACTIVITY DAY

On the 6th of every month, to encourage YLs to get on the Air and meet each other, to further radio friendship and perhaps to help work towards YL Awards. OMs are welcome. Look on the hour 14.288, 21.188, 21.388, 28.588, 28.688, plus or minus QRM. Also 7.088 & 3.688 in U.K. If nothing heard, call CQYL or CQYL Activity day.

The magician 'The Amazing Randi' (a Canadian) bought some of his props from the well-known Houdini. One of the props is a milk can and around the rim in morse code it spells out the name Houdini.

If you have any news about YLs, please send me the info and photo if possible. ■

URGENT NOTICE

The Annual General Meeting of the Radio Society of Ontario Inc. will be held Saturday, Sept. 17, 1988 at a location to be announced.

Notice has been received that a resolution to dissolve the Society will be made at that meeting. All members current in 1987 have been extended one year with no charge, and all members are urged to attend this meeting.

MOVING?

If you're moving, please let Debbie know your new address. Write her at P.O. Box 356, Kingston, Ont. K7L 4W2.



The YL is Joan G4CHH at the mike, her OM Duncan second from the left. This was the Hornsea Radio Club operating GB8RS to celebrate the Royal Birth of Prince William. The club shack is the top story of a windmill; notice the sloping roof. The other two floors are the lounge, bar and kitchen of the clubhouse. Joan said it took a great effort to clean and furnish it so it could be used as their club shack.

THE CANADIAN AMATEUR ON CASSETTE TAPE

CARF is pleased to announce that commencing July 1988 *The Canadian Amateur* will be available in talking book format. The tapes will replace the regular printed issue of *The Canadian Amateur* for CARF Members who fall into the legally blind category. Other members who wish to receive the tapes in addition to the magazine will be able to do so (while supplies last), for an additional charge of \$3.50 per cassette.

The tapes will be offered until December 1988 on a trial basis. Should sufficient demand be realized at that time, the feature will become a permanent part of *The Canadian Amateur* and CARF's services. New CARF members, identified by the CNIB as being legally blind, will be eligible to receive the tapes immediately.

For more information contact Debbie at the CARF Office (613-545-9100).

CHECK YOUR LABEL

Check your mailing label on this issue of *The Canadian Amateur*. If it is marked with a highlight marker, your subscription has expired. Just fill out the form at the back of this issue and send it along to the CARF office.

Shack of the Month



This month's highly organized 'Shack' comes to us from 'La Belle Province'. This is the home of Mike VE2AM and Nancy VE2GFN. This is also the home of VE2TCA. Since Mike is CARF Director for Quebec, we know he's organized, but didn't realize just how well. Then again, maybe it's all Nancy's doing? Anyway, Congratulations! You can collect your hats at the Fall executive meeting in Kingston. (Bring Nancy, I've got this really messy filing cabinet...

VOLUNTARY LOWER POWER LIMITS NEEDED

All this talk recently about EMI, EMC, compatibility, susceptibility and Radio Frequency interference has prompted me to ask the question, "What can we do about it?"

MANY AGREE

The concept of lower Amateur Radio permissible power levels is not a new one. With the advances of technology, equipment, antennas, spectrum and modes available; we should ask the question, "Is the present level too high?" Would a lower level be adequate in most circumstances? Perhaps a process to apply for a higher level as needed for VHF/UHF experimentation could be an approach which considers the important factor of potential to cause local effects on neighbours' appliances, even though the appliances need not have any RF immunity.

MUCH RHETORIC

This column in the past has addressed many problems associated with one technical failing of much modern electronic entertainment equipment. In particular, the lack of any form of technical measures which would help suppress the radio energy which is not only part of the environment but is ever increasing. Time and time again we conclude that given close enough proximity to neighbours, we collectively create unavoidable problems. The effect is not pleasurable nor enjoyable for the Amateur and may indeed cause malfunction of susceptible appliances. What can be done?

As users of more spectrum than most who communicate, we have a responsibility to innovate and create an efficient use of the spectrum. By previous example, we have made our donation to the thoughts and ideas that helped bring modern communications to what it is today. Without the experimentation with new forms of modulation, antennas, bands or even helping perfect one of these elements for future domestic use, we will have a tough job keeping our present spectrum. How many companies have benefited from the countless free hours contributed by their 'ham' employees, for the pure love of the 'hobby'?

LONG LIVE THE HAM

At some point in time, the very essence of ham radio causes us to skip meals, or spend endless hours devoted to some 'vital research' project in search of the unattainable. Some even go to great depths to prove that communication can indeed be established by

interrupting the power to a simple switch which is connected to some haywire concoction of metal and insulators that only we Amateurs understand. We never hear much about this aspect from the media. Ham radio has been our one reward for all the selfless, albeit Amateur, technical contributions and untold personal ambassadorial missions of external affairs, conducted on a daily basis. We don't want to rock the boat.

PROXIMITY AND THE LISTENER

There's a logical argument for providing spectrum to those who have a need and not just because we were there first. After all, weren't we given all that 'useless' spectrum to do what we wanted to do?

There have been those in regulatory affairs who have considered that two radio signals generated in close proximity may create a problem for the listener— he may hear both signals at the same time. Hams can and do cause this effect. We've probably done it longer than any other spectrum user, except for those raucous spark gaps of the '20s.

PARTIAL SOLUTION

What does it take to convince those who regulate the spectrum that solutions going a long way to eliminating susceptibility are matters of mutual concern among user, manufacturer and spectral occupants? We all are the benefactors— dollars and sense should go together. How do we do this?

METHODOLOGY

As a start, what would happen if a NEW maximum power level for the Amateur service were to be proposed? *How would it affect your regular station operation?* Proximity and power go hand in hand, and not all of us have a neighbouring problem but, if the events of the last two or three years are any indication of problems directly related to spectral management, then YOU are part of that solution. Notice I said solution and not problem.

What is some of the reasoning behind the foregoing proposal? There are several items:

1. The solution lies with us collectively.
2. We know the potential effects for high power.
3. For the most part, WE are part of urbanity.
4. As one of many users of the spectrum, there is an obligation (or needs to be) to create, to innovate, to serve the community, to communicate, expand, teach and share those techniques which by their very nature draw us together as

a searching, striving body of spectrum explorers. (We have done this for so long without a PR agent that the benefactors have tended to just barely tolerate us.) There are even those who consider us a large pain.

5. A licence guarantees us access to the spectrum.
6. Use of the spectrum demands a mutual responsibility both technically and socially.

WHERE DOES THE AMATEUR FIT IN?

It doesn't specify a problem which cannot be avoided. How close is close? What constitutes interference? How can we have a compatibility or susceptibility problem if we have no reference?

Do we have the term, 'interference' legally defined in the Radio Act? There are many who simply say, "No". What difference does it make to you and me? (It's defined by the ITU, but not by the Radio Act.) It should be part of our reference.

The spectrum is becoming increasingly crowded, yet every day we hear Amateurs talking over the back fence running the proverbial 'gallon'. Some groups seem to profess an affinity for HOW MUCH POWER they can pump into the ether with complete disregard for propagation or previous occupancy of the frequency.

Listen to any rare DX. The old rule (and regulation) of using minimum power to maintain communications seems to have been long forgotten. Something has to be done. State of the art equipment demands a modern approach to responsible operating practice.

SUNSPOTS & QRP

As the solar flux continues to improve, it's amazing how many consistent signals can be heard around the so-called, 'QRP frequencies'. Listen some time and relive the original thrill you had when you first went on the air. I've tried it myself and find the challenge of working low power takes some skill, beyond that of just pushing a few buttons.

THE REAL VICTIMS

There should be an automatic power levelling provision in our licences that says that for sunspot numbers less than 10 we run full legal power. For numbers above 100, our power reduces by 1/2. Past numbers of 150, the power should reduce to 1/4 of that legally permitted. This type of system, while having some merit, is far too complicated for a system that fails to recognize what happens to the inevitable victims of radio energy and proximity.

Continued on next page ▶

Antonio Salvadori VE3NXQ
17 Colborn St.,
Guelph, Ont. N1G 2M4

NYBLES AND BITS

So far we have covered the basic hardware components. The system as it stands will do nothing. In order to drive it you need software. Software is a generic term for the programs which drive the hardware. These consist of an operating system and application programs. The operating system is normally provided by the computer manufacturer either as a bundled package or at relatively low cost, about \$50-\$150.

The application programs are written in a computer language and may be bought or written by the user. Common languages used to write programs are Basic, Pascal and C. Normally Basic comes free with the machine while Pascal and C have to be purchased, for about \$100 each, which is why most non-professionals tend to use Basic. However Basic programs are normally much slower and use more space than programs written in the other two languages. (I tend to write most of my professional programs in Pascal or C.)

Most people get frustrated pretty quickly in writing their own programs. They find that the exercise is just not worth the hassle. Unless you have lots of time, lots of patience, and have a very well organized temperament, I would advise you not to even try. Beg, borrow and steal your programs from your friends and sit back and enjoy the pleasures of radio rather than the frustrations of programming.

As I mentioned before, CARF will distribute all programs appearing in this column at nominal cost. However be warned that programs written for one machine may not be able to be run on another machine. Computers are

non-compatible so if your friend has an Apple and you have a Commodore, you cannot exchange your programs. You will have to modify the programs to take into account the machine differences. Some languages, such as Pascal, tend to minimize the changes, but changes will still have to be made.

