

THE CANADIAN AMATEUR

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Canada's Amateur Radio Magazine

La Revue des Radio Amateurs Canadiens

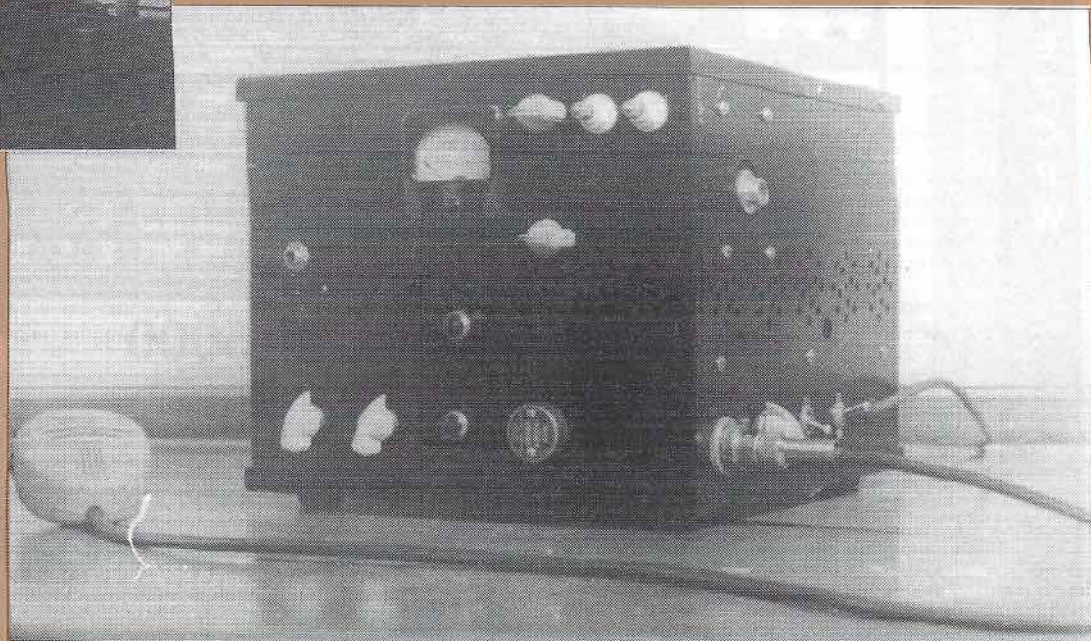
NOVEMBER 1988

Ten Metre Highs 40 Years Ago — Page 9



plus
Sparks on the High Seas—
Today's Version — Page 13

Left: Milt Saunders VE7KH in 1947 and, below, his QRP rig.



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November 1988

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

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

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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.

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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

The Three R's

BY GEORGE SANSON
VE3LXA

The Ottawa Committee, or as it is properly called, the CARF Government Relations Committee, has been in existence for almost two years now. We have had other 'Ottawa Committees' over the years but this one has something special.

This Government Relations Committee has the 'Three Rs'!

Now don't get me wrong, I'm not implying that previous Committees didn't have these qualities, but these four guys really shine when it comes to 'Rs'. The Committee members at present are: Chairperson Dan Holmes VE3EBI, C.C. Liaison Bill Wilson VE3NR, Members Ralph Cameron VE3BBM and Art Stark VE3ZS.

Why are these particular few so resplendent in the world of Rs? Well maybe it's because of their 'Pasts'. You see, it takes a special person to want, or to be offered, the chance to serve on the CARF Government Relations Committee. The fact that they live in Ottawa helps, but 'Past' is everything when it comes to Rs.

Dan Holmes' 'Past' consists of a long career with Air Canada. He has just retired for the second time. They liked him so well they called him back! During his years with the firm, he learned the value of dealing with people in a friendly, gentleman-like manner. Dan was chosen, by you, as one of two CARF Ontario Directors and is serving us well.

What can I say about Bill Wilson? His credentials say it all! As retired Director General of the Regulations Branch of Communications Canada, it's no wonder Bill is our choice to fill that all-important role as liaison with the rule-making body. He's already been there and learned the lessons of the 'Three Rs' along the way. He probably taught them to quite a few people over the years as well.

Ralph Cameron! Well! Ralph has been in the limelight for the past few years as

the person most qualified to help Jack Ravenscroft in his effort to solve his neighbour's immunity problems. Ralph also managed the Ravenscroft Fund and was named by the court as the Technical Authority. Ralph has worked for Tektronics for many years as a Technical Sales Representative and has been very involved in solving RFI and immunity problems within his company. Ralph's 'Past' has taught him well and given him the qualities associated with the Three Rs.

Last, but certainly not least, is Art Stark. Art probably invented the Three Rs, or at the very least had a major role to play in their creation. Art has been with CARF almost as long as there has been a CARF (17 years for Art, 21 for CARF). His long career with Communications Canada (or the DOC if you prefer), his role as the person responsible for CARF/CC Liaison since retirement and his general behaviour in all sorts of situations over the years makes him one of Canada's most prominent member in the 'Order of Rs'.

What are the mysterious Three Rs... the qualities these four men display so well? The dictionary does a far better job of describing the Three R's than I could, so let's see what it says:

Respect— 1. A just regard for and appreciation of worth, honour and esteem; eg. "I have great respect for that man".

Reliability— 1. That which may be relied upon; worthy of confidence; trustworthy.

Reserve— 1. The state of being reserved; silence as to one's feelings, opinions or affairs; reticence; also, absence of exaggeration.

The dictionary speaks, and I need not say more!

Your 'Government Relations Committee', Masters of the Rs working for YOU, the Members of CARF and all Amateurs of Canada! ■

LETTERS

STUDY GUIDE

I have just finished reading the letters department in this month's issue of *The Canadian Amateur* and was impressed by the comments re: Certificate Study Guide.

As part of the team who will be teaching the course leading to proficiency in Amateur Radio for the Chatham-Kent Amateur Radio Club, I am interested in doing the best job possible. Too often, Amateur Radio Courses are victims of drop-outs due to lack of interest, enthusiasm or whatever on the part of the prospective ham or teacher. I feel that both need all the help they can get.

William D. MacIntosh
VE3MAC

TROUBLE ON EMERGENCY NETS?

The incredibly disgraceful performance of certain Amateurs on the emergency nets set up to deal with Hurricane Gilbert traffic has changed the whole aspect of Amateur radio for me.

The parallel situation prevailing on frequencies used by DX nets and expeditions, where self-righteous 'policemen' wilfully interfere with reception by injecting their caustic comments, often on illegal frequencies, and/or by employing deliberate jamming, can be overlooked as juvenile antics which merely constitute a nuisance.

But the same tactics employed to deliberately disrupt emergency communications are the mark of morons who blacken the names of the 99.8% of hams who act responsibly. Obviously in our misguided haste to develop new recruits to fill up and retain our bands, we have admitted too many with questionable mentalities. Now we must take the distasteful steps to weed them out.

Certain conclusions are inescapable:

1. We (and DOC and FCC) must forever discard the notion that Amateurs can police and discipline themselves. The lunatic fringe have nothing but contempt for their fellows who entertain the naive notions that they can lead by setting a good example, and that pleas for co-operation and high standards will produce results. One rotten egg is all that it takes to spoil the cake.

2. Rules are useless unless they are enforced by rigid penalties. Amateur A has absolutely no power over Amateur B; such power is restricted solely to the licensing authority. It is time that licence suspensions and (in the case of

repeat offences) confiscation of equipment be used to punish deviant behaviour, on the grounds that the radio spectrum is public property with no-one entitled to pollute it. If DOC is not in a position to monitor on-air activity, then some independent group must be given legislative authority to act.

3. Most anti-social behaviour is encouraged by the fact that it rarely can be traced. Present-day technology would make it easy for every piece of equipment (commercial or home-made) to be fitted with a tamper-proof station identifier, the operation of which would be demonstrated to the appropriate authority before issuance of a licence.

Irresponsible behaviour on the air is entirely comparable to driving when impaired; both can be controlled only by making it costly to inflict it on others. And let us not be misled into thinking that Canadian Amateurs are any different from those of any other country. A VE who complained on 14325 kHz that "one can't be expected

SILENT KEY


VE7BV— Eric Hall was born and raised in England, and began tinkering with radio in the 1920s and '30s. However it was 1953 before he got his first Ham Licence. Eric moved to Canada in 1957 and worked with B.C. Hydro on east coast of Vancouver Island, Smithers and then Vernon, where he lived for over 20 years.

Eric passed away on May 24, 1988. He was very well-liked and respected by all who knew him.

just to sit and listen all day" was promptly logged for creating wilful interference. Canadians did their share to disrupt Hurricane Gilbert nets and to criticize those who manned them to the point of exhaustion. After all, we have transmitters to use, eh? If we can't use them to good purpose, then we're entitled to use them anyway. Right, eh?

Just for a change, let's aim for quality instead of quantity, and if it means that we are fated in the long run to retain fewer bands, at least they would be occupied by operators who are a credit to the hobby.

Ivor Nixon VE3IHN

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Mr. John Iliffe
President
Canadian Amateur Radio Federation Inc.
387 Selby Crescent
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L3Y 6E2

Dear Mr. Iliffe:

This is further to my letter of February 3, 1988 concerning the release of information relating to licensed radio amateurs.

I am pleased to inform you that after consultations with the Privacy and Information Commissioners, the Department has decided to resume its practice of releasing amateur licensing information, effective August 24. This release includes the name, address, call sign, level of certificate and any technical information related to the station and equipment. This decision was made on the basis that the disclosure of this personal information is permissible under the Privacy Act by virtue of sections 8(2)(a) and 8(2)(m).

We in the Department believe that the release of this information is consistent with the orderly and efficient management of the spectrum and in the public interest.

Yours sincerely,



R.W. Jones
Director General
Radio Regulatory Branch

Canada

So you want to set up a repeater?

BY WALLY GARDINER
VE6BGL

If you are having thoughts along these lines, this article is for you. Firstly, consider if a new repeater in an already crowded spectrum area is/will be REALLY necessary. Do you have adequate 2-metre coverage now? Is your prime interest DXing, and would a repeater on 10-metre FM be worthwhile, versus 2-metres?

How about UHF? What is the prime objective/service this machine will offer in comparison to systems already in existence? If having answered these questions satisfactorily a system is STILL necessary, read on...

The High River area consists of rolling terrain in the foothills of the Rocky Mountains. Because of this factor, plus a high ridge between High River and repeaters in Calgary, local coverage is difficult. As several of our members commute to work, it was decided that a local area repeater, preferably with autopatch would be beneficial on that far-off day that one of us might be sitting in the ditch, immobile in a blizzard at 40 below! Existing repeater systems didn't cover the area and would not serve in an emergency. Thus the need was established.

Planning for a new repeater can be broken down into several areas:

- 1) Frequency co-ordination
- 2) Equipment acquisition
- 3) Site location/management
- 4) Licensing-DOC liaison
- 5) Public Relations
- 6) Financing
- 7) Insurance

As you can see, a formidable task! Let's examine them, one at a time.

FREQUENCY CO-ORDINATION

Most provinces and territories of Canada have a volunteer committee/person responsible for trying to maintain an orderly approach to frequency management for each Amateur band. This person's job is often frustrated by geography, especially in densely populated areas, where three states and two provinces may coincide. In this case, the job is even more complicated due to the differing 'jurisdictions'.

The easiest way to find the co-ordinator is to ask the operator of an existing system for advice. In some cases, you might suggest a possible frequency pair based on your own experience of what you can/cannot hear in your area. The co-ordinator will try, if possible to allocate a frequency based on non-interference, but some sort of tone access system might be required for your situation. A local

coverage system such as ours causes little interference because it is also geographically isolated by terrain.

EQUIPMENT

There are several possibilities here. Some repeaters are home-brewed while others are a combination of commercial equipment and ham ingenuity! A quick conversation with the head of the finance committee will decide what you can afford, and then it is a matter of finding the equipment that will do the job at a price you can live with. Brand-name equipment is probably a good idea, in that spare parts are readily available, as is the commercial dealer's expertise. A repeater, bought for a song and needing parts from Botswana may not be the bargain you assumed in the long run. Caveat Emptor!

SITE

Generally speaking, higher is better, but investigate all possible sites first. Do checks with a mobile unit to see what coverage each site will give you. Remember your objective of either local or long distance coverage. Existing commercial towers are good choices in that tower space can often be rented. This saves the cost of your own tower and building to house the system. In addition, power and phone lines are often already available on-site.

In our case, autopatch was an overriding priority and hence we were limited by the telephone system to an area that had direct dial to High River and offered individual phone lines. Much of rural Alberta is still on 'party-line'! When you have a 'short-list' of possible sites, contact the owners politely with a game plan of how much power is needed, how big an area the equipment requires, an explanation of Ham Radio, how much it will cost, the steps taken to minimize interference to other commercial (i.e. paying customers) systems, etc. The list can be endless.

If you manage to obtain a site, be a good tenant. Respect the site security, report damage, do your share of upkeep if possible. Try to maintain friendly relations with the other system owners and above all, don't complain about anything! Also check for local ordinances or covenants regarding antennas and/or 'commercial' installations.

DOC LIAISON

Your repeater will require a licence. Costs at this time are \$20 per year and the licence will be in the name of one of your members (licensee). The licensee is technically responsible for everything that happens on the system. Check with the local Radio Inspector.

PUBLIC RELATIONS

If your system is going to be of benefit to the community at large, arrange for Press coverage at its inception. An interview of a local ham on the emergency capabilities of the repeater, published in the local paper, helps promote Amateur radio. A report to Town or City Government might just help out with the new proposed antenna bylaw they are considering. Above all, be seen doing your bit, and when asked, provide all the radio assistance you can at fairs, rallies and public gatherings.

FINANCING

It's going to be expensive! Consider operating costs as well as initial capital expenditures. Costs will come under headings such as:

- | | |
|----------------|------------------|
| a) licence | e) heating |
| b) telephone | f) repairs |
| c) site rental | g) miscellaneous |
| d) electricity | |

An initial operating budget of several kilo-bucks/month should solve just about any problems you might encounter! Revenue sources should be examined. Is your group eligible for any grants such as Senior Citizens, Culture, Corporate, Disaster Services, etc. Will there be a club dues levy? Some sort of self-financing scheme should be organized to fund your system. Perhaps a club dinner, auction, road rally, raffle... as long as money is coming from somewhere!

INSURANCE

Are you covered for liability? Is your system covered for theft? Are your members insured while on club business? Talk to your agent, and don't be surprised if insurance is a major part of your club's budget. Currently, basic liability insurance for a group may cost as much as \$500 per year.

Now, if you are still equal to the task, examine the benefits. You slide into the ditch on the way home from work! You punch the autopatch and call the XYL to tell her that you will be late for dinner, the Auto Club to dispatch a towtruck, and the local constabulary to report slippery road conditions and suggest they close the highway.

Strange callsigns appear on the machine looking for a campsite. You get to meet people from all over! Register your machine with the various directories available. Buy a larger coffee pot!

Disaster strikes in the form of a flood and the Town is evacuated. Public service in the form of the local repeater has health and welfare traffic running from the Red Cross shelter within hours.

So... go do it!!

The 33 cm Band

BY VICTOR DOTY VE3LNX

During the last WARC conference, several new bands were allocated to Amateur radio. Almost everyone is familiar with the new HF bands, 30, 18 and 12 metres.

At the top end of the UHF television band, on 902-928 MHz, is the little known 33 cm band. This new band, like all bands between 200 MHz and 24 GHz is shared, Amateur secondary. The band lies at twice the frequency of the popular 70 cm repeater band and 2/3 the frequency of the lesser known 1215-1300 MHz band.