The computer may be connected to your rig by means of an interface board. This interface may be home-brewed or bought. Several manufacturers supply these for several makes of computers and they range in price from \$50 to \$500. Note that for some of the more sophisticated interfaces you may also have some software costs. This interface is indispensable if you want to work RTTY or packet and you should consider the cost when purchasing your machine.

By now you should know the basic components, some of the problems and hopefully be able to tailor your system to your requirements and your budget. If you have a very limited budget you can build up your system little by little. The priorities I would suggest are: get the largest machine you can afford; get the greatest amount of main memory you can

have; get a floppy drive, printer, second floppy and a hard drive, in that order. A Commodore 64 system may look cheap but it can turn out to be much more expensive than an IBM compatible which is a far superior machine.

Where should you buy your machine? The best step is to go to all the dealers around your QTH—people living in large cities may have a large selection, even in a place like Guelph we have over ten computer stores, not to mention Radio Shack, Canadian Tire, Zellers, Eatons, Simpsons, etc. who also sell machines. Explain your requirements to the salesperson and see what package deal they can come up with. Prices will vary enormously.

Do not necessarily go for the lowest price. Consider the reputation and service that the dealer is going to give you. The service may not be worth the drive to the next town where you may save \$100 in the deal, but lose in the long run when things go wrong.

Next month I will consider a few small programs to get you programming. Again, for those of you who already own computers, please fill in the questionnaire (May issue) and send it to me. ■

Treasures that should be buried

That other *Ground Wave*, the one published by the Saint Paul Radio Club, Inc. was the source of the following piece worthy of serious consideration.

"AS I SEE IT— Last month, I, along with another long time club member visited the widow of a local Silent Key to help her determine the worth of the remaining items in the shack. Like many of us, this ham was a collector and prided himself on having a part for anything (built before 1960!). The widow thought she had a veritable gold mine; unfortunately she was disappointed.

The scene repeats itself year in and year out and lays heavily upon those of us who are called to help liquidate estates. It seems cruel to the widow to have to rent a dumpster to dispose of many of her husband's treasures. I would suggest that all hams, but especially those over 50, take a good look at all that junk they are storing in

the basement, attic or garage and get rid of anything that has not been used in the last five years.

"If you think something is too valuable to throw out, get the opinion of another, preferably younger, Amateur. He may help you gain a new perspective on things. This would also be a good time to make a log of all your station equipment and what it is worth. I would suggest that the figures be reviewed by another ham for realism. If you don't have the time or the stomach for doing the above, at least think about taking out an extra \$1,000 life insurance policy for the specific purpose of your junk. It's only fair!"

This was submitted by Ron Jalubowski K2RJ, to which the Saint Paul *Ground Wave* editor appended a note pointing out that the Saint Paul Club has an appointed position shown in the list of club officers as 'Estate Sales Assistance.'

CROSSWAVES (cont'd)

Don't for a minute think only the Amateur is a victim— think too, of your neighbours. Under normal circumstances, a little mutual respect works wonders with other Amateurs as well as neighbours. Try it— you'll be surprised. Whatever you do, don't use my name— one of those ham fellers told me the same thing 40 years ago. Who's for 200 watts max.?

IS THIS YOUR LAST TCA?

Your label will tell you when your subscription expires.

To send reminders to you all by mail costs thousands of dollars a year. By using the label to carry the message, CARF can afford to serve you better!

REVIEWS

THE WORLD HAM NET DIRECTORY

by Mike Witowski, \$9.95, plus \$1 shipping (\$2 foreign orders) U.S. funds, published by Tiare Publications, Box 493, Lake Geneva, WI 53147 U.S.A.

The World Ham Net Directory lists some 300 special-interest ham radio networks by name, by operating frequency and by time/day. Ham nets cover a wide range of interests—emergency communications, DXing, missionary work, foreign service, retirees, airline hams, weather-watchers, traffic and much more.

For Amateur operators and for ham band listeners alike, this book offers the chance for new contacts, information and interesting listening.

The author, Mike Witowski, is a ham band monitor of many years experience. He edits the monthly ham band column in the bulletin of the Association of DX Reporters; publishes a ham bands DX newsletter; wrote the chapter on ham band DXing in the Howard W. Sams Co. book *Shortwave Radio Listening With the Experts* and, in cooperation with the ARRL, operates the incoming QSL bureau for ham band monitors.

THE RADIO HANDBOOK

23rd Edition, by William I. Orr W6SAI

An Amateur's library must, like friendship, be kept in continual repair. These days, textbooks are obsolete within a few years. The Amateur keeps up-to-date by reading the excellent magazines available, but these are not convenient reference materials. So, from time to time, the Amateur must buy a new handbook.

The first Radio Handbook I bought was the 15th edition. Its battered remains are beside me now. Whenever I have wanted a lucid exposition of tube vintage theory or practice, it has been of help.

My 19th edition is in somewhat better shape, and has served in its turn as I learnt about transistors. Now I have the 23rd edition, all new and shiny, beside me. What shall I learn of this one?

First, I learn that the construction of low-power transmitters is a dying art. I may deplore it, but that's the times we live in. The first chapter, in olden time 'Introduction to Radio' has become 'Introduction to Radio Communication'. There are no exciter designs, but seven HF power amplifiers, and eight VHF ones.

Then, the antenna chapters, unchanged for many editions, are greatly revised. Nothing on the rhombic or Sterba designs, but EME and Oscar antennas are there now.

The Handbooks always carry an up-to-date communications receiver construction section. This latest one describes a beauty by W8ZR. The only criticism I have is the lack of circuit board data. While circuit boards could be hand drawn from the schematics, this would add substantially to the time needed for construction. A source for the boards, or for patterns, would be welcome.

The chapter on Radiation and Lines startled and delighted me. It carried a discussion of the electromagnetic wave, with emphasis on Maxwell's equations. It seems the modern Amateur has swapped the soldering iron for the computer, and the mathematical approach to understanding radio is now more popular. Even so, I would think that many would like a little more information on divergence and curl—I was greatly helped, long ago, by the little diagrams representing these phenomena.

In summary, the 23rd Radio Handbook is 600 pages of compressed information on Amateur radio. I suppose this beautiful, well-bound book will become dog-eared and flux stained, like the others, as it will surely be beside my workbench for years. Bill Orr is to be congratulated on his work.

—VE3DQB

HISTORY OF QRP

History of QRP in the U.S. 1924-1960 by Adrian Weiss WORSP published by Milliwatt Books, 833 Duke Street #83, Vermillion, SD. U.S.A. 57069. Price \$12.95 Foreign in U.S. funds. 200 pages.

Fast on the heels of *Joy of QRP*, here is the next in a series of well researched and written QRP manuals. *The History of QRP* is must reading for history buffs or anyone interested in just how it all started. Everyone was QRP in those Early Days and not through choice. Chapter one explains one exception, K8EEG who chose QRP for many reasons and you must read it for yourself to gain full appreciation.

Read about other QRP operators in the next chapter on how they were chased from the long wave spectrum to fend for themselves in the short waves. But before all the shortwave activity started we find experimental stations engaged on 150 metres working across the Atlantic with 100 watts.

It appears Dr. W.H. Eccles, FRS, a well-known scientist and president of RSGB, was active in the early 20s and is actually responsible for QRP taking hold in those days.

A review cannot do justice to this book which is very well written and required reading for all who are even vaguely interested in QRP. You might even class it as a reference book when talking to the newcomers in Amateur radio. No need to dig back through the 1920s *QST* or subsequent issues as Ade has already done so, as well as early *CQ* magazines covering QRP.

Definitely a QRP book for the shelf of any well-stocked station that can be read more than once, or on a regular basis for that matter. This book could be the definitive work on QRP and therefore required reading for old or new Amateurs. It sure opened my eyes in a field where it was thought QRP was something heretofore unheard-of when discussed locally.

Interspersed with old pictures of vintage QRP rigs, diagrams galore and even drawings of early antennas should leave no reader disappointed. Highly recommended.

JOY OF QST

JOY OF QRP Strategy for Success, by Adrian Weiss, K8EEG/WORSP published by Milliwatt Books, 833 Duke Street #83, Vermillion, SD. U.S.A. 57069. Price \$12.95 U.S. funds for Foreign orders, 151 pages.

In the preface of his book, the author announces that *CQ* magazine was undergoing growing pains and their budget would not allow printing his original 1150 page manuscript with nearly 300 drawings. The result is this 8½" by 5½" paperback totally lacking in specifics required for a newcomer or beginner entering QRP. A beginner taking up the book with intentions of 'getting on the air' is in for a rude awakening. Adrian does tell you his past performance and that of other successful QRP operators, but leaves too much uncertainty for those trying to follow his few homebuilding instructions.

Table of contents lists eight chapters that touch on every imaginable facet of Amateur radio, but the associated drawings and tables lack continuity. Some drawings are not labelled and Figs. 21 to 29 inclusive are all on less than two thirds of one page.

Notwithstanding all the shortcomings in his haste to 'get the thing published', there is a wealth of information even if you only read chapters 6 and 7 on Operating Techniques. It is must reading for anyone desirous of improving their operating technique on HF or honing their skills for these same bands. Weiss has promised to publish further endeavors by himself and in

collaboration with Chris Page G4BUE of G-QRP SPRATT fame, in the near future. Such an undertaking could prove more interesting and useful to QRP homebuilders if their efforts should materialize. In the meantime, readers may be interested in a CQ magazine regular column for QRP written by the same Adrian Weiss—Author, Publisher, Distributor.

ANTENNA GOSPEL

Many technical books 'explain' things in a manner which leaves the reader baffled and more confused than before. A notable exception is Doug DeMaw's *W1FB's Antenna Notebook* published by ARRL. At \$8 U.S., it is a bargain.

Doug has written about fundamentals, dipoles, wire antennas, verticals, 'invisible' antennas, top-loading, feeding arrangements and related subjects, in an easy-to-read, straightforward manner. He explodes a few myths, and points out a number of common misnomers too:

It is not a 'trapped' dipole;

A centre-fed antenna is not a 'zep';

A dipole is best broadside, only at

INFRACTIONS TO THE RADIO ACT

Michel Brazeau of Montreal, has pleaded guilty to charges laid against him relating to infractions he committed in July 1987 against the provisions of subsections 3(1) and 9(1) of the Radio Act.

Mr. Brazeau owned and operated a radio apparatus in the private commercial service band, without a radio licence as required by the aforementioned Act. The Minister of Communications is the sole authority empowered with the right to issue radio station licences.

Furthermore, Mr. Brazeau, without lawful excuse, used the said radio apparatus in conjunction with a home-built device in a way as to cause harmful interference to the radiocommunications of a taxi company.

— Communications Canada

MESSAGE FROM CARF NEWS SERVICE

We NEED more input from YOU! I would like to urge those clubs or organizations that receive the bulletin that I rely solely on your support for the material in these bulletins. I would like to hear from all of you. Let me know what you or your club is doing; many Amateurs would like to know. We are here for you; however we must hear from you in order to continue issuing these bulletins. Send your correspondence to the office at Box 356, Kingston, Ont. K7L 4W2.

heights, i.e. about 120 feet above ground on 75 metres;

A physically-long piece of wire is not a 'long-wire'. It must be one wavelength or more in length to qualify for that term;

Gain for a true long-wire is 2 dB for three wavelengths, nearly 5 dB for six wavelengths, and better than 7 dB for ten wavelengths!

Many quarter-wavelength, ground-mounted verticals, even with an effective ground screen, exhibit a feed impedance of about 25 ohms. Some short, ground-mounted verticals, only ten ohms!

A transmatch (tuner or matcher) does not correct an antenna mismatch;

Balun is pronounced bal, as in pal, and un, as in unhooked;

The SWR is most accurately read, for practical purposes, with a half-wavelength feeder, and using the SWR meter which is built into most modern transceivers.

Roy VE7TG

CANADIAN INTERNATIONAL DX CLUB 'MESSENGER'

I first became acquainted with this publication when Don Moman VE6BOD sent me the October 87 issue of the *Messenger*. Don is the Secretary of the organization. The club and its publication are SWL-oriented, but every Amateur should find considerable material of interest in each issue.

The October issue was 63 pages and I found more interesting reading within its covers than in most of the well-known, glossy monthlies. Technical and product review articles are very well done and the station log data rivals the best of the DX bulletins, with the loggings mainly from Canadian stations rather than U.S. stations in the lower latitudes where the propagation is always good.

Membership is \$23 per year. I recommend it highly. Address is: Canadian International DX Club, #61-52152 Range Road 210, Sherwood Park, Alberta T8G 1A5

-VY1CW

ELECTRONIC COMPUTER PROJECTS

By Soori Sivakumaran, Published by *Compute! Publications Inc., Greensboro, NC, U.S.A.* Distributed in Canada by *McGraw-Hill Ryerson, 208 p. \$13.95 Cdn.*

For those already active in experimenting or those who want to brave a new frontier, here is something not seen since the *Vic-20 Interfacing Blue Book*. *Electronic Computer Projects* is for Commodore Vic-20, C-64, C-128 (in 64 mode), Atari 130E, 800XL, 600XL, 800 and 400 personal computers. The words of wisdom in the forward tell us that our PC is a powerful machine for all kinds of software but

with the devices described in the book we can do greater things. All projects are in step-by-step form for a variety of electronic devices from the simplest to the most sophisticated. Each has been built and tested according to Soori, so when connected to your computer there should be no surprises.

In the Preface he mentions various sensors and actuators besides software, data, applications and what to use for building all circuits. Most all projects utilize the solderless breadboard and list the Radio Shack numbers for the parts, but you need a soldering iron too. A short course is included to lead you toward soldering wires to switches, computer connectors and any component that will not plug in to the breadboard. Then follows six short paragraphs on those few tools that might be required (and no doubt, everyone already has them all on hand).

Thirteen chapters cover not only the projects, but an explanation entitled 'Getting Inside Your Computer' followed by 'Exploring the Control Port'. A thorough understanding of these two chapters with the associated experiment utilizing a simple logic probe one builds is ample preparation for what lies ahead. Around the corner you will find step-by-step instructions for making a Joystick, Game Paddles, Analog Light Sensor, Light Pen, Digital Light Sensor, Electronic Switch and a Burglar Alarm. These all include parts list, test data, warnings, and software that you type in for whatever computer you want (and keep your fingers crossed that it runs— Editor). Chapter 10 contains 12 pages on 'Digital Logic', then four pages expounding 'A Better Logic Probe' which you should build on a small PCB of your own design for future use. Or, as is recommended in the same chapter, "buy a commercial probe if you are really serious about experimenting with digital circuits."

Four more ideas are given in Chapter 12 and the most complex of all in Chapter 13 is a project on motor control entitled 'Robotics'. Again they include a parts list, step-by-step instructions, software for Commodore and Atari plus a warning should you decide to use a larger motor.

Two Appendices close out the book by giving 'Compute!'s Guide to Typing in Programs', so you don't make any mistakes, and then pin-outs for each IC used throughout the book. Having yet to put together any of these projects, my personal experience is not given here. However, just recently a secondary source was located for the control port connector (at \$1.25 each) so my curiosity has been aroused, plus the fact that all the projects appear so well presented that even my simple mind could be successful in constructing most of them!

—VE6BLY

TRANSMITTERS - RECEIVERS - TEST EQUIPMENT - LAB EQUIPMENT - COMPONENTS

CARF

VE3 KHB

ARRL/CRRL

RSGB

Wholesale/Retail

W. J. FORD SURPLUS ENTERPRISES

Buy/Trade



Our warehouse 21 Market St., Smiths Falls.
(corner Market & William)

Mail to: P.O.Box 606
Smiths Falls, Ontario
K7A 4T6

Phone: (613) 283-0637 or (613) 283-5195

We are open Saturdays from 9 am to 5 pm. Weekdays, for the present, are restricted to appointments for any time between 5 am to 10 pm. We normally are not maintaining a regular schedule during the week and therefore an advance appointment is essential to ensure your visit is successful. Sundays and holidays we are closed.

We carry a vast assortment of items ranging from medical, laboratory, scientific, photographic, optical, antiques and other strange pieces for the experimenter and enthusiasts as well as schools, labs and electronic firms. If in the area when we are open, feel free to drop in and browse through two floors loaded with surplus.

We are always happy to answer queries by phone or mail. If the latter, a postage stamp to defray the cost of a reply would be appreciated. Due to the nature of surplus very few items are stocked in depth and as a result it is impossible to prepare a catalogue or listing which would remain valid for even a short period of time.

More items received recently include the following: (1) Rotary vacuum pumps, Metrovac, direct drive & equipped with a high vacuum magnetic valve. \$400.00 (2) Small crossed dipole antennas mounted on a semi-rotating plate. Unit is inside a fibreglass dome approx 12"D by 14"high. Other misc switches, gears etc on bottom. \$12.00 (3) Environmental chamber, Delta Model 5700, -200F to +600F. Uses CO₂ or LN₂ for cooling. Glass window in door, working volume 11x20x15. \$115.00 (4) Centronics 104 printer with 4 heads. \$120.00 (5) 16mm Bell & Howell sound projectors, Model 567. \$140.00 (6) Singer 16mm sound projectors, instant load. \$125.00 (7) Sloping wooden desk consoles 20x8x8 containing speakers, 4 ten gang push switches, PCB audio amp plus other components. \$10.00 (8) Regulated DC pwr supplies removed from IBM computers, xmfrs, large filter caps, heat sinks, PCB, line cord etc. \$10.00 (9) Another small supply of Systron Donner spectrum analyzers Model 762-2A, 10MHz to 40GHz. Unfortunately priced higher due to competition in the procurement field but still a bargain at \$1550.00.



K.A.R.C.

(Kingston Amateur Radio Club)

4th ANNUAL
EASTERN ONTARIO
AMATEUR RADIO and ELECTRONICS

FLEA MARKET

SATURDAY, SEPTEMBER 17th, 1988

ST. MARGARET'S UNITED CHURCH

690 Sir John A. Macdonald Blvd. (Across from Sears)

KINGSTON, ONTARIO

TABLES

Small \$5.00 LARGE \$10.00 DEALERS \$20.00

General Admission \$1.00

For Reservations etc. Contact:

BERNIE BURDSALL, VE3NB

91 King St., E. Apt. 304, Kingston Ontario, K7L 2Z8

AREA CODE 613 **544-4438**

DOORS OPEN PUBLIC 9 am - 1 pm VENDORS 7:30 am UNPAID RESERVATIONS HELD UNTIL 09:00.
COMMERCIAL DISPLAYS — DOOR PRIZES — REFRESHMENTS TALK-IN 34, 94 — VE3UEJ



TOWN OF SIDNEY

2440 SIDNEY AVENUE • SIDNEY • VANCOUVER ISLAND • BRITISH COLUMBIA V8L 1Y7
TELEPHONE 656-1184

Proclamation

WHEREAS the Victoria Short Wave Club will be sponsoring the Annual Vancouver Island Amateur Radio Operator's Gathering at Sidney and North Saanich Community Hall in the Town of Sidney on September 10th and 11th, 1988, and

WHEREAS Amateur Radio is a hobby that promotes good citizenship, public service, and the pursuit of intellectual technical development, and

WHEREAS this "Gathering" will be highlighting the Handicapped Operators and how the hobby frees them from their bonds of infirmity to roam the world from their homes, and

WHEREAS Ham Radio offers direction and character building while stimulating robust curiosity and intellect

NOW THEREFORE, I, NORMA L. SEALEY, Mayor of the Town of Sidney, do hereby proclaim September 5th through the 11th, 1988, as

"AMATEUR RADIO WEEK"

in the Town of Sidney.