The sharing aspect comes out in the odd restriction that only F3 (FM) and A3 (AM/SSB) are allowed in the rules. Upon written request, permission has been granted for other modes, including fast-scan TV and digital high-speed links.

In my opinion the way to describe 33 cm is as one of the best UHF bands available to the Amateur today. The propagation is good and very high gain antennas can be made and take up very little space. Some commercial equipment is available and articles have appeared in the Amateur press describing a homebrew transceiver and power amps up to 50 watts. (I can supply a copy of this information upon receipt of an SASE).

The only problem with this fine piece of spectrum is that it is going to waste in Canada! North of the border we have only a few stations, among them VE3ASO Ottawa, VE3LNX Orono, VE3CRU Toronto, and VE3MWM in Burlington. Don VE6EY in Calgary is

active on fast scan TV at 910 MHz.

Most weak signal work is done near 903 MHz, with 903.1 being the calling frequency. The distance record, according to Joe Reisert W1JR, is 478 miles (769 km) via the tropo scatter propagation mode. (*Ham Radio Magazine*, July 1987). Joe also reports an EME contact with both stations running 150 watts and 24 or 28 foot dishes. (*Ham Radio*, June 1988).

Activity is much greater in the U.S.A. In the Buffalo area alone there are about 10-15 stations active on ATV, and about

30 more doing weak signal work in the northeastern U.S.A. Most of the weak signal work is on CW, but a lot of activity with local stations is on SSB.

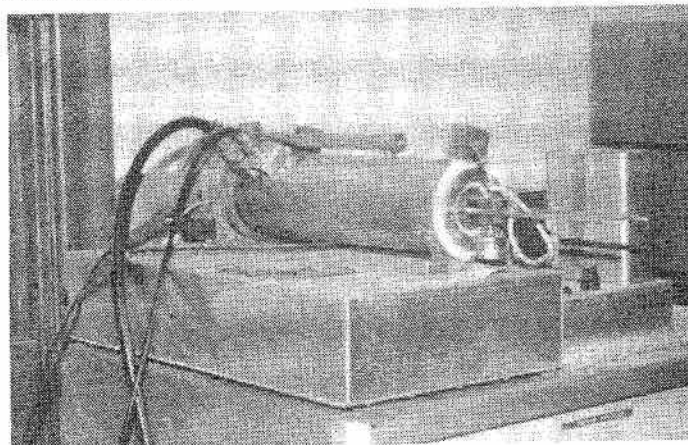
My own experiences have been excellent on this band. I have worked grid squares as far away as EN52 (K3SIW in Chicago), EN72 (WB8BKC in Michigan) and FN42 (W1JR in Boston). Orono is in FN03. In total I have 36 grid squares in nine states worked at this time and VUCC number 2. My Chicago contact, at about 800 km, should be a new record.



The LT-33 S transverter. This upconverts the 2-metre signals from the Icom IC-220A all-mode transceiver to 902 MHz.



The author, holding a 19 el. circular quad for 33 cm.



Homebrew PA using cavity and 2C39 tube to put out 60 watts on 902 MHz.

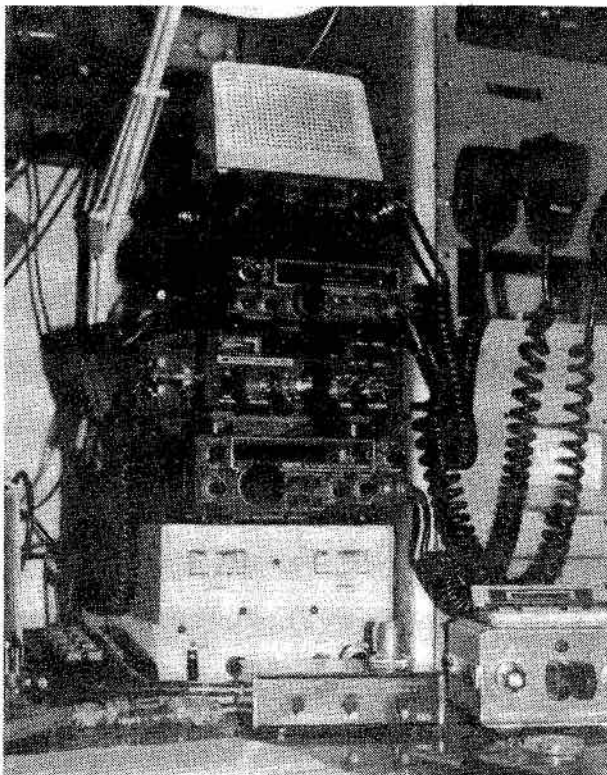
The station using the least power was Mike W3IP in FM19. He was running a borrowed LNW transverter, of British origin, with an output of three watts. The antenna was a 33 element loop yagi at 100 feet fed with 170 feet of 1-5/8" Heliac. It took about 45 minutes to work Mike, but he finally came out of the mud

with a 519 signal for a new state and a new grid square on 33 cm.

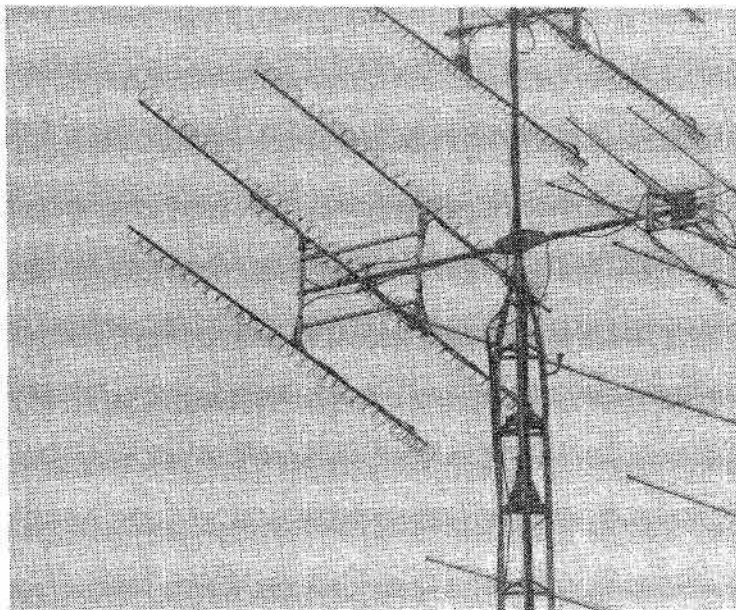
My station consists of an SSB Electronics LT33S using an Icom IC-260A as the IF. This converter can put out six watts which is then fed to a single 2C39 amplifier. The combination gives me about 60 watts of output power.

The antenna system consists of four 33-el. loop yagis. The power splitter is homebrew. This array receives power through 65 feet of 7/8" Heliac.

From what I can see of the 33 cm band, it is going to be a fun band to operate. It is too bad more Canadian Amateurs aren't getting in on the fun! ■



Left: Stack of excitors. From the bottom up, 2M all mode used as a driver for the LT-33 S, 220 MHz, 450 MHz, and 2M FM. Below: Where it all goes. This quad of 32 element circular quads is counterbalanced by identical arrays on the other end of the boom for 1296 and 2304 MHz.



WORMHOLE LINK

A new 'wormhole' link between Ottawa and Calgary became operational on July 28. The link, provided by Telesat Canada, uses one of the Anik satellites and runs at 9600 bps. The gateways to the link are the NET/ROM nodes OTTSAT (VE3RWJ-1 and CGYSAT (VE6PAK-1).

Sorry to disappoint you packet DXers in the east, but the OTTSAT node is only accessible in the Ottawa area, on the 145.07 LAN frequency. However, mail for VE6-land can be forwarded via the VE3JFBBS in Ottawa to the VE6HWY BBS in Calgary.

Prime mover behind the establishment of this link was Richard VE3EYJ of Telesat Canada, with technical assistance from VE6VQ (ex-VE6BOA), VE3JBO, VE3JF and Telesat staff members (my apologies if I left anyone out).

The link will be available 24 hours a day, for a period of about two years. Please send enquiries to VE3JF @ VE3JF.

— Ottawa Valley MRC Rambler

Social Events

YORK REGION ARC 12TH ANNUAL NEWMARKET HAMFEST

Saturday, Nov. 5, 1988, Huron Heights Secondary School, Newmarket, Ontario.

Admission: \$4 per person. Doors open to the general public at 9 a.m. Talk-in on VE3YRC 147.225+

This is the fleamarket all the others are judged by. Featuring over 200 vendors, plenty of parking, dozens of door prizes. Refreshments available. Extra space for Eyeball QSOs and socializing.

TELEPHONE PIONEERS 24TH ANNUAL QSO PARTY

A reminder to members of the Telephone Pioneers of America who are also radio Amateurs that the 24th Annual QSO party is set for Dec. 3, 19:00 UTC to Dec. 4, 05:00 UTC, 1988. QSO Party rules and contest forms are

available from your local chapter office.

Canadians performed very well in the 1987 event with B.C. Chapter 53 securing 1st place in Canada for the 3rd successive year and 4th overall (U.S. and Canada). Lee Sawkins VE7CC topped the Canadian individual awards with 46,084 points and enough to give him 2nd place overall.

Canadian Pioneer chapters ranked as follows:

Rank	Chapter	Points
1	British Columbia	103,491
2	Maple Leaf Prov. - Toronto	38,220
3	New Brunswick - St. John	23,910
4	Saskatchewan - Regina	22,263
5	Acadia - Halifax	8,540
6	Manitoba - Winnipeg	6,372
7	Maple Leaf - Metro Toronto	320
8	C.F. Sise - Montreal	71

So, dust off the rig, check out the antenna and enjoy the fun as the solar flux and the scores make a great entertainment weekend possible! ■

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Receive Aircraft Frequencies on Two Metres

And vice-versa! No modification required— just use simple arithmetic.

Most 2-metre and VHF scanner receivers will detect strong signals from a portion of the VHF aircraft-communication band. The technique described here makes constructive use of Image Response, a normally-undesirable aspect of superheterodyne receivers. It makes a good lesson/demonstration of how superhets work.

Here's how:

1. Find the active aircraft frequencies in your area. (See scanner listings, aircraft navigation charts, ask a local pilot or aircraft radio technician.)

2. Look up the first intermediate frequency (IF) of your receiver. It's usually 10.695 or 10.7 MHz, or may be in the 16 or 17 MHz region.

3. Multiply the IF by 2 and add to the desired aircraft frequency. Set your receiver to the sum.

Example: I want to listen to 124.15 MHz, the approach-control frequency at my local airport. My Icom IC-2AT's IF is 10.695 MHz.

$$2 \times 10.695 \text{ MHz} = 21.39 \text{ MHz.}$$
$$124.15 \text{ MHz} + 21.39 \text{ MHz} = 145.54 \text{ MHz.}$$

If I set my receiver to 145.54 MHz, it's loud and clear! Although aircraft radio is AM, most transmitters contain enough FM or incidental phase-modulation so that they are easily readable on narrow-band FM receivers. You sometimes must increase the

volume-control setting, depending on the transmitter and the type of FM detector in your receiver. Of course, multi-mode receivers work better for this application than do FM-only types.

Here's the catch— sensitivity is low; receiver designers do their best to eliminate image response. You must be less than a mile from the transmitter (2-3 miles if you have a beam antenna).

Look up the image-rejection specification of your receiver; the poorer the image rejection, the BETTER the receiver works for intentionally receiving images. (Here's new life for that vacuum-tube antique that you're ashamed to take to the hamfest!) Image response could be enhanced by connecting an antenna directly to the receiver RF stage or mixer input, bypassing the front-end filters.

Even the low sensitivity can be turned to advantage. A friend who services aircraft radios uses his IC-2AT for making preliminary tests of transmitters in parked planes. If the transmitter is off frequency, he hears nothing.

The aircraft band (108-136 MHz) is much larger than the 2-metre ham band. The image response of a ham-band-only receiver covers from about 122.6 to 126.6 MHz, a well-populated and interesting segment.

Some 2-metre transceivers receive outside the ham band, or can be modified to do so. The Icom IC-02AT

can be modified to cover a 20 MHz range. It can receive most or all of the aircraft band by the image-response technique, depending upon how it is realigned after modification.

The IC-02AT's IF is 16.9 MHz, so it receives images 33.8 MHz below the indicated frequency. Image sensitivity is about the same as that of the IC-2AT, and audio recovered from AM signals is louder and of better quality.

The Icom IC-28A and 28H receive 138-174 MHz (unmodified), and have 17.2-MHz IFs. Images fall 34.4 MHz below the indicated frequency, so the image frequency range is 103.6 to 139.6, which includes the entire aviation band including the VHF navigation frequencies. (Some VOR and Localizer beacons include voice transmission.)

If you must kill time at an airport, or if you just like to go plane-watching, take a 2-metre rig along. Note: Federal Aviation Regulations prohibit passenger use of portable electronic devices aboard aircraft without the permission of the operator. With airliners, 'operator' means the airline management, not the pilot. Pacemakers and a few other devices are excepted. The reason for this regulation is that RFI from, for example, receiver local oscillators can interfere with the plane's communication and radio navigation equipment.

It's wise to check for potential image problems before establishing a repeater. Builders of 2-metre repeaters often discover that 'their' input frequency is unusable because of aircraft interference. The solution is to use a receiver with a different intermediate frequency.

MORE TRICKS— HOW TO CHEAT AT FOXHUNTING!

Local oscillators can radiate for considerable distances. Signals from scanners in the 155-MHz public-service band are the bane of hams doing 2-metre weak-signal work. 2-metre receiver local oscillator frequencies fall inside the aircraft band. Your 2-metre receiver is a field-expedient signal generator for testing aircraft receivers. Conversely, an aircraft-band receiver can be used to track down hidden 2-metre transceivers at close range, by DFing their local oscillators while they are not transmitting. ■

— Open Wire &
Frank Reid W9MKV

Swedish Amateur visits Ottawa

On May 19, 1988, a call from the Press attaché at the Swedish Embassy inquired about availability of local radio Amateurs. Gunnar SMOAVK was visiting Canada as a delegate to a labour board, discussing aids to the handicapped.

After a few phone calls, arrangements were made to drive Gunnar to the QTH of VE3SR. 20M band conditions were good and shortly one SM CW station was heard and asked to QSY to the phone portion.

Much to Gunnar's delight, SM5THI was located in the town of Leksand where SMOAVK grew up and maintained a summer home. An excited

20 minute QSO followed in Swedish. Steve SM5THI even recognized Gunnar's voice from 2M activity.

Thanks to Jack VE3SR for an entertaining visit. A further visit to Bill VE3EKA showed Gunnar the new developments in slow scan colour TV and enabled a discussion of common interest— aids to the handicapped— another of Bill's 'sidelines'.

Thanks to Jack and Bill, Gunnar left Canada suitably impressed with the universality of trust and sharing found in the average Amateur. For strangers in foreign countries, this camaraderie is hard to beat. ■

de VE3BBM

1988 Jasper-Banff Relay

BY OZ BLANCHET
VE6BEO

On the first weekend of June, the Ninth Annual Chasquis Invitational Rocky Mountain Road Race was run. This occasion pits 120 five- to 17-man teams representing Canada, the U.S.A. and such places as Bermuda, Chile, Holland and Japan, in a challenging relay footrace through the Canadian Rockies. Additional support people, volunteers and spectators resulted in a population of about 5,000 for the occasion. The race begins in Jasper, Alberta and covers over 284.2 km of mountain terrain. It starts at noon on Saturday, and finishes 24 hours later in Banff.

The race is divided into 17 stages of about 12 to 20 km, each differing in complexity and terrain. In general, it follows undulating glacial valley floors, but there are some fairly strenuous sections (i.e. the climb to the Columbia Icefields, and an equally strenuous decline from the Icefields to the North Saskatchewan River, or the steady ascent to Bow Pass.)