Norma L. Sealey
MAYOR

Collinear 2 Metre Antenna

BY BRIAN HENDERSON
VE6ZS

The antenna to be described in this article will provide 6 dB of omnidirectional gain, is simple to construct, and is economical. It has been described in the ARRL Antenna book and the VHF Manual, although not in this form. It is constructed entirely of copper tubing and associated fittings that are all available from plumbing supply outlets.

PARTS LIST

- 3 12-foot lengths of 1/2" copper pipe,
- 12 90-degree 1/2" elbows,
- 3 1/2" pipe tees,
- 4 1/2" pipe caps,
- 3 2" U bolts.

ASSEMBLY

Construction is straightforward. Dimensions shown in Fig. 1 are the

cutting lengths for the pipe. Note that tees and elbows do not take up space. This has been taken into account in the dimensions shown. Elbows, tees and caps are assembled using standard plumbing techniques as shown in Fig. 2. Pipe caps are installed at the top and on the ends of the mounting pipes. The bottom of the antenna is left open to allow condensation to drain.

As elements are assembled, ensure that they remain in line with each other. The easiest way to accomplish this is to assemble the antenna on a large flat surface such as a garage floor.

MOUNTING

The supporting pipes for mounting should be drilled to accept U bolts (Fig. 2) before they are soldered to the

pipe tees. Drill holes such that the antenna will be mounted vertically along the tower or support mast. The antenna should be mounted as shown in Fig. 1.

Note that the tower or mast on which the antenna is mounted will affect the pattern of the antenna. The tower acts as a reflector and some skewing of the radiated pattern away from the tower will result. Spacing of the antenna from the tower is about 1/4 wavelength.

FEEDPOINT

The antenna has a balanced feedpoint and should be fed with a balun. A 4 to 1 balun constructed from coax works well and is simple to construct as shown in Fig. 3. Dimensions are for coax with a solid dielectric. If foam coax is used, lengths will have to be

Continued on next page ▶

Figure 1
VHF Collinear Antenna

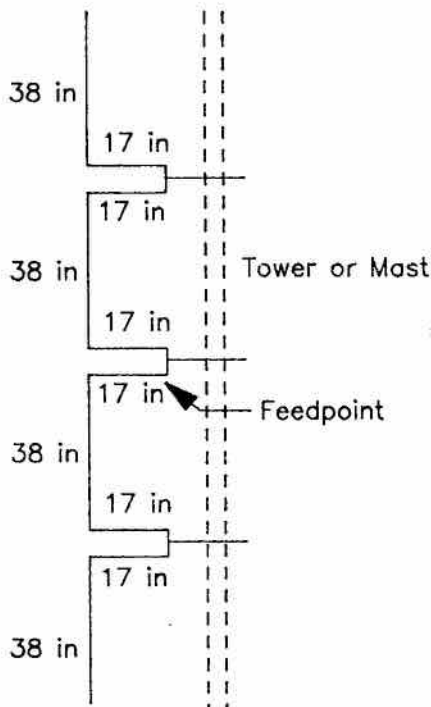


Figure 2
Construction and Mounting

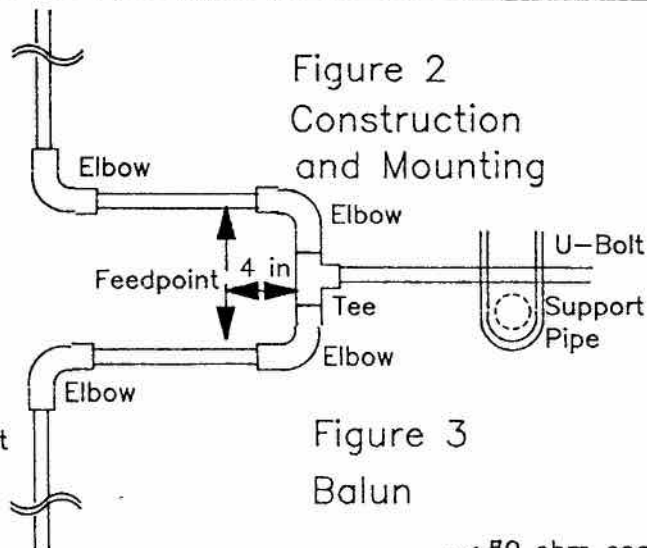
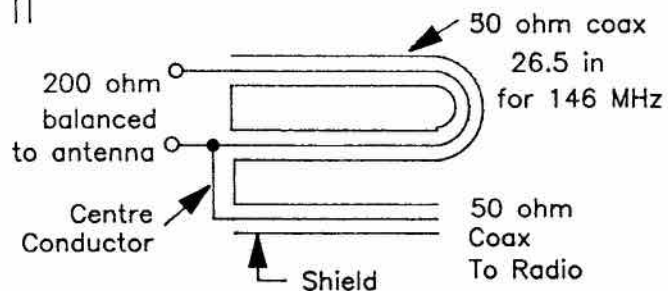


Figure 3
Balun



▶ ANTENNA (cont'd)

altered to compensate for the difference in velocity factor.

The antenna should be fed about 4" from the shorted side of the centre support. A short length of copper tube is split lengthwise and soldered to the conductors of the balun. These pieces are then clamped to the antenna with hose clamps. This allows for adjustment of the feedpoint for

minimum SWR. When this has been determined, the copper pieces are soldered in place.

Tuning can be roughly done at ground level. Final tuning will have to be done with the antenna at its final operating position. Very small adjustments at the feedpoint will cause large changes in SWR.

OPERATION

The theoretical gain of this antenna

is 6 dB over a dipole. Comparison was made with a 5/8-wave vertical. Operating base to mobile in the north end of Calgary showed an increase in simplex coverage from 4 miles with the 5/8 to 15 miles with the collinear. The most distant repeater that could be accessed was VE6BBR in Warner, south of Lethbridge, a distance of over 100 miles.

CONCLUSIONS

Cost of the antenna was \$15 and performance was much superior to what had been used previously.

Alteration of dimensions would allow use on 220 or 435.

Addition of more dipole elements would provide more gain. Four more elements could be added. This would result in 4 elements on either side of the feedpoint rather than the present 2 on each side.

The author will attempt to answer any questions about this antenna if problems with its construction or use should arise. ■

One cure for Telephone RFI

BY J.F. HOPWOOD
VE7AHB

Are the neighbours upset because you frequently override their phone calls with weird sounds and vulgar noises when their trying to carry on a friendly conversation? Does the XYL tell you to get off the @\$%& radio so she can talk to her mother in peace? Have you tried everything from RF chokes and ceramic bypass capacitors but still it's not good enough? Well, try this one cause it works so well for me on 160, 180, 40, 30 and 20 metres that I know it will do the job for you, too!

It's an AT&T Z100A Filter (see Fig. 1). It is packaged in a small plastic box and contains a tiny ferrite transformer wound with very thin wires. To install the RFI Filter you simply unplug your phone's modular line cord from the receptacle at the base of the phone set. Connect the modular plug on the Filter's cord to the receptacle on the base of the phone set. Then plug the modular line cord into the receptacle on the Filter. Voila! It's all done! It sells for about \$17 U.S. I don't believe it's available in Canada yet.

I tried Northern Telecom's plug-in filter and several other makes, but

they don't do the job around the house or neighbourhood at all. But wow, does the Z100A work. Running barefoot it completely eliminates the RF. Running a kilowatt 20 to 30 feet away, it only leaves a tiny barely audible trace of unobjectionable RFI. However, it's not as effective on 15 and 10 metres when the RF source is close by.

AT&T market the Z100A as a "Radio Interference Filter to eliminate extraneous noises from local AM radio stations and to minimize interference from other sources such as FM band radio stations, citizen band and ham radios." It does that very well.

The real plus is that if it is or becomes available in Canada you can tell the neighbours where to buy one and save yourself a lot of time and money. All they have to do is plug it in. B.C. Tel is looking into selling them through their phone mart stores as AT&T are doing in the U.S. A little expensive, I grant you, but it really does the job and believe me I've tried many others which don't come near the Z100As. Then again, you can continue tinkering with chokes and capacitors if you feel ambitious and energetic! ■

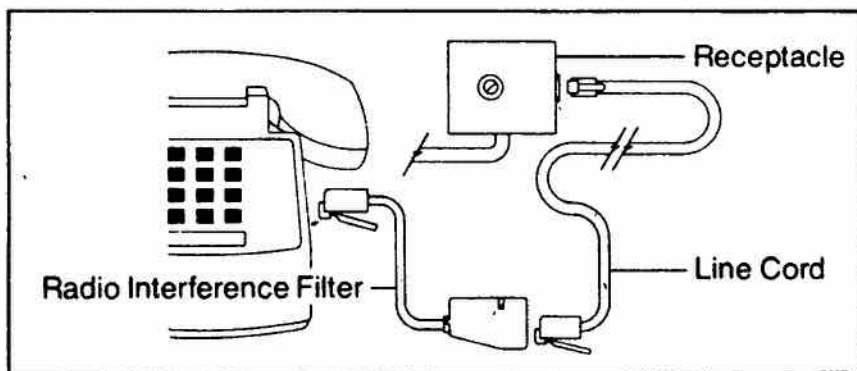


Fig. 1— Z100A Installation (courtesy AT&T Co.)

BEVERAGE ALIVE AND WELL AT 94

During the last few years there has been a great revival of the travelling wave receiving antenna for use below 5 MHz or so, commonly called 'the Beverage'.

Dr. Harold Beverage, who together with Rice and Kellogg, developed the antenna in the early 1920s for the reception of transAtlantic signals, was 94 on Oct. 14, 1987. He built a crystal set in 1908, and was a pioneer W2 radio Amateur. He received his BSEE in 1915, a D.Eng in 1938. He worked most of his life for RCA Communications and RCA Laboratories, retiring in 1958. He was president of IRE in 1937 and, as you can well imagine, received dozens of prestigious awards including the IRE Medal of Honor (1945) and the Lamme Medal of AIEE (1956). —VE7BS

REQUEST FOR TECHNICAL ARTICLES

The Canadian Amateur is always looking for technical articles. If you don't feel you can write a finished manuscript, just rough out your ideas and we will do our best to complete it for you.

We would also like your suggestions for technical topics for future articles. Technical questions are also welcomed and we will attempt to answer them in these pages.

Please send all contributions to the Technical Editor, whose address appears at the beginning of the Technical Section.

Contest Winner/Technical

The Sun's Effect on Short Wave Radio Communication

BY D.J. KELLY VESTX

Amateurs have for many years been aware of the effect the sun has on radio communication in the 3 to 30 MHz range. This article is an attempt to explain, as simply as possible, a number of ways in which short wave communication is enhanced, degraded, or completely wiped out by unusual occurrences on the surface of the sun.

IONOSPHERE

A series of ionized layers have been formed around the earth's circumference by the electrification of the upper atmosphere when hit by ultraviolet and X-rays from the sun. This penetration of ultraviolet and X-rays into the upper atmosphere causes the separation of electrons from the air molecules, in effect ionizing them and rendering these molecules electrically conductive (Fig. 1). These ionized layers act as reflectors and return transmitted signals back to the earth. The normal ionosphere has three distinct layers.

They are:

E layer— Average height about 112km above the earth's surface.

F1 layer— Average height about 225 km above the earth's surface

F2 layer— Average height about 320km above the earth's surface.

The lower fringe of the E layer, about 65 km above the earth's surface, is known as the D layer.

RADIO WAVE PROPAGATION

Ground station radio waves entering the ionosphere cause the free electrons in the ionosphere to vibrate in sympathy with them and to re-radiate energy at the same frequency as the incident waves. As these waves penetrate more deeply into the denser portions of the ionosphere, the oscillating electrons re-radiate their energy more in the reverse direction than in the same direction as the transmitted wave. Finally, the higher ionospheric density retards the transmitted wave energy to the point where it can no longer move in the forward direction. As a result of this, radio waves transmitted from the earth at

frequencies below 30 MHz are turned back by the various ionospheric layers. For example:

The D layer turns back frequencies below 500 kHz.

The E layer turns back frequencies between 500 kHz and 2 MHz.

The F1 and F2 layers turn back frequencies between 2 MHz and 30 MHz.

CHANGES IN THE IONOSPHERE

The degree of ionization or electrification of the ionosphere is continually changing. Some of the reasons for this are:

1. The rising and the setting of the sun.

2. Highest ionization (electrification) occurs at noon when the sun is highest in the sky, i.e., the ionization layers are most dense.

3. Minimum ionization occurs just before dawn, i.e., ionization layers are most attenuated.

4. Seasonal changes caused by the orientation of the earth.

5. Solar activity.

6. Ionization tends to be greatest near sunspot maxima.

7. Ionospheric storms seem to be associated with magnetic storms which destroy the normal stratified layers of the upper atmosphere.

Continued on next page

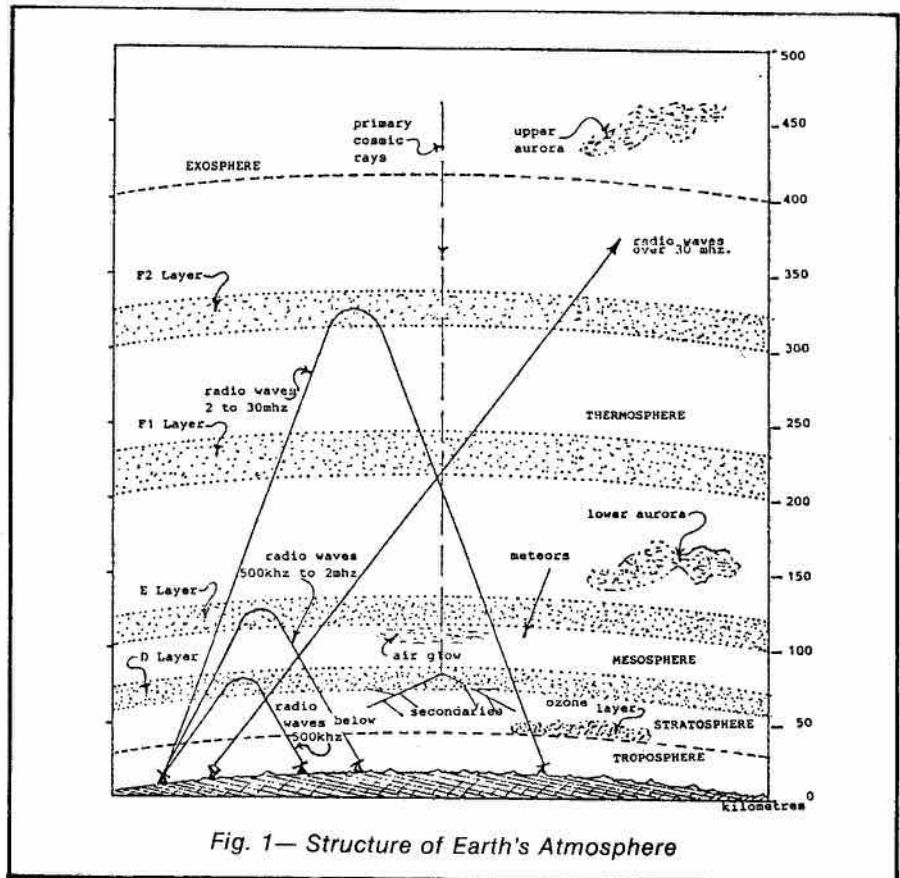


Fig. 1— Structure of Earth's Atmosphere

SUCCESSFUL LONG DISTANCE RADIO COMMUNICATION

For successful long distance communication, the frequency must be low enough so that it will pass through the ionospheric screen, but not so low that it will be absorbed in the lower portion of the atmosphere.

EFFECT OF SOLAR DISTURBANCES, SUNSPOTS

A typical sunspot possesses a cell-like structure consisting of a dark centre surrounded by a grayish filamentary region called the penumbra. The sunspot by its very nature is extremely bright. Its umbral temperature is 4500 degrees Kelvin. The umbra appears dark because it is viewed against an even brighter photospheric background whose temperature is 6000° Kelvin.

Sunspots develop rapidly (within a matter of hours) as small pores in the disturbed photosphere. They grow rapidly and usually from clusters of related groups containing spots of various size. The diameter of these spots may vary by thousands of kilometres,

Fig. 2— Large Sunspot Group

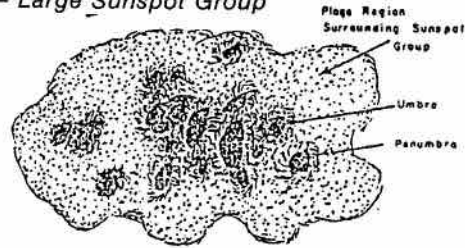


Fig. 3— Sunspot Trend during a Sunspot Cycle

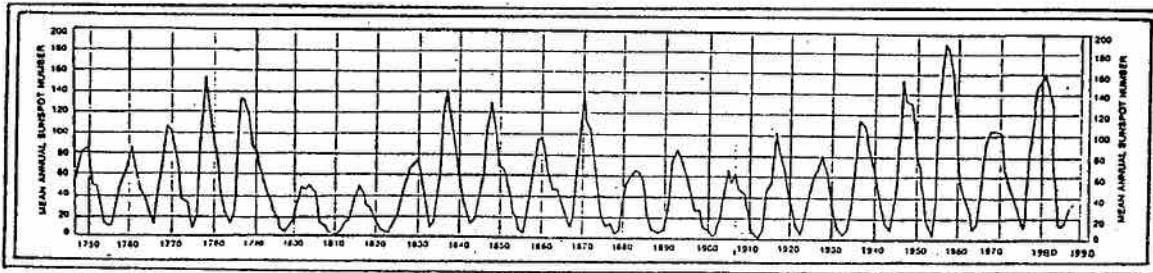
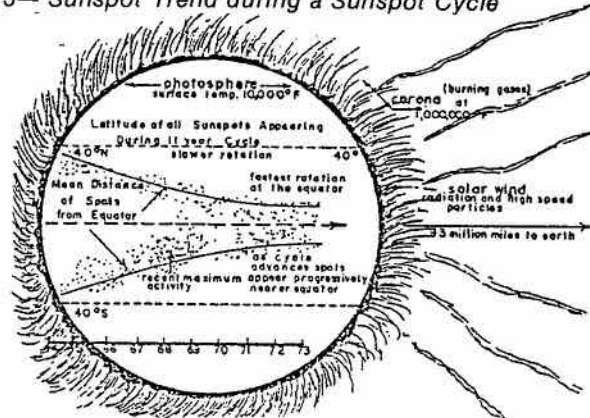
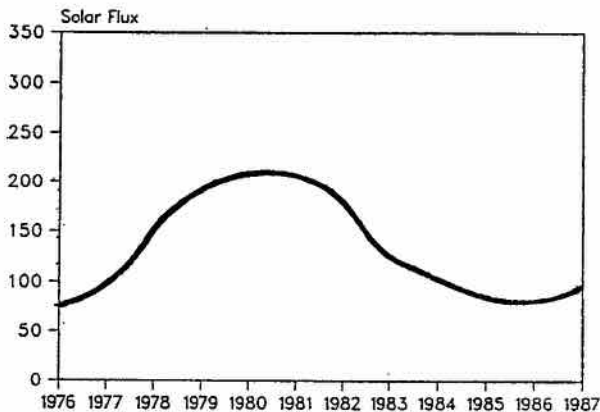