WWV TIME SERVICE AVAILABLE VIA COMPUTER ACCESS

Are conditions so bad that you can't hear WWV? You can still be on time with WWV via a 'time by modem' service. The National Bureau of Standards provides this service at either 300 or 1200 baud. The phone number is 303-494-4774. For information on the service, hit the question mark right after connecting. The U.S. Naval Observatory offers a similar service. Their phone is 202-653-0351.

—NOFARS Balanced Modulator

HELP WANTED

The CARF Office needs the current addresses of the following Amateurs, listed by name and last known address. Let Debbie know at P.O. Box 356, Kingston, Ont. K7L 4W2.

J.G. Lacroix VE5GL, 5040 Broadway Ave., Saskatoon, Sask.
Robert Dewar, RR 2 Beaumont Pk, Sault Ste. Marie, Ont.
Kajetan Adamski SP5MR, 1100 Dr. Penfield, Apt. 1521, Montreal, Que.
Ross Carr VE6FG, 112 Southhampton Dr. SW, Calgary, Alta.



At this time of year and at this latitude, the period of darkness is about seven hours, but running in the dark does call for some special care and safety measures.

Ham radio has been used in the race as a result of the concerns of one of the runners (a ham operator) who saw problems of traffic, lost runners and safety as a possible reason for authorities to cancel subsequent relays. As a result of conversations with other radio operators, the first Amateur involvement in the race occurred in 1983.

In the current year, some 80 volunteers, mostly Amateurs, joined together to supply communications for the relay. Information regarding team times and positions was transmitted from one station to the next for posting. An additional operator was positioned as a spotter about 1.6 km out from the stations to alert the runner taking over (by 2 metre radio to a receiver and PA horn) that his or her team-mate was approaching. Extra operators were supplied to race officials who had to be available on short notice. Some of the transmissions were done on simplex frequencies and some were linked through repeaters set up on two of the many available mountains!

People participating in the operation enjoy a chance to try out new ideas and equipment (i.e. packet radio) in an environment that can supply anything from high temperatures to rain and snow, as well as many strange problems in communication which may occur in the mountains. ■

1989 REPEATER DIRECTORY

We are in the process of updating the CARF Repeater Directory for 1989. We need your help to ensure its accuracy. Please send changes, additions, or deletions before Nov. 12th, 1988 to:

P. Mainville VE3LPM or
23 Chatsworth Dr.
Brampton, Ont.
L6X 2L8

CARF
P.O. Box 356
Kingston, Ont.
K7L 4W2

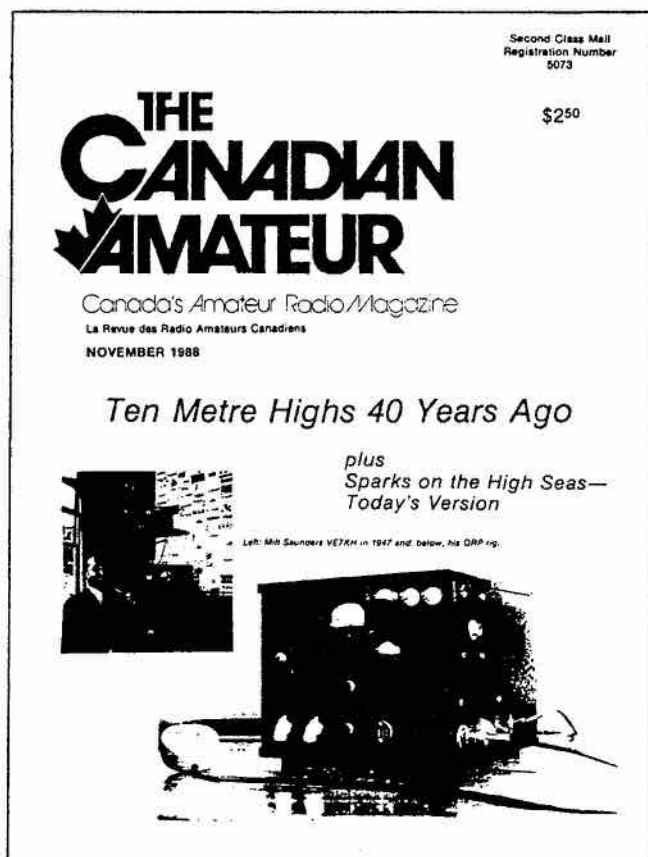
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Continue reading this issue of TCA to see for yourself how entertaining and informative it is. Check out the high level of pure Canadian content. Take a look at our technical projects. Read about what *Canadian* Amateurs are doing!

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THE CANADIAN AMATEUR

the greatest thing to happen to Canadian Amateur Radio since Marconi!

Sparks on the High Seas

Today's Version

BY KENNETH BERG
VE7KEN

Yes, there are still Radio Officers sailing the High Seas. Cruise ship positions are few in number, especially in the radio department. Many changes have taken place over the years and many more changes are about to occur.

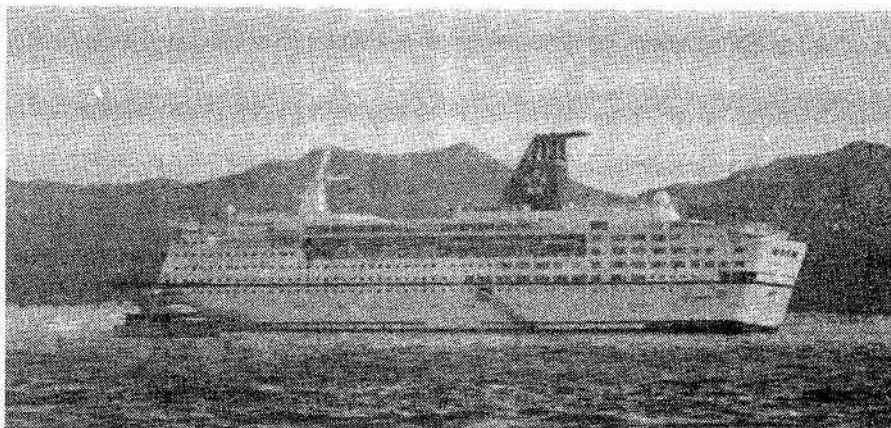
The *MV Stardancer*, call sign C6CP, is a 1200 passenger cruiseship with 450 crew aboard. Many positions of crew include casino staff, dining staff, gift shop, doctor and nurse, cruise staff (responsible for passenger activities on board), entertainers, able seamen and engineering and deck officers (includes the radio department as part of deck).

There are two radio officers, still called 'sparks'. We are responsible for ship's communication incoming and outgoing, passenger and crew telephone calls and telegrams. Most messages nowadays are on Telex which in most cases replaces the telegram circuit to keep in touch with the home office.

Our communications equipment consists of a variety of MF/HF and VHF receivers and transmitters. Most of our radio gear is Scandinavian made, as our ship was originally a Scandinavian ferry running between Denmark and Sweden. In the radio room, there is now also a satellite telex/telephone terminal which allows reliable communication 24 hours a day without having to worry about propagation characteristics of MF or HF. Telefax (sending of pictures or diagrams over the air) is also now present in the radio room.

Our mains transmitter is an ITT Mackay marine ST 1680 A, 1500 watts into a Vertical Antenna and Wire Antenna with frequency coverage between 410 kHz and 22 MHz. Reserve transmitter on MF is a Scandinavian model. We also use Skanti TRP 500, each 500 watts with frequency coverage of 2 to 25 MHz for radio telephone calls through KMI San Francisco, WOO New York or WOM Florida for the passengers and crew (part of the AT&T telephone system). Watches are kept on 500 kHz and 2182 kHz during silence periods through automatic watchkeeping receivers. Our three floating receivers consist of SR51 marine covering 100 kHz to 30 MHz.

There are two lifeboats equipped with emergency lifeboat radios, powered by boat motors (24 volt) or hand crank (if you really get desperate) which transmit and receive on three distress



Above: *MV Stardancer* off Cabo San Lucas, Mexico.



Right: Ken Berg, Chief Radio Officer, and Olag MacMillan, 1st Radio Officer, in the radio Room of the *Stardancer*.

frequencies 500 kHz, 2182 kHz and 8364 kHz. Satellite equipment consists of a Telex terminal with CRT screen, called the Saturn 3. The antenna is encased in a dome mounted at the highest point on the ship. Logging is done entirely on computer.

Between two of us, it gets a little busy at times! The Radio Room is open from 0800 to 2400 ship's time while at sea. We each work two split four-hour shifts making up eight hours a day plus any overtime. We sign-on for a period of nine months but are allowed work-breaks at various times of the year as needed.

Stations worked include KMI/WOM; WLO in Alabama, KPH and KFS on the

West Coast. Frequencies to monitor for KMI 4407, 4404, 4357 kHz; 8728, 8784 kHz; 13.187, 13.107, 13.103, 13.100 MHz; 17.304, 17.240 MHz.

Frequencies for WLO (RTTY) 8707, 13083.5, 17199.5 kHz. KFS 8706, 13072.5, 17198.5 kHz. CW freqs. include 4374, 8444, 12695 kHz for KFS.

On the northbound runs, VAI Vancouver, B.C. operate on CW 500, 440 kHz; 4235, 6493, 8453, 12876 kHz; R/T (USB) 4385, 6518, 8738, 13119, 17254 kHz. Other coast station frequencies:

Alert Bay/VAF 2182 kHz/2054 kHz USB

Continued on next page

SPARKS (cont'd)

Bull Harbour/VAG 484 kHz CW
Prince Rupert/VAJ 420 kHz CW

The R/O certainly looks forward to getting some time off in the many ports we pull into, although due to administrative duties not as much time is available to regular passengers.

The *Stardancer* (formerly the *MS Scandinavia*) travels between Los Angeles, California and Puerto Vallarta, Mexico on a seven-day cycle with stops in Mazatlan and Cabo San Lucas, Mexico during the winter months. Summer (June-September) from Vancouver to Juneau, Alaska with stops in Skagway/Haines and Ketchikan on a seven-day cycle. It is a class 2 ice-breaker which allows it to cut through the ice in Tracey Arms and Misty Fjords in southeast Alaska. Built

in Nantes, France in 1982, it's L = 608 ft., W = 88 ft., H = 169 ft. with a draft of 21 ft.

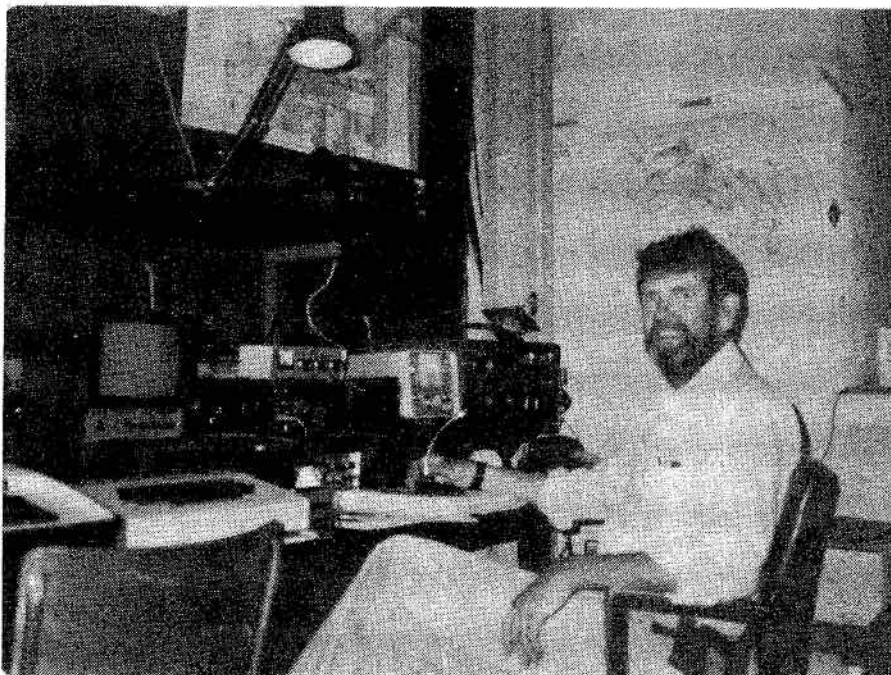
Registered in the Bahamas, it has an international crew (25 nationalities). The Captain is Swedish. Gross tonnage is 26,747 ton. The propelling machinery is 2 main engines, Burmeister and Wain; 2 stroke, slow speed, driving two variable pitch propellers with maximum speed of 20 Kts. Car deck capacity is 189 American and can also carry Recreational Vehicles. The *MV Stardancer* is owned and operated by Admiral Cruise Lines, Miami, Florida.

Each deck officer has his/her own cabin with private washroom, TV/radio and bar. TV programs and news feeds are received via satellite. Satellite tracking is done automatically using an

auto-track device mounted on the aft end of the ship.

Unfortunately, the days of the radio officer are numbered. Soon we will be replaced by automatic methods, where one will simply be able to dial directly from the ship to home without any operator assistance. I am not even sure as to how much longer passenger ship R/Os will be required. Like many other professions, there will come a time when I must retire my life at sea and assimilate into a 'normal' job on land. (Pity!). ■

Shack of the Month



Do you know this man? Well, you should!

This is Earle Smith VE6NM, CARF Vice-President (Education) and and credit to the organization in Western Canada.

Some time ago Earle submitted this photo to our Shack of the Month feature. In making a choice for this month's 'Shack', I looked at the picture again and suddenly realized its importance. This is probably the last photo taken of this particular station in this location.

This is the former VE3VCA!

The Station was dismantled in September, 1988 and moved into new

quarters more convenient to the CARF Office. Bernie Burdsall VE3NB, the CARF News Service Editor and 'Man about the Office' has made the new station operational and a pleasant place to be. He has also increased its on-air time by about 1000%. Thanks to Earle for the picture (Bet you thought I'd miss it, didn't you Earle?) and thanks to Bernie for all his efforts in getting VE3VCA back on the air.

Coming soon: RTTY, Packet, Net Control— who knows? If you're going to be in town, let Bernie know. The tea is always on and the station is yours. ■

COMMUNICATIONS CANADA APPOINTMENT

Doug Prentice has been appointed to the position of District Director, Belleville District Office.

Mr. Prentice holds a diploma in Electrical Technology with an electronics option from Ryerson.

Mr. Prentice began his employment with Communications in Toronto as a Radio Inspector and was subsequently promoted to various supervisory positions in the Toronto District Office.

We congratulate Doug and extend best wishes for the future.

AVIS DE NOMINATION

Nous annonçons la nomination de Doug Prentice au poste de gestionnaire de district, Bureau de district de Belleville.

M. Prentice a obtenu un diplôme en technologie électrique (option électronique) du Ryerson Polytechnical Institute.

M. Prentice a commencé à travailler à Communications Canada, à Toronto, en tant qu'inspecteur radio. Il a ensuite été promu à divers postes de supervision dans le Bureau de district de Toronto.

Nous félicitons Doug et nous lui présentons nos meilleurs vœux de succès.

AMATEUR ADDRESSES

On Aug. 24 Communications Canada agreed to release the names and addresses of Canadian Amateurs. This resumption of the former practice was the result of extensive lobbying by CARF with the Minister (Miss MacDonald) and with senior Communications Canada staff. We are pleased that this information is again available. Just one more example of why you should support your national Amateur Radio organization.

MOVING?

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

Is that all there is to a QSO?

BY ERIC STABLER
VE3ISD

How many times have you had a QSO "tnx fer call ur RST 599 QTH blank city name Joe" "Tks fer nice report cu agn 73 de xxx xxx sk." Wow! this is ham radio?

How many times do you think that you may have contacted the SAME station and, not knowing it, gone through the same sterile 'form' QSO?

Well... you can change all that very simply and cheaply and you do NOT need a computer or any fancy equipment. It does take about 45 secs after a QSO, however!