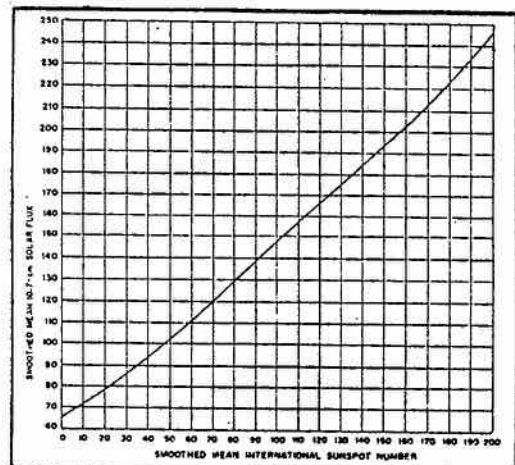
Fig. 4— The Sunspot Cycles

Note: 1977-88 based on yearly Average Solar Flux readings converted to Mean Annual Sunspot Number (Graph, Fig. 5).

Fig. 5— Average Annual Solar Flux Cycle 21



Relationship Between Solar Flux and Sunspot Number



there being usually one large dominating spot in each group. A typical spot can build up to a diameter of 50,000 km within a week and then decline. The largest sunspot groups may cover an area 300,000 km in diameter and persist for months (Fig. 2).

THE SUNSPOT CYCLE

The number of sunspots appearing on the sun increases over a period of time which averages 11 years between maxima. This 11-year cycle is by no means constant as recorded cycles have varied considerably. Intervals between maxima have varied from 7.5 to 17 years and minima from 8.5 to 14 years. Usually the rise to maxima averages 4.1 years while the decline to minimum has averaged 6.7 years.

As the 11-year cycle progresses, the spots move closer to the equator each year (Fig. 3). A new group of sunspots appearing in the higher latitudes around 35 degrees north or south indicates the beginning of a new cycle, while the spots from the old cycle end their days near the solar equator.

Sunspots are disturbed areas of the sun. They are more active than the quiet sun and give off more radiation and charged particles. As the number of sunspots increases, more radiation and charged particles are given off. The radiation and charged particles enter the earth's ionosphere, increase the ionization (electrification) of the various layers and in effect increase the density of those layers. This increased ionospheric electron density permits improved long range communication.

Sunspot records have been kept for many years so that the various cycles of activity are readily available for study (Fig. 4).

It should be noted that the sun's

activity, since 1750, has been recorded by counting the actual number of sunspots on the sun and recording them as a smoothed average. This smoothed average is based on a formula which is not particularly pertinent to this report. Sunspots are still counted but there is another way to record the sun's activity; it is done by a radio measurement which is carried out daily on 2800 MHz and reported every hour by WWV as the solar flux index. The relationship between the solar flux index and smoothed average sunspot number is shown in Fig. 5. Also shown is my ten year record of solar flux variations during Cycle 21 which ended in September 1986. We are now in cycle 22.

It must be realized that, as the sun rotates, sunspots will move with that rotation across the solar disc, appearing and disappearing from the earth's view about every 27 days. As the speed at the sun's equator is greater than at the higher latitudes, this figure will probably be somewhat higher at the beginning of a new cycle. My records over the last ten years show some variation but they do appear to confirm the 27-day average referred to above.

There are also a number of other solar terrestrial inter-relations known to be tied into the 11-year sunspot cycle. They are:

1. Maximum and minimum receipt of solar ultraviolet radiation by the earth coincides respectively with the maximum and minimum sunspot cycle.
2. Aurorae are most prominent at the time of sunspot maximum.
3. Terrestrial magnetic activity closely follows the ups and downs of the sunspot cycle.
4. The intensity of galactic cosmic

rays diminishes near sunspot maximum as a result of the interrelation between the charged particles and the strengthened magnetic field which tends to deflect the particles.

FLARES

When a flare erupts it occurs as an intensely bright area in the plage region of the photosphere usually associated with a sunspot group. It emits radiation strongly through the entire electromagnetic spectrum and is most common when sunspots are high.

A major flare is the most violent kind of solar disturbance. When a flare occurs it gives off intense ultraviolet and X-rays. These rays, travelling at the speed of light, hit the ionosphere and very rapidly increase the ionization, especially in the D layer. Radio waves hitting the ionosphere could be quite strongly reflected prior to the occurrence of a flare and shortly afterwards may fade and disappear completely.

All frequencies from 1.5 to 30 MHz are affected with the lower frequencies being the most severely absorbed. This radio fadeout is known as a Sudden Ionospheric Disturbance (SID) and affects only stations lying on the sunlit hemisphere of the earth. Fadeouts may last for a few minutes or for several hours and several may occur in rapid succession.

Within 24 hours of the flare outburst, low energy cosmic rays (charged particles), spiral into the earth's polar regions causing polar radio blackouts. A long plasma tongue (high energy mixture of charged particles) with its own magnetic field stretches out from the sun sweeping over the earth.

These unusual developments disrupt the ionosphere, interfere with the earth's magnetosphere and generate magnetic storms.

The effect that flares have on the solar flux is clearly shown in the graph "Average Monthly Solar Flux for 1978-79 (Fig. 6).

All of these features, which are the result of solar flares, can disrupt communications in the 2 to 30 MHz range for days.

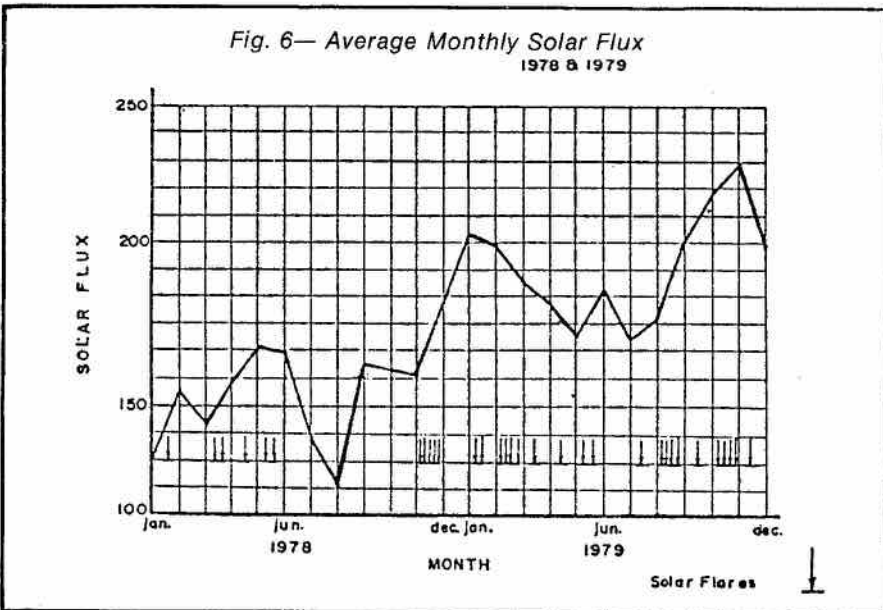
THE SUN AS A TRANSMITTER

The quiet undisturbed sun emits thermal radiation from the microwave region (about 1 cm) to the long wave region of about 20 metres. The shortest waves (millimetres) originate in the cooler photospheric layer, the medium waves (centimetres) in the hotter chromosphere and the longest (metres) in the still hotter coronal regions.

When the sun is disturbed, three additional radio emissions occur which are not of thermal origin.

Continued on next page

Fig. 6— Average Monthly Solar Flux
1978 & 1979



1. Very intense radio bursts, lasting about a minute and radiating over many wavelengths, are produced by the ejection of plasma from the highly disturbed regions surrounding a sunspot group.

2. Noise storms which can last for hours and even days, in the one to ten metre wavelengths. They are believed to originate from the interaction between magnetically trapped particles and moving plasma waves.

3. The centimetre wavelength slowly varying component which is partly thermal in nature and can last for weeks. This phenomenon is connected with sunspot activity in the surrounding bright areas known as plages.