Get a supply of 3 x 5 recipe cards, a suitable box (shoe box does nicely... you get 'brownee points' by buying the XYL a pair of shoes) and some 3½ x 5 cards for dividers.

Mark out one recipe card as in Fig. 1.

This is used to make your dividers.

Now get your first divider, a piece of the 3½ x 5 card, and place the master sheet on it. Mark as shown in Fig. 2 and remove the surplus card.

Now you have the first divider, so you can make them for all the numbers. For the U.S.A. I have W 0123456789 WA 012 etc., WB etc., WD A KKA etc., N and NA etc. This may take 20 minutes!

When I make a QSO, I write the card out as shown in Fig. 3 and place it in the appropriate section (this is an actual copy).

When you hear a CQ it takes but a second to flip through the appropriate section and see if you have worked him before... if you have, you can answer "W3BVC de VE3 ISD ga Alex hw are things in Peabody today?" Now you have the guy intrigued! Also you can carry on the conversation. I don't 'pry' but copy down anything that is given that may be interesting or informative, (I have had QSOs spaced nine years apart) and by this method can 'carry on'!

After a QSO, I fill in anything that I feel is worth recording... if it is a new

station then simply make out a new card. None of this is time consuming. Ah but, I hear you say, I have been a ham for X number of years, I couldn't begin now... why not?

If you wish to expand your file system you can make a QTH file— one card per town/city— and on that card put the call and name of each station that you work from that location. You work a station from, say, Atlanta GA... you can now chat about some of his friends whom you have worked in Atlanta! This is also useful with U.S.A. stations who change their calls every time they upgrade. So, you have worked KB4WFB Cyril in Tootong... a couple of years

later you work K4LM Cyril in Tootong. It's a good gamble that it's the same chappie upgraded. Ask him and he will be staggered that you can detect this!

You will be amazed at how many stations you do actually work many times, a fact that would go undetected normally. It seems so pointless if you start all over again with a station which you worked a couple of months ago. What if last time he told you that his XYL was seriously ill and a few weeks later you don't even ask how she is (because you have forgotten)... not very friendly, eh?

Get your file system(s) started and bring fresh enjoyment to your hobby.■

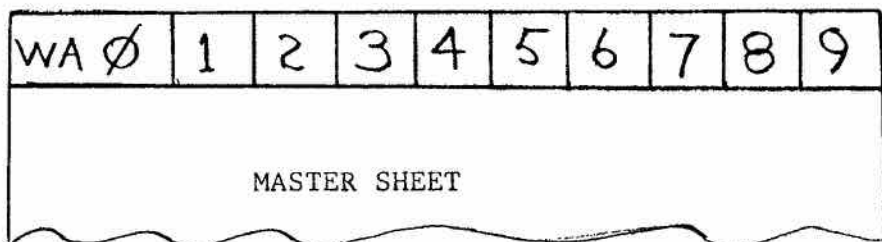


FIGURE 1

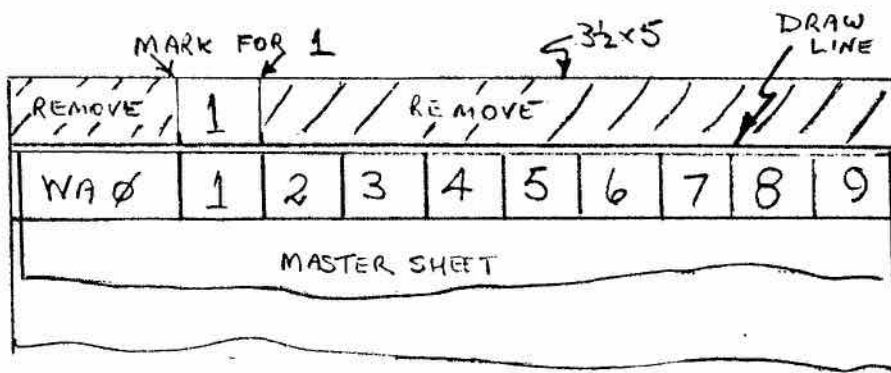


FIGURE 2

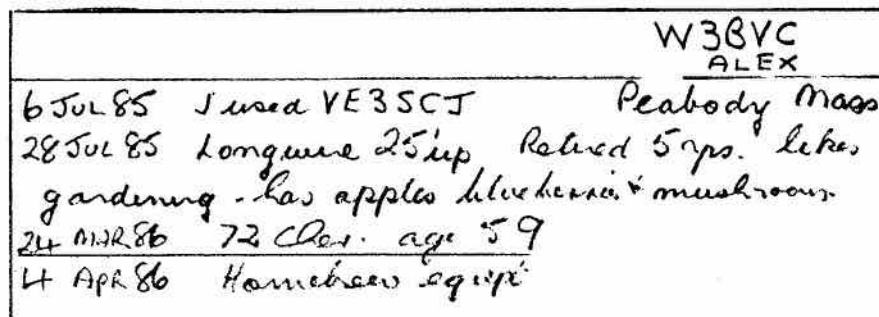


FIGURE 3

IARN BROADCASTS

The International Amateur Radio Network broadcasts and coordinated nets may be heard on 3.975, 14.275 and 28.475 at 1400, 1800, 2200, 0100 and 0500 UTC. One hour earlier during Daylight Saving Time.

DL-SAT P3-C

de RADIO REF

LA PHASE DE LANCEMENT

Après plusieurs contretemps, le nouveau satellite amateur d'AMSAT 'P3-C' doit être lancé prochainement.

Après sa mise en orbite, il prendra, selon la tradition, le nom d'OSCAR 13 (Orbital Satellite Carrying Amateur Radio). Dans l'article qui suit, on décrira sa structure ainsi que son utilisation.

AMSAT P3-C est une version techniquement améliorée d'OSCAR 10. Il sera lancé par une fusée Ariane IV depuis le pas de tir de Kourou en Guyane Française.

Ariane IV est un nouveau lanceur européen. Il peut mettre en orbite des charges utiles de 4 tonnes. Il mesure près de 11 m (58,5 m) de plus qu'Ariane

II (47,4 m) et possède quatre propulseurs supplémentaires accouplés à son premier étage. Deux autres satellites (Météosat 82 et Ranamsat) seront lancés en même temps que P3-C.

Après sa séparation du lanceur, P3-C décrira une orbite elliptique avec un apogée à 36 290 km et périégée à 219,9 km. L'inclinaison sera de 10° . Comme cette orbite n'est pas stable et que l'inclinaison doit être portée à 57° environ, elle sera modifiée pour atteindre l'orbite définitive après la phase d'orientation, grâce au propulseur de 400 Newton du satellite. L'apogée reste inchangé, le périégée remonte à 150 km et l'inclinaison à 57° . La période d'une révolution durera près de 11 heures. 45 à 60 jours seront nécessaires à la stabilisation du satellite, de telle sorte que son entrée en service se fera près de deux mois après son lancement.

Néanmoins, il sera possible d'entendre la balise générale en mode B (145.812 MHz) dès trois heures après la séparation. Elle émettra des informations de télémétrie à 400 Bauds, en CW ou en RTTY.

LA CHARGE UTILE DU SATELLITE P3-C

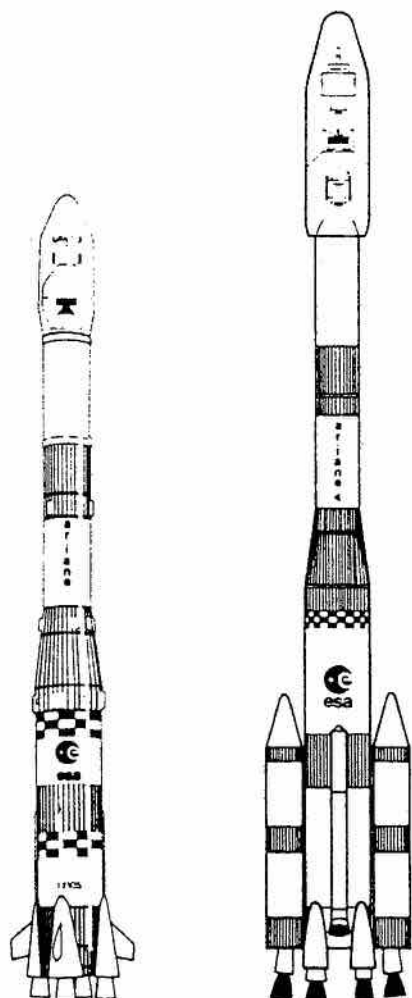
Le satellite P3-C comporte trois transpondeurs ainsi qu'un module d'expérimentation de communications digitales (RUDAK).

Le transpondeur U (mode B)

Le transpondeur U est un convertisseur linéaire avec une bande passante de 150 kHz. Son entrée est située entre 435.420 et 435.570 MHz. Le retour du satellite s'effectue entre 145.825 et 145.975 MHz. Les bandes latérales sont inversées.

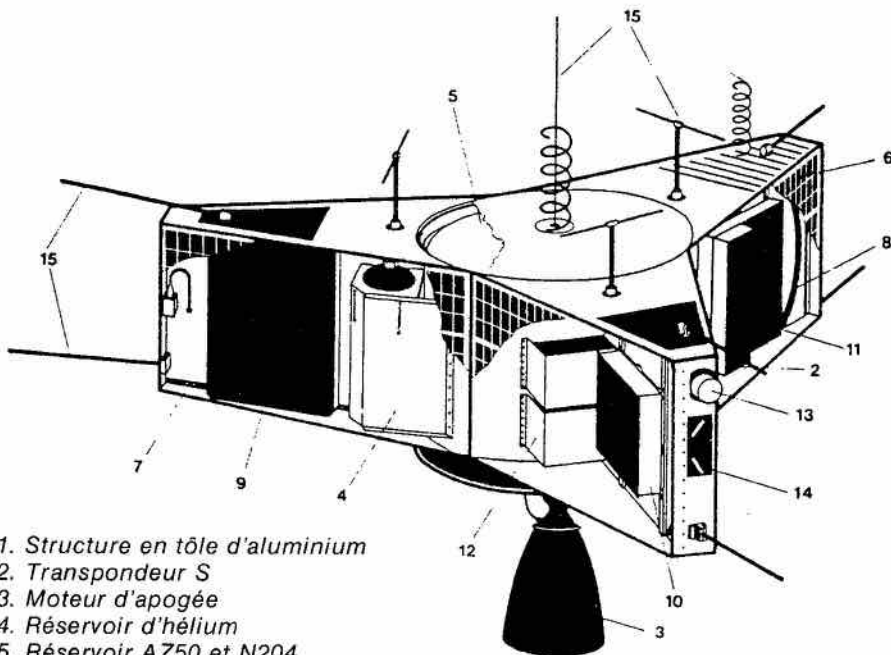
Le transpondeur U comporte une balise générale (GB) sur 145.812 MHz. Cette balise sert à l'information de l'utilisateur et émet à 400 bauds en CW ou en RTTY. Une seconde balise (EB = balise spéciale) émet sur 145.985 MHz à 400 bauds et est spécialement destinée à la station de commande.

La puissance maximale de sortie du transpondeur est de 50 W PP. Le transpondeur nécessite 21,5 dB de PIRE sur 70 cm (voie montante) pour un rapport de 20 dB signal/bruit du signal de la voie descendante. Ceci veut dire qu'une puissance au sol de 10 W dans une antenne de 12 dBiC est nécessaire. Pour



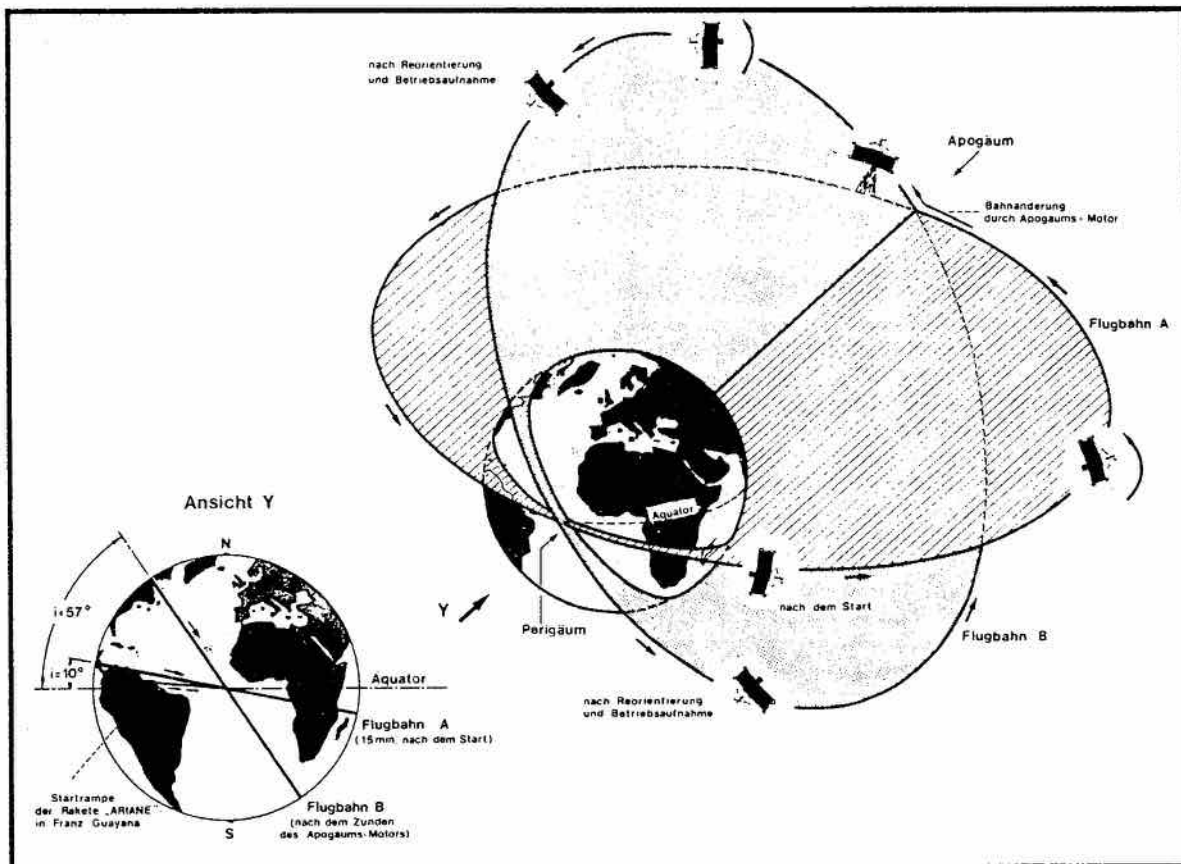
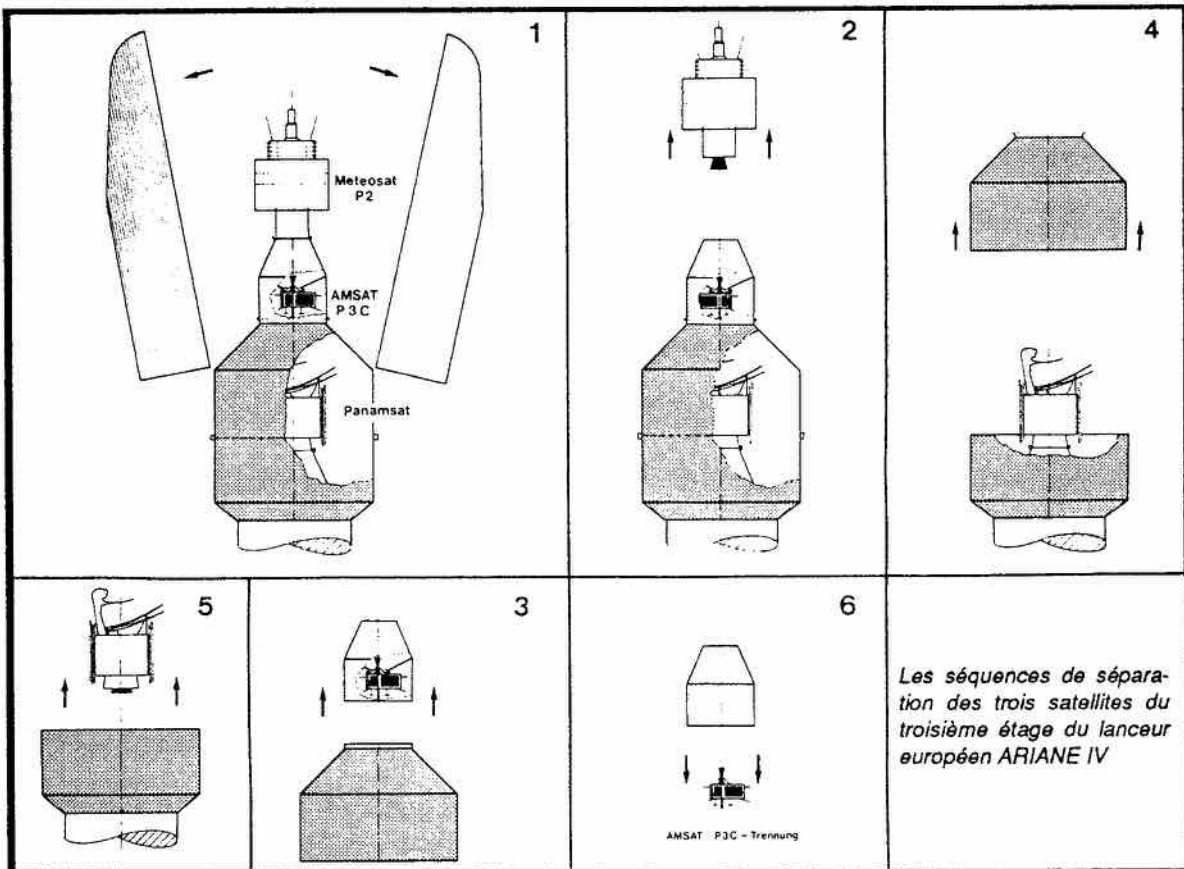
ARIANE 2
h. : 47,4 m