THE EARTH'S MAGNETIC FIELD

The earth's magnetic field is not due to permanent magnetism of the earth's materials. It is thought to be the result of

a flow of electric currents within the earth's core caused by a flow of electric charges. As the earth's core is assumed to be made up of an alloy of iron, it is considered to be a good electrical conductor, and at a depth of about 2900 km beneath the earth's surface, exhibits some of the properties of a liquid. These currents may result from movement within the earth's core material due to thermal conduction delivering heat from the core to the mantle (outer crust) as the earth cools.

This conducting fluid movement across a magnetic field induces an electromotive force which drives an electric current producing a magnetic field. This process, known as the dynamo mechanism, does not explain how the earth's original magnetic field could have been generated; it is merely the most recent theory put forward to explain how the magnetic field around the earth is generated. It has, however, been proven mathematically that a

dipole type poloidal magnetic field can only be maintained if an appropriate pattern of fluid motion exists in the earth's core.

The magnetic fields are twisted into very complicated patterns by the fluid motion of the earth's core. These patterns are forced to lineup approximately along the earth's axis because of the earth's spin which provides the controlling mechanical influence on these motions and the earth's magnetic field.

A small part of the earth's magnetic field comes from outside sources which are now understood to have a considerable effect upon electromagnetic activities in the earth's upper atmosphere. This part (the daily varying portion) of the earth's magnetic field is primarily controlled by the position of the sun at the site location of the observer. It is caused by horizontal electrical currents flowing around the earth in the lower portion of the ionosphere (105 to 130 km in altitude), the intensity of which is observable only on the sunlit side of the earth.

Two thirds of this daily varying part of the earth's magnetic field is directly affected by the outside source, the sun, while the remaining third is indirectly affected and is thought to be the result of a flow of electric current in the earth's core, caused by a process of electromagnetic induction. This in turn generates a magnetic field varying in both frequency and intensity in sympathy with the primary outside source.

The Moon's gravitational force also gives rise to a tidal current in the ionosphere similar in nature to its affect on the earth's oceans and, because of this tidal effect, a lunar ionospheric dynamo also exists. It is noticeable only on the sunlit hemisphere and is much smaller in amplitude than the solar daily variations, but it does exist and has a very minor effect on the earth's geomagnetic field.

A sudden increase in the sun's activity can cause geomagnetic disturbances of large amplitude to take place. In temperate latitudes, such disturbances are characterized by a sudden increase in the horizontal intensity of electric current flow followed several hours later by a sharp depression and then gradual recovery. This kind of geomagnetic disturbance is called a magnetic storm.

Next issue: More of the Sun's Effects on Short Wave Radio Communication.

BELL MODEMS

Note: The cost of Bell Rixon Model T212A Modem is now \$42.00, 5% of original cost. For further details, see June issue.

DX at 300 Terahertz

BY ROBB VE7FSK

Not so long ago, I thought about buying a couple of Gunnplexers, the heart of a 10 GHz communication system. At 10 GHz you have to accept a few limitations: contacts are limited to line of sight most of the time, the Gunnplexers only put out 10 milliwatts, and a bit of rain or even heavy fog prevents communication. So why would anyone want to even try this band? Microwave links have the potential to carry enormous quantities of data and multiple voice channels. It sounded so promising, I was willing to give microwaves a try. At least, I was willing until I saw the price of Gunnplexers: \$200 a piece. My dreams of high speed packet faded away. I had almost given up. Then I found out about the 300 terahertz band.

The 300 terahertz band is one of the least publicized Amateur bands. Its strengths and weaknesses are much like those of the 10 GHz allocation.

It can handle incredible speeds, but it's limited to line of sight. It has one great advantage over 10 GHz, however: the equipment is dirt cheap. A 5mWCW transmitter can be bought locally for \$3. A front end to build a matching receiver costs only \$2. A 30 dB antenna costs less than \$5. So why aren't more people on the band? Why don't CQ and QST publish articles about it? And why isn't it listed in the RIC-25?

Well, I must admit I haven't been completely up-front with you. I

neglected to mention that the 300 terahertz band is not radio at all: it's infrared light. But every other word I've said is true! The transmitter is an infrared LED, and the receiver is a photo transistor. You can buy them at Radio Shack. The 30 dB antenna to which I referred is, in fact, a concave reflector from the flash unit of an older camera. These simple and inexpensive components can form an effective communication system.

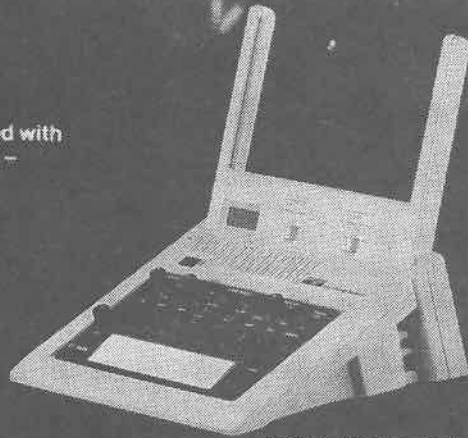
In all seriousness, lightwave technology has great potential. Given the recent developments in laser diodes and fiber optics there's a lot of scope for experimentation. There's no reason why we can't build repeaters and so on just as we do for VHF and UHF radio. Amateurs may even develop new modes of operating such as bouncing laser beams off aircraft, much as some of today's Amateurs bounce signals off meteor trails. And given the precarious nature of our claim to radio spectrum and increasing congestion of the bands we use, we may be forced to use such alternate techniques. One day, lightwave communication will be as much a part of Amateur radio as 2M is today.

If you want to be ahead of the pack in this new field, now's the time to get started. I have the schematics, if you have the interest! It shouldn't be long before you hear "QSY to 300 terahertz" on a repeater near you. ■

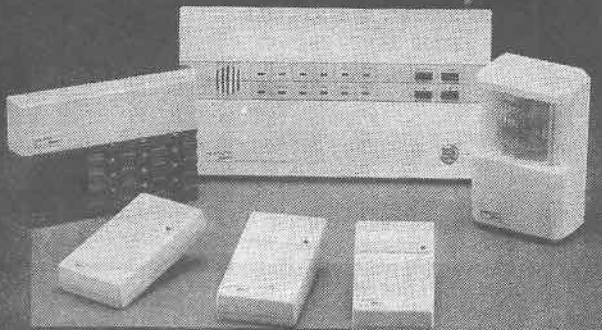
—Victoria Short Wave Club



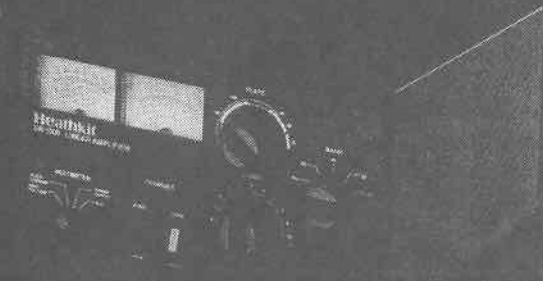
Laptop PC equipped with a 10MB hard disk – see page 84



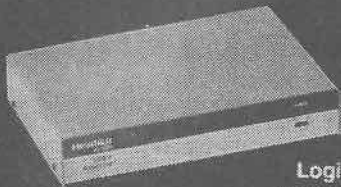
Analog Trainer and Backpack – see page 58



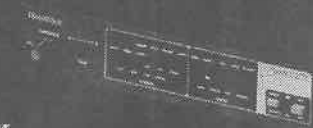
Wireless Security System – see page 102



Pack-Kit Multi-Mode TNC and 1KW Linear Amplifier – see pages 32 and 36



Logic Analyzer converts PC into a test instrument – see page 42



Heathkit

Helping you make things better

Visit your nearest Heath/Zenith Computers and Electronics Centre today.

Vancouver, B.C.
3058 Kingsway V5R 5J7
604-437-7626

Mississauga, Ont.
1478 Dundas St. E. L4X 2R7
416-277-3191

Edmonton, Alberta
4966 92nd Ave. T6B 2V4
403-468-6195

Ottawa, Ontario
866 Merivale Rd. K1Z 5Z6
613-728-3731

Montreal, Quebec
1400 Saue Ouest H4N 1C5
514-332-3666



Publications

CARF Pens	\$1.00	_____
CARF Log Sheets (Package of 25)	\$3.00	_____
CARF Lapel Pins	\$2.50	_____

TEXTS AND STUDY GUIDES

Certificate Study Guide	\$15.00	_____
Advanced Study Guide	\$15.00	_____
CW into Foreign Languages	\$6.00	_____
Amateur Radio in Canada— An Overview	\$10.00	_____

Special Club Discount of 15% for orders of 10 or more of The Certificate Study Guide and/or the Advanced Study Guide to the same address. The price is now F.O.B. Kingston by your selection of carrier. Ask about our Large Order Discounts!

CANADIAN AMATEUR REFERENCE GUIDE

Basic H.F. Antennas <i>By Art Blick VE3AHU, 23 Pages</i>	\$2.25	_____
Contests: Radiosport <i>12 Pages</i>	\$1.75	_____
The Amateur Bands <i>12 Pages</i>	\$2.25	_____
Routine Daily Operating <i>16 pages</i>	\$1.75	_____
DX <i>By John Gilbert VE3CXL, 15 Pages</i>	\$2.25	_____
Establishing An Amateur Station	\$2.25	_____
<i>By the late Bud Purnard VE3UD, 11 Pages</i>		
Cable Television Signal Leakage	\$3.50	_____
<i>By Tony Van Wouw VE7CCI, 19 Pages</i>		
The Vertical Radiator <i>By Art Blick VE3AHU</i>	\$3.00	_____
Amateur Radio Towers— Your Rights and Obligations	\$2.50	_____
<i>By Bill Wilson VE3NR, 15 Pages</i>		
Amateur Design of Printed Circuit Boards	\$2.50	_____
<i>By John Iliffe VE3CES, 19 Pages</i>		
Binder— 2" D-Ring with CARF Logo	SPECIAL \$4.50	_____
<i>For Reference Sections</i>		

VIDEO TAPES

SAAC Video (Wind Profiler)(Beta&VHS)	\$14.95 + \$2.50 Shipping	_____
Hamming It Up (VHS only)	\$14.95 + \$2.50 Shipping	_____
Hamming It Up Rental 3/4" professional format for broadcast use	\$35.00	_____
Refund when returned in 21 days	\$30.00	_____

Add \$1.00 Postage and Handling

\$1 ⁰⁰	_____
-------------------	-------

Total— Please Remit by Cheque, Money Order, Mastercard or Visa (No COD's) ..

Name: _____

Call: _____

Address: _____

Postal Code: _____

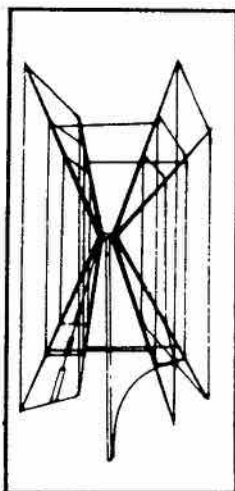
**Canadian Amateur Radio Federation
Federation des Radioamateurs Canadiens**

P.O. Box 356, Kingston, Ont. K7L 4W2

613-545-9100

GEM QUAD PRODUCTS (1987) LTD.

Chosen By Amateurs For Over 15 Years.
Winner of the Manitoba Design Institute
Award of Excellence.
Will Accommodate New Bands From
2 To 20 Meters.



Fiber Glass
Quad Antenna
For 10, 15, and
20 Meters

2 element \$255.00
3 element \$425.00
4 element \$610.00

Price is F.O.B. Boissevain.

Kit Includes:
Spider, Arms, Wire, Balun
Kit and Boom Where Needed

Boissevain, Manitoba, Canada R0K 0E0
P.O. Box 291, Telephone (204) 534-6184

Another New Reference Section

CARF is pleased to announce the latest
in the Canadian Amateur Reference
Guide series of single topic booklets.

THE VERTICAL RADIATOR

Written by Art Blick VE3AHU, the author of Basic
HF Antennas, this section continues in Art's thorough
style with complete details on the design and
construction of your own Vertical Antenna.
Information is presented for antennas from 160 metres
to VHF frequencies with examples, diagrams and
theory.

Topics covered include Current Distribution,
Radiation Resistance, Loading, Bandwidth and Q,
Ground systems, and Using the Tower as an Antenna.

This booklet should be in the library of any serious
antenna experimenter or just the Amateur who needs
a good radiator.

The Vertical Radiator, by Art Blick
VE3AHU, 21 pages plus cover.

\$3⁰⁰ from CARF

NEW! FROM CARF! HAM RADIO MAGAZINE

CARF IS NOW THE EXCLUSIVE CANADIAN SUBSCRIPTION AGENT FOR **HAM RADIO
MAGAZINE.**

**12.5% DISCOUNT FOR MEMBERS
USE THIS HANDY ORDER FORM**

.....
CARF Membership Number: _____ Expiry Date: _____

Ham Radio Number (if Renewal): _____ Expiry Date: _____

Name: _____ Call: _____

Address _____

City: _____ Code: _____

I am not a CARF Member but wish to order at the non-member rate. Enclosed
is:

- \$40 Ham Radio
- \$60 Ham Radio and CARF Membership

I am a CARF Member. Enclosed is:

- \$35 Cheque for Ham Radio
- \$35 Money Order for Ham Radio
- Visa/Mastercard Number: _____

Expiry Date: _____



Subscription Form

Full Voting Member

Membre a part entière avec droit de vote

\$25⁰⁰

per year/pour un an _____

Associate Member

(Non voting, non licensed or foreign call signs)

Membre associé

(Adhérent sans droit de vote, sans licence ou détenteur d'indicatif d'appel étranger)

\$25⁰⁰

per year/pour un an _____

Members residing outside Canada

Same as above, except in U.S. Funds to cover additional postage costs.

Membre résidant à l'étranger

Même que membre associé, mais en monnaie U.S. pour couvrir les frais postaux.

Additional Family Members

\$2⁰⁰ for each year extra per person; \$30⁰⁰ for life.

Membres d'une même famille

\$2⁰⁰ par année par personne; A Vie \$30⁰⁰

Life Membership (Full or Associate)

Adhésion a vie (Membre votant ou associé)

\$375⁰⁰

All members of CARF receive *The Canadian Amateur*.

Non-members may subscribe to *The Canadian Amateur* at

Tous les membres de FRAC reçoivent *The Canadian*

Amateur. Ceux qui ne sont pas membres de FRAC peuvent souscrire à *The Canadian Amateur* pour le prix de

\$25⁰⁰

per year/pour un an _____

Total

Name

Nom

Address

Adresse

City

Ville

Province

Postal Code

Code Postal

Date

Membership #, if renewal.

No d'adhérent si renouvellement.

Mastercard and Visa Service now available:

Master-charge et Carte Visa acceptées:

Card #

No de la Carte

Expiry Date

Date d'expiration

Signature

Canadian Amateur Radio Federation Federation Des Radioamateurs du Canada

P.O. Box 356/B.P. 356

Kingston, Ontario, Canada K7L 4W2 613-545-9100



ARMACO

ARMACO Electronics Ltd.



Mailing Address:

P.O. Box 24625, Station 'C', V5T 4E2

224 West 5th Avenue

Vancouver, B.C. V5Y 1J3

Telephone: (604) 876-4131

IMPORTER & DISTRIBUTOR

INTRODUCING THE AFFORDABLE
"LIGHTWEIGHT POWERHOUSE"

FT 747GX



NEW FEATURES INCLUDE

- GENERAL COVERAGE
100 KHz - 30 MHz
- 100 WATT HF ALL MODE
- CW AND AM FILTERS
STANDARD
- EASY TO READ
LCD DISPLAY
- FRONT PANEL SPEAKER
- HIGH DYNAMIC
RANGE RECEIVER

OPTIONS

- FC 1000 GENERAL
COVERAGE TUNER
- FM OPTIONAL
BOARD
- HIGH STABILITY
OSCILLATOR

YAESU

ICOM

ARRL INTERNATIONAL
DX CONTEST
IC-735

HF Transceiver



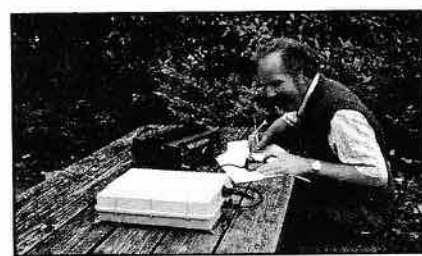
'MOST RELIABLE HF'

"Of all the possible radios, I chose the ICOM IC-735 for my CQWW QRP world record attempt."

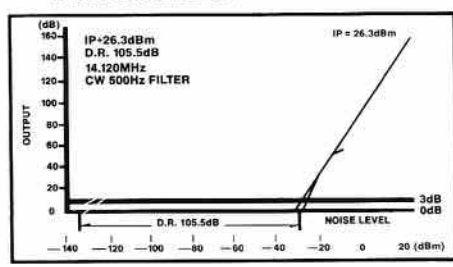
Danny Eskenazi, K7SS, World High QRP Score
-1987 CQWW SSB (PJ2FR)*
-1986 CQWPX SSB (K7SS/WH6)
-1986 ARRL DX PHONE & CW (K7SS/KH6)

ICOM's IC-735 is the world's most popular HF transceiver. With the highest performance, smallest size, and best customer satisfaction of any HF transceiver, the IC-735 is the winner's choice for fixed, portable, or mobile operations.

- **Field Proven 100W Transmitter** with 100% duty cycle. Proudly backed with ICOM's full one-year warranty.
- **105dB Dynamic Range Receiver** includes passband tuning, IF notch, adjustable noise blanker, and semi or full CW QSK.
- **Conveniently Designed.** Measures only 3.7"H by 9.5"W by 9"D.



- **Optional AH-2 Automatic Tuning Mobile Antenna System** covers 3.5MHz-30MHz and tracks with the IC-735's tuned frequencies.
- **All HF Amateur Bands and Modes** plus general coverage reception from 100KHz-30MHz.



- **12 Tunable Memories** operate and reprogram like 12 separate VFO's. Supreme flexibility!
- Additional Options:** SM-10 graphic equalized mic. PS-55 AC power supply, AT-150 automatic antenna tuner for base operation.
- ICOM's IC-735...** a proven winner for reliable worldwide HF communications. See it today at your local ICOM dealer.

ICOM

First in Communications
 ICOM America, Inc.,
 2380 116th Avenue N.E., Bellevue, WA 98004
Customer Service Hotline (206) 454-7619
 3150 Premier Drive, Suite 126, Irving, TX 75063
 1777 Phoenix Parkway, Suite 201, Atlanta, GA 30349
 ICOM CANADA, A Division of ICOM America, Inc.,
 3071 - #5 Road, Unit 9, Richmond, B.C. V6X 2T4
 All stated specifications subject to change without notice or obligation. All ICOM radios significantly exceed FCC regulations limiting spurious emissions. 735188.
 *Final contest results pending.