ARIANE 4
h. : 58,5 m



1. Structure en tôle d'aluminium
2. Transpondeur S
3. Moteur d'apogée
4. Réservoir d'hélium
5. Réservoir AZ50 et N204
6. Panneaux solaires
7. Stabilisateurs magnétiques
8. Amortissive de nutation
9. Ordinateur de bord
10. Régulateur charge piles
11. Modulateur

12. Piles auxiliaires
13. Senseur de terre
14. Deux senseurs solaires
15. Antennes



DL-SAT P3-C (cont'd)

la réception 2 m), une antenne d'au moins 10 dBiC est nécessaire.

Tous les gains d'antenne s'entendent polarisation circulaire droite. Pour les antennes à polarisation linéaire, il faudra compter un gain supplémentaire de 3 dB.

Avec un facteur de bruit du récepteur de 5 dB et une bande passante de 2,4 kHz, la balise EB doit être reçue avec un signal supérieur d'au moins 17 dB au bruit. Si la puissance d'émission n'atteint pas les 100 à 500 W de PIRE nécessaires pour entendre correctement son retour, il est conseillé de mettre un bon préampli réception.

Le transpondeur L

Le transpondeur L est un convertisseur linéaire avec une bande passante de 290 kHz. Son entrée est située entre 1269,620 et 1269,330 MHz. La balise générale (GB) émet sur 435.651 MHz. Cette balise diffuse les informations générales à 400 bauds en CW ou en RTTY. La puissance maximale de sortie du transpondeur L est de 50 W PEP. Le transpondeur L nécessite 28,8 dBW de PIRE dans le sens montant sur 23 cm.

Ceci veut dire, par exemple, 3 watts dans une antenne de 24 dBiC ou bien 50 watts dans une antenne de 12 dBiC. Pour la réception, sur 70 cm, une antenne d'au moins 13 dBiC de gain est nécessaire (facteur de bruit du récepteur = 3 dB et bande passante = 2,4 kHz). Tous les gains antenne s'entendent polarisation circulaire droite (3 dB de plus si polarisation linéaire). La balise GB doit être reçue au moins 17 dB au-dessus des bruits. Ici aussi, il est nécessaire de mettre un bon préampli en réception.

RUDAK

RUDAK est un canal de transmissions digitales, couplé au transpondeur. Les performances émission et réception au sol sont les mêmes que pour le transpondeur L.

Le canal d'entrée est sur 1269,710 MHz, 2400 Bauds/DPSK. Le canal de sortie est sur 435.677 MHz, 400 bauds. Une brève description doit expliquer les fonctions RUDAK.

Des informations doivent être échangées entre deux ou plusieurs participants sur un canal. Pour ce faire, chacun des participants émettra, dans un protocole déterminé, des paquets d'informations vers le satellite. Ceci se fera à 2400 bauds. Ceci peut se faire à l'aide d'un émetteur FM et d'une interface appropriée. Après traitement par le satellite, les paquets sont retransmis à 400 bauds/PSK vers la Terre.

Comme les stations au sol n'émettent pas de façon coordonnée, il y a risque d'interférences entre des signaux qui seront inutilisables par le satellite. Les paquets doivent alors être répétés par les stations au sol.

Pour cette raison, le débit vers le satellite est six fois plus rapide que celui de la voie retour. Aussi, le transfert est statistiquement identique sur les deux trajets. Il existe aujourd'hui de nombreux réseaux Packet Radio qui pourront s'interconnecter par le satellite.

Des informations détaillées pourront être obtenues grâce à un ouvrage sur RUDAK qui sera édité sous peu auprès de DK1YQ, Hans Peter Kuhlen, responsable du projet RUDAK pour P3-C (Finkenstrabe 11,8011 Aschheim, RFA).

Mode JL

Pour les utilisateurs du transpondeur L, qui ne sont pas QRV sur 23 cm, il existe une entrée expérimentale additionnelle de 50 kHz de bande passante, entre 144.425 et 144.475 MHz. Cette entrée doit être laissée libre pour les pays du bloc de l'Est, où les OM doivent avoir des difficultés pour obtenir les puissances nécessaires sur 23 cm et ainsi avoir accès au mode L. Les utilisateurs occidentaux ne doivent utiliser que l'entrée 23 cm. Compte tenu de recouvrement des fréquences de sortie (modes JL et L), il est nécessaire d'utiliser avec précaution la portion d'entrée correspondante en mode L (voir plans de fréquence). L'utilisation envisagée initialement de la portion 145.950 MHz +/- 25 kHz a été rendue impossible car entre-temps, et particulièrement en DL, de nombreuses stations en FM ne respectent pas les plans de bande et perturbent ainsi mondialement de trafic par satellite).

Le transpondeur S

Le transpondeur S est un transpondeur avec une entrée sur 70 cm et une sortie sur 13 cm et une bande passante de 36 kHz. Sa puissance d'émission est d'un watt. Compte-tenu de sa consommation relativement importante, son utilisation ne sera possible que rarement ou pour des durées déterminées.

Le transpondeur S nécessite, pour la voie montante (70 cm), 21,5 dB de PIRE pour un rapport de 10 dB de signal/bruit de la voie descendante. Pour la réception (13 cm), une antenne de plus de 25 dBiC est nécessaire (parabole de 1 m). Le transpondeur S peut être mis en mode transpondeur ou en mode balise.

Le mode transpondeur ne peut être mis en service que lorsque le satellite est configuré en mode U.

Les informations sur les modes de fonctionnement du satellite (quand et quel transpondeur est un service) seront diffusées en temps opportun.

Les informations horaires sont déduites d'une valeur en MA (mean anomaly). La durée d'une révolution est divisée en 256 tranches et MAO est environ au périgée (une unité MA équivaut à environ 2,6 minutes).

AMSAT-DL souhaite à tous les utilisateurs du satellite de nombreuses satisfactions avec P3-C et de bons DX.

PLAN DE FREQUENCES SATELLITE PHASE 3-C

Transpondeur U

Entrée 435.420-435.570 MHz

Sortie 145.825-145.975 MHz

Balise générale 145.812 MHz

Balise spéciale 145.985 MHz

P sortie du transpondeur 50 W PEP

P nécessaire au sol 21,5 dBW PIRE

soit 10 W dans une antenne de 12 dBiC (polar droite)

Transpondeurs L et RUDAK

Entrée 1 1269.620-1269.330 MHz

Sortie 1 435.715-436.005 MHz

Entrée 2 144.425-144.475 MHz

Sortie 3 435.990-435.940 MHz

Balise générale 435.651 MHz

Sortie RUDAK 435.677 MHz

Entrée RUDAK 1269.710 MHz

P sortie du transpondeur 50 W PEP

Puissance de sortie RUDAK 6 W

P nécessaire au sol 28,8 dBW PIRE

soit par exemple 3 W dans une antenne 24 dBiC (polar droite)

Transpondeur S

Entrée 435.601-435.637 MHz

Sortie 2400.711-2400.747 MHz

Balise 2400.325 MHz

P de sortie du transpondeur 1 W

P nécessaire au sol 21,5 dBW PIRE soit par exemple 10 W dans une antenne de 12 dBiC (polar droite).

NEW RULES

If you plan to travel into the United States and operate there under the Canada/U.S. Reciprocal Agreement, then the following FCC Order is valuable information to have.

The FCC Order with an effective date of July 18, 1988 effects rule 97.313 and has been revised as follows:

"When the station is operating under a reciprocal permit, the call sign transmitted in the identification procedure must be that issued to the station by the licensing country, preceded by the appropriate letter-numeral designating the station location, separated by the slant mark (/) or by the word 'Stroke' or 'Slash' during radiotelephone operations. At least once during each inter-communication, the identification announcement must include the geographic location as nearly as possible by city and state, commonwealth or possession, stated in the English language".

— South Pickering ARC
Spark-Gap

MANGAROO CASE

Ken Mangaroo VE3NCM has won his case and has been paid partial legal costs. Details to follow.

— VE3BBM

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IC-228

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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.

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The International Callbook lists 500,000 licensed radio amateurs in countries outside North America, its coverage includes South America, Europe, Africa, Asia, and the Pacific area (exclusive of Hawaii and the U.S. possessions).

The 1989 Callbook Supplement is a new idea in Callbook updates, listing the activity in both the North American and International Callbooks. Published June 1, 1989, this combined Supplement will include thousands of new licenses, address changes, and call sign changes for the preceding 6 months.

Every active amateur needs the Callbook! The 1989 Callbooks will be published December 1, 1988. Order early to avoid disappointment (last year's Callbooks sold out).

* North American Edition	\$37.95
* International Edition	\$42.95
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* Supplement - Available July 1989	\$13.95

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IC-120	\$839.00	\$499.
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IC-47A	\$869.00	\$599.
Icom 25W 440MHz Mobile		
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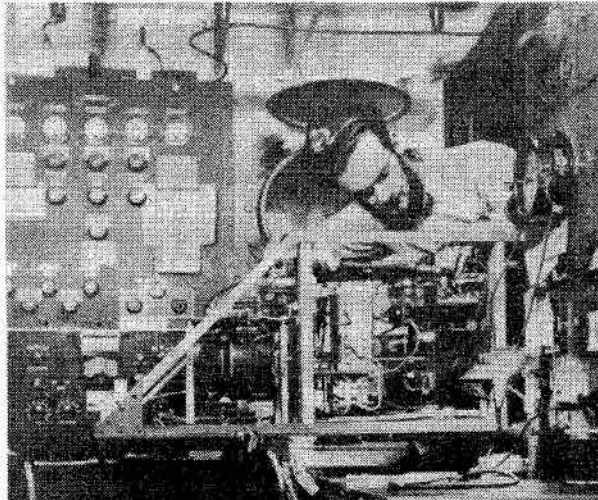
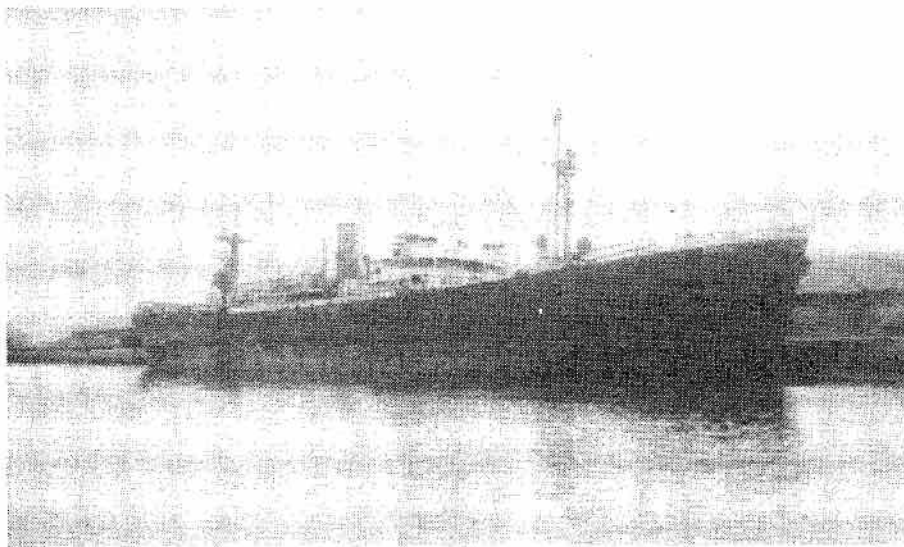
Merchant Marine Sparks

BY DAVE McMILLAN
VE3MIM

Aside from a pitifully few cargo vessels from the old Canadian Government Merchant Marine, and a few tankers and coasters, the bulk of Canada's pre-war 'Merchant Navy', and probably the best known part of it, were passenger ships: the lovely 'Lady Boats' on the east coast, the majestic 'Princes' and the beautifully proportioned 'Princesses' on the west coast.

The *Lady Drake*, *Lady Hawkins*, *Lady Nelson* (1928), and the *Lady Rodney* and *Lady Somers* (1929) sailed on the Bermuda West Indies run. The *Drake*, *Hawkins* and *Somers* were lost to enemy action. The *Nelson* was torpedoed in St.

The ship, S.S. Cargill.



The main transmitter folded out on hinges for servicing. Here the operator is soldering something. Check the size of the iron! Note, from left to right, the HF transmitter with Scott receiver below; with the main transmitter opened for servicing. The operator is inside the cavity normally filled by transmitter. TRY THAT WITH YOUR TS440S!

Radio Shack S.S. Cargill, a 10,000 ton DWT vessel. This shows the operator position with (from left to right): The HF transmitter with a Scott 15 tube superhet receiver below, the operator, the main transmitter, Auto Alarm (at top) and main 500 kcs receiver at bottom just over operator's hand.

Lucia, repaired and served as a hospital ship until sold after the war. The *Rodney* also survived, was sold after the war and was eventually scuttled in the Suez Canal in 1967.

The Princes *David*, *Henry* and *Robert* which ran the inside passage to Alaska, were converted to armed merchant cruisers and served with distinction in all theatres.

Most of the 'Princesses' changed to wartime grey and continued on their regular service with brief interludes as troopers. The *Kathleen* (1925) and the *Marguerite* (1925) were requisitioned and served with distinction in the Mediterranean. The *Marguerite* was sunk by a torpedo in 1942.

This shortage of ships changed as Canadian shipyards girded for war. Two basic classes of cargo ships were produced: a hog island four-hatch '4700 tonner', and a flush-decked five-hatch '10,000 tonner'. These ships were named after Canadian parks, giving us such vessels as *Stanley Park*, *White Shell Park*, *Gatineau Park* and *Point Pleasant*

Park. About 175 were built and manned by Canadians before the war was over and many were lost to enemy action. But where to find the officers and crew necessary to man these new bottoms?

Radio College of Canada in Toronto, then on Bloor Street between Bay and Yonge and I believe, a school in Saint John N.B., and one on the west coast trained radio operators for this rapidly expanding fleet. The course was nine months, with pass marks: 100% C/W sending and receiving at 20 WPM, 100% on practical, and if my memory doesn't fail me, a minimum of 85% on theory. We graduated with a second class radio telegraphy certificate.

What was life at sea like for a radio man? Well, for example...

The *S.S. Mayfair Park* (1943) was a coal-fired '4700 tonner' running to the West Indies from East Coast Canadian and American ports at a top flat-out speed (with a following wind) of 7 knots.

The defensive armament consisted of an ex-WWI 12-pounder aft which, when fired, broke dishes and just about fractured ear drums. We had two Oerlikon rapid firing AA guns, one of which all but filled each bridge wing. Twin Point Five Browning machine guns over the engine room housing, and two lifeboats made up the balance of our defensive armour. I include lifeboats as I think they would have been our best defence! We were one of the 'stragglers', forever behind the convoy.

The two radio men shared a cabin on the port side of the boat deck. The Captain had a bigger one on the starboard side. Just outside our cabin was a huge potato locker (it tended to smell after a few weeks in the tropics), and ammunition lockers for the oerlikons on the bridge deck above.

The radio shack was stuffed in between the radio men's cabin and the Captain's quarters. I had two small ports facing forward and a door opening on to a passageway—hot in the tropics with blackout curtains drawn and deadlights closed!

The batteries were kept under the 'stairs' leading to the bridge, and servicing required heaving on a rope to hoist the stairs (after warning the officer of the watch).

The equipment was a Marconi MSL5 receiver, LTT-4 transmitter, a quench gap emergency spark transmitter, and a direction finder. The H/P transmitter was a Marconi STT4, with an old TRF receiver, a relic from the ark tuned by using two (or was it three?) big knobs on the front. It terrified me; you never knew where you were, all tuning was done for both transmitter and receiver by dial setting from a chart. No digital readouts in those days. The antenna was a long wire inverted 'L'.

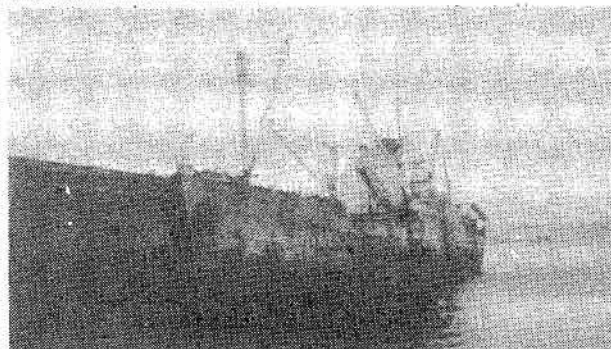
The *Stanley Park* (1943) was a 10,000 tonner built in Sorel and supplied with the same radio equipment but in a much larger shack and laid out in 'U' shape.

Continued on next page ▶

'Hard at work'.



Another shot of the operator position with HF rig in background.



S.S. Wentworth Park shortly after the war with guns removed but quick-release life rafts still in place. This was one of the '4700 tonners' similar to the *Mayfair Park*.

MERCHANT (cont'd)

The chief 'sparks' had a cabin on the boat deck while the two juniors shared a large cabin on the main deck starboard side forward. An airy comfortable cabin by standards of those days, each had a bunk, a large drawer under the lower bunk, a clothes locker about 15X15" by five feet tall with a small drawer underneath as well as a settee, and a metal wash stand with a water bucket which was never used. The 1st, 2nd and 3rd officers, two cadet officers, three radio officers and the chief steward shared a toilet, shower and wash basin on that deck. The wardroom where all the officers ate was in this accommodation.

Radio watches on this size of ship were four on and eight off. The chief stood the four to eight while the second and third (on this ship at least), split the 12 to 4 and the 8 to 12. One worked 8 to 12 out and took the 12 to 4 on the way back.

We carried a 4 inch aft, FAM rockets

on the stern housing, twin oerlikons on each side of the engine accommodation aft and the same on each wing of the flying bridge along with another FAM rocket set.

The ship was about 425 feet long, with a coal fired triple expansion steam engine which gave us a top speed of 10 knots. We carried four life boats which were always swung out for instant lowering. In addition we had 'anti-torpedo' nets slung from four booms, two forward and two aft, that swung outboard with the net between them. This was supposed to catch torpedoes and stop them from hitting us. Luckily we were never called upon to see if they worked.

During wartime, no transmitting was done except in case of attack. SSSS SSSS de VDTS (ship's call sign) was used in case of submarine attack, RRRR was for attack by a surface raider and AAAA was used for aircraft attack. Watches tended to be somewhat dull. We copied 'BAMS' (Broadcast to Allied

Merchant Ships) routines regularly at certain set times from designated coast stations for the area in which we were sailing. GBR at Lands End on 16 kcs was the best copy from mid-Atlantic right through to well into the Indian Ocean. Talk about DX!

A traffic list was broadcast on BAMS and if our call sign was included, we listened through the traffic that followed (all broadcast blind), and copied the message addressed to us. The rest of the watch was then spent in decoding same. If our call sign was not in the list we went back to 500 kcs. All ships had war secret call signs very similar to 'ham' calls, ie. BR4UF.

The chief doubled as ship's purser while the juniors were kept busy amending radio regulations and Notices to Mariners affecting navigational aids throughout the world. In convoy the junior radio man was often called to the bridge when off watch to handle aldis lamp signalling with the convoy commodore or escorts, but generally the routine was boring and we looked forward to arrival in port, crossing the equator and such.

There are many memories of those stirring wartime days, good and bad, far too many to include in so short a space, but memories of VJ Day 1945 deserve mention.

We were returning from the Indian Ocean steaming along the South African Coast a few miles off shore as we made our approach to Capetown. The houses of the suburbs sparkled in the South African sun on our starboard side as we watched thousands of people following along the coast road as we sailed along, all flags flying.

As we were warped along side we found the quay wall to wall with thousands of people. The docks had been opened to the public for the first time since the beginning of the war and we were the only ship to arrive that day!

Heaving lines flung ashore were cut up for souvenirs and several times we had to be pulled back by the tugs for fear that people might be pushed over the dock edge and crushed between the dock and ship. Order finally prevailed and we came alongside. Two DEMS naval ratings were posted at the gangway with fixed bayonets to keep the delirious crowd from overwhelming us.

As we went ashore that afternoon, we were mobbed by residents begging us to be their guests. The City was ours! The war was over! ■

TO BE CONTINUED

A recently formed Canadian Merchant Navy Association is looking for ex-wartime sparks, or other wartime ship personnel. Contact Roy Spry, President, Canadian Merchant Navy Assoc., 316 Tweed St, Cobourg, Ont. K9A 1W3.— Editor.



Tasmanian Amateurs

Ron Churcher VK7RN and Mrs. Churcher of Devonport, Tasmania, Australia were recent visitors to the weekly breakfast meeting of the Charlottetown Amateur Radio Club.

They were warmly welcomed by club president Tom Arsenault VE1GB and the upwards of 40 members attending. Mr. and Mrs. Churcher are on their way to visit friends in other parts of Canada as well as in England. They made the detour to Prince Edward Island on the invitation of several of the local Amateurs with whom Ron converses quite frequently from his home in Tasmania via Ham Radio.

While on the Island, they are the welcome guests of VE1YN, Mr. and Mrs.

Wylie Barrett of New Dominion. Mr. and Mrs. Bill Jameson of Argyle Shore and Mr. and Mrs. George Shelfoon of Stanhope are co-hosts. Mr. Churcher is an Alderman on the City Council of Devonport and while in Charlottetown was given a tour of the newly-renovated City Hall.

After visiting England and other parts of Europe, the Churchers intend to return to Canada to visit some of the northern areas when the trees are displaying their Autumn colours. Then it will be back to Tasmania and their home where, by the way, the last snowfall was on Aug. 4, 1951. ■

— Tom Arsenault VE1AB

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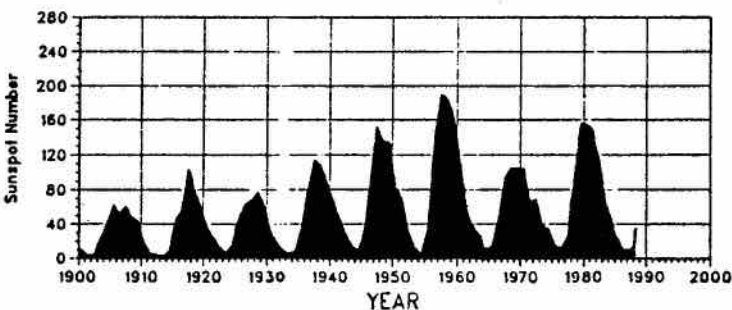
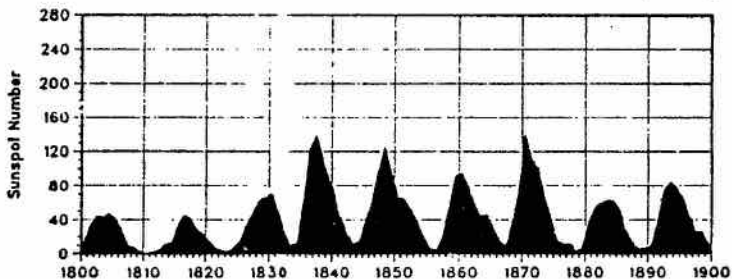
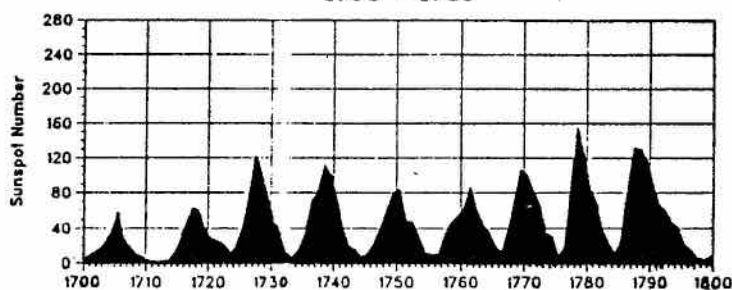
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Due to the popularity of the CARF QSL Bureau, our address has become VERY well known and consequently many INCOMING cards arrive in our mailbox. These in turn, are forwarded to the applicable Provincial Bureau.

To RECEIVE cards from your Provincial Bureau, send a quantity of *pre-addressed 5" x 7"* envelopes along with *money* for postage (money is better than stamps since postal rates are always changing). Your Provincial Bureau will forward cards to you on a regular basis and inform you of the need for more postage money. Although the addresses of the Provincial Bureaus are found in the latest International Callbook, we have included them here for the benefit of CARF Members.

YEARLY MEAN SUNSPOT NUMBERS 1700 - 1988



Provincial Bureau Address List

VE1QSL Bureau
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E2L 3X1

VE7QSL Bureau
8922-148 Street
Surrey, B.C.
V3R 3W4

VE2QSL Bureau
2960 Douglas Avenue
Montreal, Que.
H3R 2E3

VE8QSL Bureau
2 Taylor Road
Yellowknife, N.W.T.
X1A 2K9

VE3QSL Bureau
Box 157
Downsview, Ont.
M3M 3A3

VY1QSL Bureau
Box 4597
Whitehorse, Yukon
Y1A 2R8

VE4QSL Bureau
Box 365
Carman, Man.
R0G 0J0

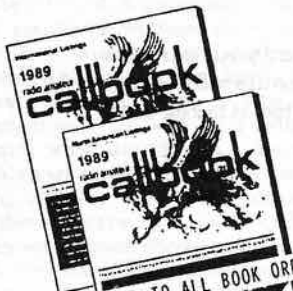
VO1/VO2QSL
Bureau
Box 6
St. John's, Nfld.
A1C 5H5

VE5QSL Bureau
739 Washington Drive
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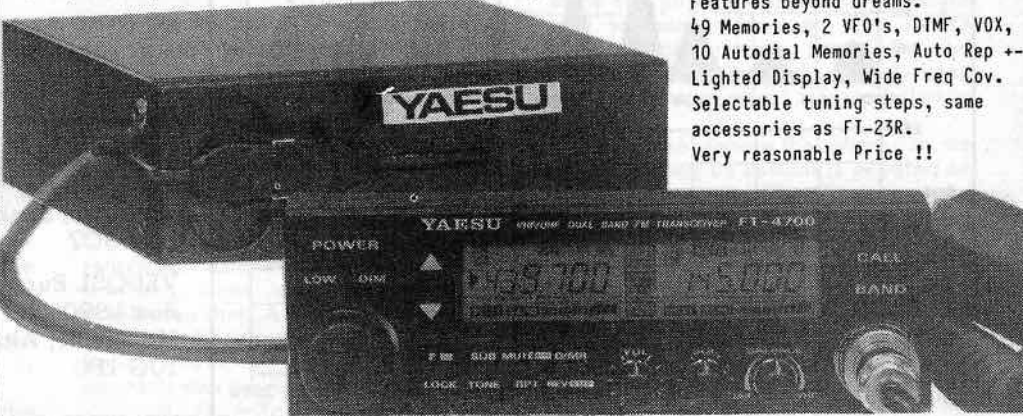


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 851A 25w SSB/FM
 1421A Compact FM 35w
 415A 2.5w 440 HT
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 FT-736R, New All Mode, 2m/70cm
 FEX-736-50 6m, 10w Module
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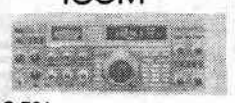
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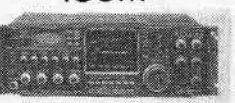
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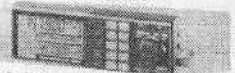
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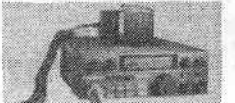
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 FRG-9600 60-905 MHz

VHF
 FT-212RH NEW 2m, 45w mobile
 FT-290R All Mode Portable
 FT-23 R/T/T Mini HT
 FT-209RH FM Handheld 5w

VHF/JUHF Full Duplex
 FT-736R, New All Mode, 2m/70cm
 FEX-736-50 6m, 10w Module
 FEX-736-220 220 MHz, 25w Module
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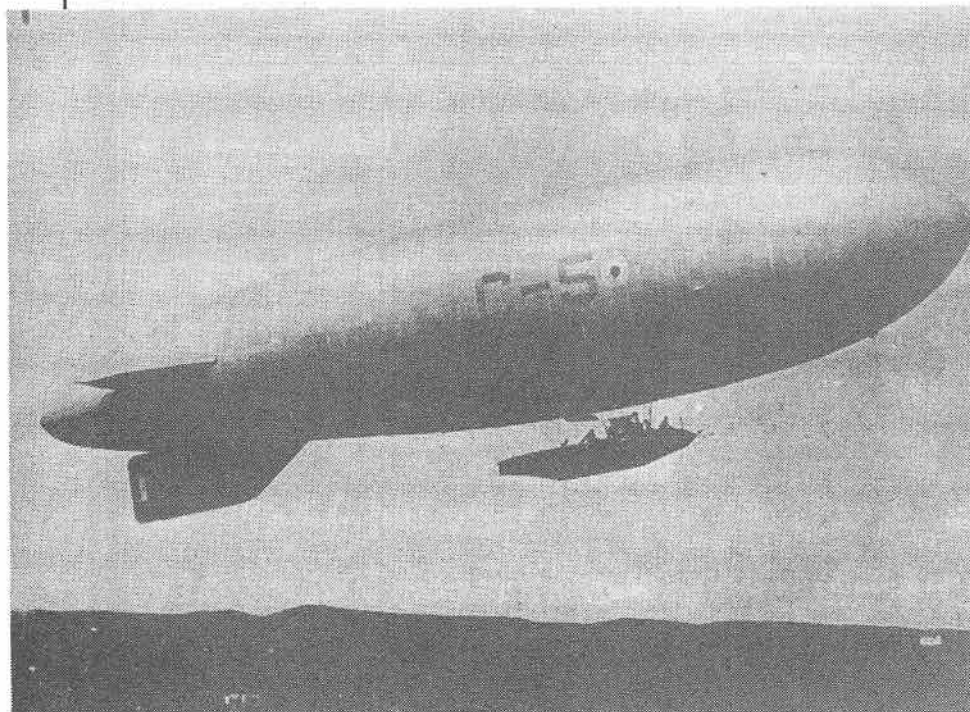
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Air Race



Warren Stone VO1KS is a member of the Canadian Forces who regularly goes on manoeuvres and travels to far away places. He's an adventurer, much like his late uncle Gordon Stanley VO1KS. Warren is proud to have the call letters used by his uncle, who became a Silent Key shortly before Warren received his Amateur Radio licence. The following story was originally related to the late Lawrence Adams of Milton, Newfoundland.

Left: The C-5 Airship.

Below: Warren Stone VO1KS.

NEWFOUNDLAND'S FIRST AIR TRAFFIC CONTROLLER

Gordon Stanley VO1KS, who now resides at Gander, relates the story of the part he played as an air traffic controller on May 8, 1919. He was then in his early teens and employed by the Reid Newfoundland Railway as Station Agent at Placentia Junction. While awaiting the arrival of an east bound freight train, he became aware of a large balloon type flying machine circling the railway station at a very low altitude.

An officer of the airship, using a hand-held megaphone, called to young Stanley and asked him to point out the direction of St. John's. Gordon gave him instructions by hand signals and the lighter-than-air craft departed enroute to St. John's, following the railway line, but not before its trailing antenna became entangled in the land line and for a time shorted out the system. (Gordon kept this length of wire as a souvenir.) Contact was then made with his superior railway dispatcher, W.J. Chafe, who now lives in retirement at Gander, Newfoundland.

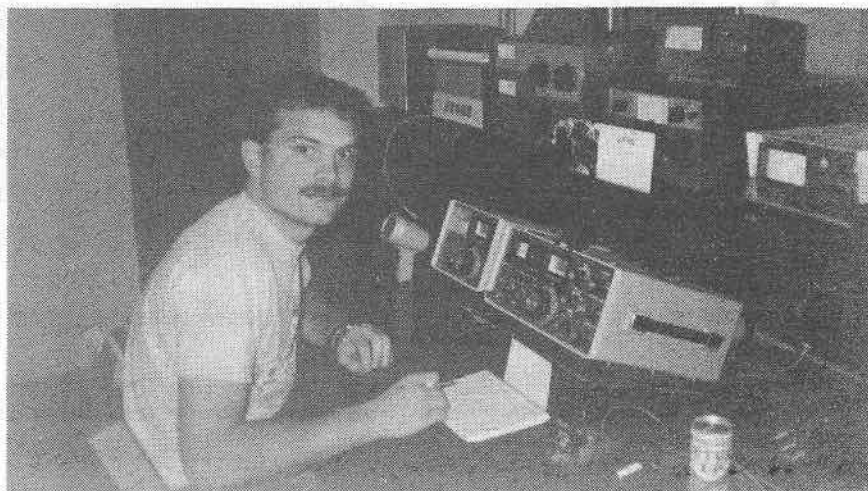
When Gordon reported this unusual incident to the railway dispatcher, it caused some concern to the railway officials, who feared that the isolation at Placentia Junction had caused the

lonely young man to report air-borne objects rather than trains. Their concern for their young employee was dispelled, however, when they received the news of the landing of the U.S. dirigible C-5 at St. John's, Newfoundland after its flight from Cape May, New Jersey. The C-5 was anchored on the north side of Quidi Vidi lake, to await favourable weather to attempt a crossing of the Atlantic by way of the Azores. Misfortune frustrated these intentions when a roaring gale blew up from the southwest on May 15, 1919, ripping the airship from its moorings and blowing it out to sea, fortunately,

without loss of life, but leaving no trace of the airship.

In making the hand signals to direct a route for the dirigible that day in May almost 60 years ago, Gordon Stanley was among the first of a long line of communicators who are known as air traffic controllers.

A complete account of the flight of the American Airship, the C-5, may be read in *The Great Atlantic Air Race* by Percy Rowe, published by McClelland and Stewart Limited, ISBN 0-7710-7739-4. Another version is available in the Thursday, March 6, 1958 issue of *The St. John's, Nfld. Daily News Editor*. ■



CARF's Charter Members

BY JOHN ILIFFE
VE3CES

With CARF reaching its 21st birthday this autumn, there is one class of member who must be congratulated on their foresight. These are the 'Charter Life Members', those hardy souls who, in 1977, when membership was first opened to individuals, had enough confidence in the new all-Canadian organization to buy a Life Membership.

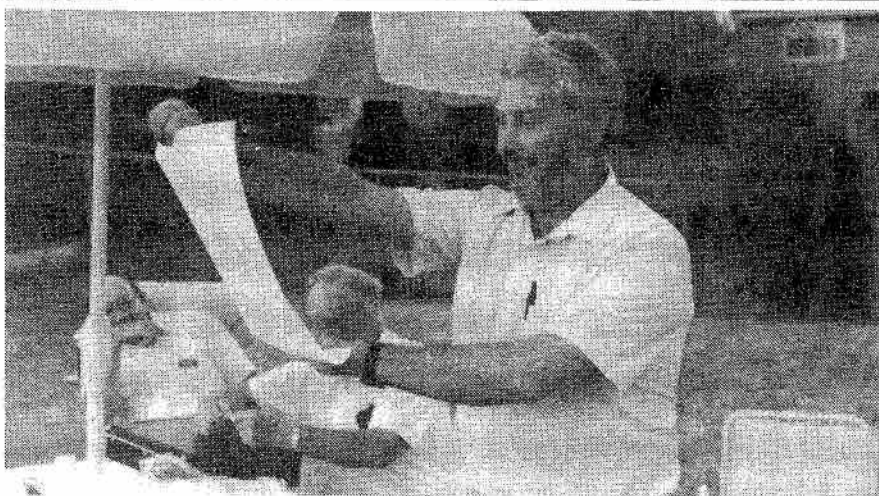
By a motion of the Board of Directors, all Life Members who joined before the end of 1977 were entitled to use the title 'Charter Life Member'. There were originally 79 of them and they are listed below. *The Canadian Amateur* would be interested in hearing from you and what you have been doing in Amateur Radio in the past 11 years.

The list of charter life members was kindly provided by Harrie VE3HYS, from the February 1978 TCA, who first brought this membership class to my attention.

Nate Penney VO1NP
Bonnie MacEachern VE1TY
Darell H. Porter VE1AFS
G.W. Goodwin VE2DQ
Joan Powell VE3FVO
A.E. Blick VE3AHU
David G. Evans VE3BAR
Bob Hulme VE3DNG
B.H. Burdsall VE3NB
W.E. Braithwaite VE3FWM
Norman Lawton VE3ON
Hersh Goldberg VE3JBU
Thelma Woodhouse VE3CLT
Malcolm Timlick VE4MG
Jim McKenna VE6HO
Dave Bennett VE7AXG
E.A. Osberg VE7AXJ
J.J. MacEachern VE1UA
Frank MacEachern VE1AWL
Ralph Hindle VE2BMH
R.F. Poulter VE2ANE
K.E. Rolison VE3CRL
Jean Evans VE3DGG
Laetitia Hardie VE3HIR
William B. Kent VE3HSK
J.L. Ferns VE3BZF
Dave Noon VE3IAE
E.L. Crosby VE3CJD
J.A. Fegan VE3BUI
Kent Chown VE3JKC
J.R. Sandercock VE5CS
Liz McKenna VE6APD
R.G. Skegg VE7AII
Roy Cable VE7ZR
A. Len Tuckey VE6TF
Mildred Cable
Peter Dreissen VE7BBQ
James L. Voight VE7CWC
W.A. Parker VE7IX
Barry Baggs VE3IVW
Patricia Baggs VE3IWI
K.D. Baker VE2XL

Frank Bell VE3FMF
Harold E. Brown VE3DMB
Bert Hovey VE3EW
Lorna Hill VE3IWH
Croft Taylor VE3OR
W.A. Crabbe VE3CUK
Harry Raby VE3FJJ
Grace R. Penney VO1NB
John Henry VE2DNM
Patricia Baker VE2XS
William Hardie VE3EFX
Vic Naderer VE3IHK
Harrie F. Jones VE3HYS
Pamela I. Gorham VE3BVG
Morley Wiltse VE3CYW
Myrtle Manning VE3FXM
J.R. Burke VO2CW
John M. Mann VE2ADZ
Farrell Chown VE3JKL
Carl Thorsteinson VE3IAH

Wilf Hill VE2ICQ
John W. Woodfield VE3CYK
Fred Strang VE3CMS
John Neumann VE3DDN
Roy Manning VE3PM
W.L. Morris VE3DEV
C.W. Bushell VE3DXY
Leon Blazejak VE6CGR
T.R. Talbot VE6ATT
Henry Thel VE7WJ
Phil Muncaster VE7AWJ
D.R. Jenkins VE7IU
Peter M. Smith VE3DEX
Ken Yeatheard VE7KY
Don MacDonald VE7AKW
Richard Thompson VE7CNY
Don E. Cosby VE7DAM
M.A.F. Dier VE3BCO
Jim Nazar VE4NC
Edward E. Johns VE3IWS



Thank You, Francis!

During the cold months of 1988, CARF replaced our old Apple computers with a new IBM-based



system. New programmes were written and installed for all aspects of administration and billing.

CARF's Senior Vice-President, Francis Salter VE3MGY, wrote most of the programmes and installed them on the computer, then did the staff training. He spent many days in Kingston and many nights on the bus and train from his home in London, Ont. to do this work. CARF is indeed indebted to Francis for the donation of hundreds of hours of his time.

At the CARF Director's meeting in June, it was decided to honour Francis with some fun and merry-making. The photos show George VE3LXZ, your Editor, reading a scroll proclaiming 'St. Francis' who 'healed the savage bytes' and Francis listening to the proclamation.

REVIEWS

W1FB's Antenna Notebook by Doug DeMaw W2FB Published by ARRL 1987, \$11.50. 124 pages plus tables, symbols, glossary of antenna terms and a few blanks for taking notes. There is also an index in addition to the contents page which lists nine chapters of about 100 headings.

Doug had quite a colourful career before joining ARRL in 1965 and reaching the top in his category as Technical Department Manager in 1970 before retiring in 1983. Besides his many articles in *QST*, he also wrote three books and co-authored another with famous QRP'er Wes Hayward W7ZOI. This latter book in second printing is *Solid State Design for the Radio Amateur*.

The *Antenna Notebook*, besides being well laid out, is easy to read and quite informative for both new and old Amateurs. It certainly contains one or more antenna designs for each and every reader. Even the notorious antenna matching units are covered, including design drawings. Chapter 4, Simple Vertical Antennas, leaves one with the impression you can never go too far seeking a good ground.

The reader should be able to find a suitable antenna in Chapter 5, all of which were tried by Doug who says he has no reservations about recommending them! Simple Antenna Measurements required 11 pages in his inimitable style and tells you how to use a field strength metre.

— VE6BLY

MAGAZINE REVIEWS

Break-In is the Official Journal of the New Zealand Association of Radio Transmitters (Inc), NZART for short. Their March 1988 issue was mainly about the Wellington VHF Group. An ATV article mentioning three repeaters already, one of which needs an ATV extender to reach a wider coverage area. The technical forum carried a report from *Ham Radio* of Sept. '87. Satellite News covers almost three pages. Other regular columns are all well-written and informative.

April '88 contained mainly Annual Reports of NZART in keeping their membership well informed. May '88 was more Technical with articles entitled Packet Radio— What is it?, An Alternative Approach to Packet Radio, Computer Networking Standards, PacComm TNC 220 Modifications, A Packet Audio Amplifier, 'Off-Line', 'On-the-Shelf', which just lists reference material pertaining to Packet both Amateur and non-Amateur pubs. All this, besides the regular columns, but you must read 'Feedback' (letters to the editor) to pick up any QRP activity.

Except for a periodic Special QRP issue there is no regular QRP column.

Radio Communication is the official Journal of RSGB sent FREE and postpaid to all members of the Society. Page numbering begins with No. 1 in the January issue. May carried a supplement of eight pages reporting the Annual Meeting of the Society including pictures of award presentations. Average circulation of their Journal in 1987 was 38,070 copies per issue!

All issues mentioned above are over 80 pages each and they are the metric size format. There is no copyright notice but they do say payment for accepted articles is at high competitive rates and become the property of RSGB along with the copyright from the original author.

July issue featured HRH Prince Philip, KG, President of the RSGB who gave the Opening Ceremony and Address at the RSGB 75th Anniversary Convention.

All the technical articles certainly indicate payment is high and not for the faint of heart. They have left the simple

things to the G-QRP Club and their organ, *SPRATT* (Small Powered Radio Amateur Transmitters) whose Secretary a couple of years ago was Rev. G.C. Dobbs G3RJV, St. Aidans Vicarage, 498 Manchester Rd, Rochdale Lancs. OL11 3HE England. Certainly a lot easier to read or build their projects. Does anyone have an updated address for the Secretary or subscription manager?

Four copies of *Worldradio*, Feb., March, June and July '88 hit my desk early in August. Although not a glossy magazine, *Worldradio* continues to be good reading. If for no other reason than to keep up to date with the latest radios, accessories, antennas, radio clubs, Digital news, 10-10 International News, Six Shorts (6m), HandiHams, QRP, Bob's Corner, Aerials, Awards, DX World, Off the Air, QCWA, Mobile, Traffic, Contests, and usually over two pages of classifieds for a total page count between 60 and 70 each issue.

My choice is still *The Canadian Amateur*, but it is always interesting to read about Amateur activities from other parts of the world! ■

— VE6BLY

Product Reviews

Robb Smith VE7FSK is Editor of *Zero Beat*, the official bulletin of the Victoria Shortwave Club. This product review originally appeared in the Jan. '88 issue of *Zero Beat*. *The Canadian Amateur* encourages readers to submit reviews written on products you have tried. The topics may include Ham related test equipment radios, peripherals, computers, software, etc.

THE SHARP PC1247 POCKET COMPUTER

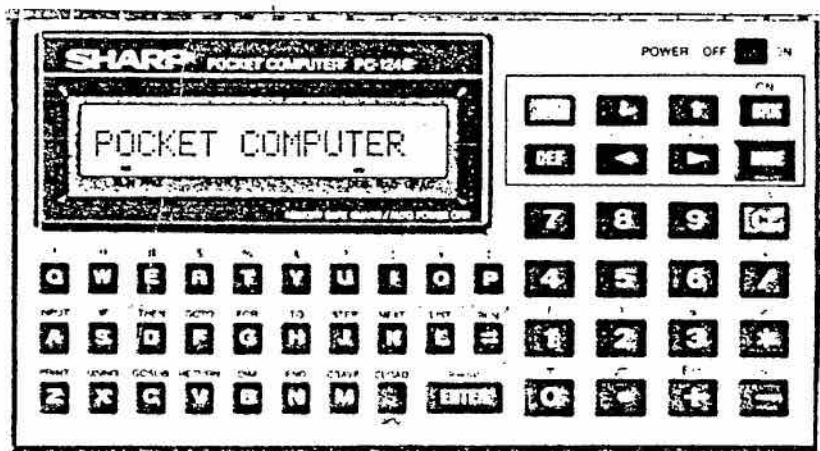
Pocket computer sounds like a rather esoteric item, but once you've tried one, believe me, you'll find dozens of uses for it.

What you get for your money is a genuine computer with 4K of RAM which you can program in Basic just like the larger personal computers. It has a 16 character alphanumeric display, and a tiny QERTY keyboard flanked by a full size numeric pad. It is battery powered, and retains all data while off. The whole unit is about 5.3" wide by 2.75" top to bottom by 0.5" high. It comes with a hard plastic cover which protects the keyboard and display while being carried. Optional accessories include a cassette interface and miniature printer.

The computer can be used as a smart calculator, with full access to all of the built-in Basic variable and functions. Programmers will appreciate the ability to enter hexadecimal numbers directly. Another unique feature is that you can recall the last equation you entered, make changes or corrections, and recompute the answer. For more repetitive calculations, you'll want to do a bit of programming.

One of the best features of this pocket computer is that it can store several programs in its memory at once. Each program may be given a single character label, so that you can call it up with a single keystroke. For example, I was making an impedance matching section, so I entered a program to calculate the impedance of parallel conductors, which I labelled 'I' for impedance. Now I just hit the DEF key and the 'I', and away it goes. Later I added a program to calculate the correct length of an element given a frequency and wire diameter. This I labelled 'L' for length, and so on.

I expect I will soon have all of the major equations for Amateur radio tucked away in my handy pocket computer for immediate reference!



A PC1247 Pocket Computer

Of course, Amateur radio is not the only application for those computers. The purists among the boating set will find it indispensable for celestial navigation. It would certainly reduce the tedium of azimuth and elevation calculations for astronomy buffs. Science and engineering students would also find many uses for a pocket computer. Anybody who had to do repetitive calculations on the go will appreciate this bit of technology.

My Sharp EL-540 calculator has served me well for many years, and I have no doubt my new PC1247 computer will do so, too. Although the small display and limited memory may seem like handicaps at first, the computer is so well thought out that they rarely get in your way. The Sharp PC1247 pocket computer is a versatile tool which I can highly recommend. However did I manage without one?

NEW PRODUCTS

In the latest Efstonscience catalogue, a battery is listed which generates electricity through the interaction of aluminum plates and oxygen in the air. You activate the battery by adding salt water. Until you add the water, however, the battery is completely dry so it can be stored indefinitely, won't leak, and is very lightweight. In short, it's the ideal battery for emergency power.

This battery was intended for classroom demonstration and is rather expensive and too small for practical use; it provides only 2.1 volts at 0.3 amps. However, it sustains this output continuously for a remarkable 12 hours. What's even more remarkable is the fact that once the battery is exhausted, you just scrub the aluminum plates clean, put in a new batch of salt water, and it's all ready to go again! The technology clearly has a lot of potential.

Zero Beat

ICOM IC-781 HF BASE STATION TRANSCEIVER

The Future of Amateur Communications' is here with the introduction of Icom's new IC-781 HF base station transceiver, according to an Icom new product release.

The IC-781 operates all modes and bands 160 to 10 metres with a band spectrum scope that displays signals in a 50/100/200 kHz range of your operating frequency. This is all indicated on the multi-function five-inch CRT screen which displays frequencies, modes, memory contents, operating notes, RIT, two menu screens and includes subdisplays for Packet and RTTY.

The IC-781 also features:
-Dual Band Watch. Simultaneously receives two frequencies in the same band. A single button activates both VFOs for dual receive, and a 'balance' control varies A/B levels.
-Twin Passband Tuning with separate controls for second and third IF stages. Increases selectivity and narrows bandwidth.
-99 Tunable Memories. Operates like 99 last frequency remembering VFOs! Reprogram quickly or leave your permanent frequency selections in place and simply return. All

memories can be retuned, yet instantly return to the original memory channel selection. Even the original filter selections remain unchanged!

-All Wide and Narrow Filters included. Independent selection of four filters for super DXing flexibility!
-Direct Keyboard Entry. Don't feel like dialing in a frequency? Just program it in on the IC-781's user friendly front panel keyboard.

-150 Watts Output.

-Built-in Power Supply, 100% duty rated, AC Supply, with super silent cooling fan.

-Dual Noise Blanker, includes MCF filter plus width and level controls.

-Five Multi-Function Timers. Three on/off modes and two sleep modes, have your IC-781 warmed up and ready to go when you get home from work!

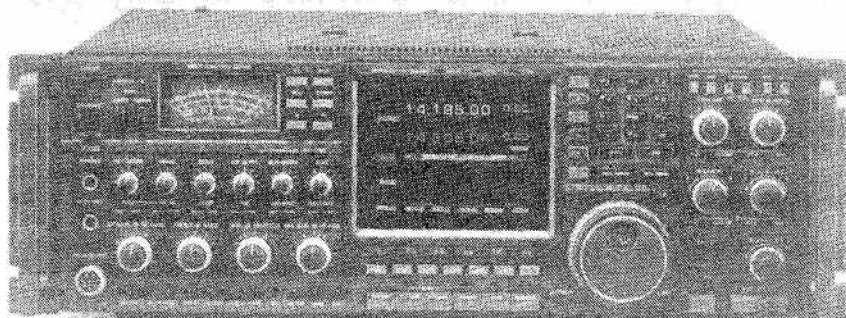
-Two internal clocks display the local time and program in any time zone in the world for fast QSO reference.

The IC-781 comes standard with these other features: built-in high speed automatic antenna tuner, iambic keyer, semi-automatic or full QSK CW break-in to 60 wpm, Audio Peaking Filter, RF speech processor, multiscanning, 105dB dynamic range receiver that continuously tunes 100 kHz to 30 MHz, plus exceptional frequency control. Scheduled availability of the IC-781 is March 1988.

BRUNELLE MODEL 63 PRECISION RESISTANCE DECADE BOX

This unit makes possible the selection of any resistor value from 1 ohm to 9999 ohms in one step. The model 63 is suitable for use in electrical measurements, substitution resistor to aid in designing and for experimentation in schools and research institutes.

Model 63 has manganin wire-wound resistor elements. This unit has a low zero resistance and low inductance. A one year warranty on parts and labour is an added feature. ■



ICOM IC-781

LOG ENTRIES

It's always a pleasure to sort through my mail and find, amongst all those bills, another letter from a reader. This month special thanks to Terry VE2PJ, who took the trouble to send me several long extracts from his log book. He obviously uses a computer to keep his log and so he was able to ask the machine to print out all the different countries he worked during 1987. The log shows a very respectable total of 213 during the year, not counting some of the Russian prefixes which he finds, I quote, 'murder'. I think I know what he means! When you think that 1987 marked the end of cycle 21 and just the first stirrings of cycle 22, his total clearly represents many, many hours of patient listening.

Terry also included a hand-written list of the more interesting countries worked during August 1988. I think most of us would be very pleased to add these to our logs:

CALL	FREQ	UTC
YBOHBL	21.201	1509
4U1ITU	21.184	1509
JY5DL	21.255	1849
JY3ZH	14.251	2230
3B9FR	14.215	?
FR4FA/J	14.236	0450
9V1WW	21.250	1618
SORASD	?	? (worked mobile!)

It would be interesting to know a little more about Terry's station, what power he usually runs and what kind of antennas he uses. I look forward to further printouts from Terry's electronic log book.

Another interesting log extract was passed to me by Ralph VE3BBM, who has lately been working some interesting DX on the 30 metre band. On the 1st and 2nd of September he worked UBSWE/RO, F3BC, UD6BKW, 5B40G, UW1ZW/UD1D, 3B8CF and FG5BM. He tells us that:

"The band seems to peak around supper time local time and again 2-3 hours later. If one can second guess where the commercials will pop up, 30M is a fun band. The diplomacy on this band is something to enjoy. Stations actually standby while one works DX and seldom call blind. I have kept several 9 p.m. skeds with N.C. and Alabama and signals have always been consistent. Some evenings can keep perfect contact with 5-10 watts. Lots of VK signals heard between 7 and 9 a.m. local time. I'm using 150 watts and a sloping dipole."

DX REPEATERS

The local Ottawa DX repeater continues to limp along with a low sensitivity receiver, however, the DX group is working on various fixes which



VK9LM

Lord Howe Island, a minute and spectacular fragment of New South Wales, is the largest of a cluster of rocky islets, 702 kilometres north-east of Sydney, and almost due east of Port Macquarie. Only 11 kilometres long and from 3/4 to 2 kilometres across, Lord Howe contains some 120 hectares of rich low-land and a jumble of romantically beautiful mountains. Total area of the Island is 1300 hectares.



An unusual card from Lord Howe Island. This was for a contact in 1987 with a DXpedition mounted by Rudi Muller DJ5CQ.

should greatly improve its area of coverage. While this work is going on, DXers in the Ottawa area are using the output frequency, simplex, to make announcements. This is not really of much interest to readers other than those in the National Capital Region, but it does serve to lead into an item I've been following over several months in *The DXer*, the journal of the Northern Californian DX Club.

Their DX repeater has been on the air for a number of years and they are now in the midst of extending its coverage by building several remote repeaters which will be linked to the main site.

Of particular interest is the use, by many club members, of a Packet Radio bulletin board to make their DX announcements. The advantages of this technique are fairly obvious. Voice announcements are fine if you happen to be in the shack monitoring the repeater at the precise moment that the announcement is made. But what about the time when you slip down to the kitchen to make a quick cup of coffee and at that critical moment someone announces a spotting?

Also how about those announcements that are made while you are at work or in the middle of the night when you are lazy enough to be in the sack instead of the shack? Of course it goes without saying that DX announcements rapidly lose their value with time.

However they can be a very valuable long-term clue to DX station activity allowing you to check the frequency at the same time next day or next week. I think all of us who currently use, or who are considering using, a DX repeater

should give very serious consideration to including the packet radio mode in the system.

I should mention, before leaving the subject, that the NCDXC is having a number of teething troubles with their voice/packet repeater. A lot of members with packet are not making coincident voice announcements when they report a sighting. The other problem is long discussions of packet radio problems which now seem to be a regular feature of the DX repeater. This is very annoying to those club members who feel, quite correctly, that this is a misuse of a facility that exists solely to make DX announcements. Ah well, would that we had problems of this sort to deal with on our local DX repeater!

PIRATE CALLS

Thanks to 'Hoppy' Hopwood VE7AHB, who recently dropped me a line by Envoypost, no less, about a couple of pirate calls he worked this year. In both cases the real station call sign owners were kind enough to respond to his QSLs with a note of explanation while returning his IRCs. Hoppy reports the following details:

OY7ML— Jan 30/88— Faroe Is. 20 CW— G6ZO came on frequency at the end of the QSO to warn me, as he is a friend of the 'real' OY7ML. Sure enough my QSL was returned.

XX9CT— Aug 18/88— Macau. 20 CW— Philip Weaver, the owner of XX9CT, VS6CT and G4JMB says he never operates CW and is usually at work at 0300 UTC, 1100 local time, when this 'Slim' was playing his nefarious game.

I've been noticing fairly frequent reports in *QRZ DX* of other probable 'Slim' operations, mostly using the rarer DX prefixes. It's annoying to realize that there are a few competent operators around who seem to get some kind of kick out of using bogus call signs on the bands. All one can do is to be a little cautious when that rare prefix appears but, meanwhile, Bob Winn W5KNW's adage always holds good, WFWL... "Work first, worry later"!

THE BOOK SHELF

When the bands go out or your antenna blows down, there is nothing nicer than a good book to fill the void until you are back on the air.

I spotted the following short review by Jim Maxwell W6CF in *The DXer* of August 1988: *My Seychelles Years*, by V.C. Harvey-Brain.

"Most old-time DXers will remember Harvey VQ9HB, who was one of the mainstays of the Seychelles and other points in the Indian Ocean during the 1960s. He put on some really rare operations, in a sort of casual way that many didn't understand. And then he disappeared from the Seychelles. His book, *My Seychelles Years*, published just last year, makes it all understandable. Ham radio isn't what kept him going—it was a love of the sea, and a love of the Seychelles and its people.

"Although ham radio plays a role in the book—an entire chapter is devoted to one of his operations at Chagos—this is not really a ham radio story. It is really a story of the islands and a story of boats and the sea and a man (Harvey) against both of them.

"This is a book worth reading, although it will take some time—it contains 265 pages. Harvey will ship you a personal copy for \$8.50 (U.S.) surface mail, \$13.50 (U.S.) by air. Although that's all he asks, I suggest you slip him \$10 for surface or \$15 for air. Exchange rates vary and he is cutting it pretty thin. Write to V.C. Harvey-Brain ZL1BSO, 7 Hamilton Road, Surfside, Waiheke Island, Auckland, New Zealand."

SPECIAL CORRESPONDENTS

Long term readers of the column will recall that, from time to time, I have been able to pass on firsthand impressions of Amateur radio activity in Thailand thanks to my special correspondent there, daughter No. 3, Julia. Her dispatches have been so useful that I recently asked her to return to Canada for further briefings prior to another 12-month stint on station at Korat, 150 miles north of Bangkok.

The use of special correspondents in DX locations has been such a success that, in August, I sent out the column's second stringer, daughter No. 1, Sarah, to Pakistan. She will be there for two years and I look forward to her firsthand

reports on Amateur radio activity in AP land. She will be in the North West Frontier Province fairly close to YA. (I wonder how difficult it is for a visitor to get a temporary licence to operate from Pakistan? Perhaps I could mount a mini DXpedition based on my daughter's house! It's all tempting stuff.)

To complete the picture, I should mention that daughter No. 2, Jane, has recently returned from three years in ZE, Zimbabwe. Unfortunately she spent almost the entire period in a remote rural part of the country with absolutely zero Amateur radio activity, so a splendid opportunity to report on DX activity in central Africa was missed!

Perhaps I should add that it is not necessary to be closely related to me to become a special correspondent for the column! I know that now and then some of my readers head off for distant parts of the world on short and sometimes long visits. Your comments on the world of Amateur radio and particularly DXing in these exotic locations would be most welcome to me, helping to add a personal touch to the column's meanderings.

BITS AND PIECES

C9 Mozambique— Nice to read in *QRZ DX* that SM7DZZ will be on Mozambique for the next two years and hopes to be quite active. My spy, VE2ZP, reported that he would be active

particularly over two short periods in September and October on 14.300-14.310 and 21.290-21.300 MHz. He plans CW and low band activity as well, so you might bump into him almost anywhere! He will have a licence, unlike many recent operations from C9, and so should be acceptable to the DXCC desk. Your QSLs should be sent to SM5KDM. **EP Iran**— Dave EP2DL and Helmut EP2HSA have been active on 14.160 MHz at 2340 UTC. QSLs to P.O. Box 17845, Tehran, Iran. It's to be hoped that now peace seems to be breaking out in the Gulf, we shall see more activity from EP and YI, Iraq. Odd that Amateur radio activities were not banned completely, in either country, during their extended conflict.

VP8 South Orkney Islands— VP8BRT is now reported to be active from Signy Island, one of the South Orkney group. Look for Mick on the 15 metre band on one of these frequencies: 21.275, 21.155 or 21.202 MHz. He plans to be there until June 1989 so there is no excuse for not working him! QSLs go to Mick, BAS Signy Island, Falkland Islands, South Atlantic.

Thanks are due to the following sources for some of the material appearing in this column: VE2PJ, Julia Cooper, *QRZ DX*, Sarah Gody W6CF, Jane Cooper, *The DXer*, VE7AHB, VE2ZP and VE3BBM. ■

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 pocket-watch. I am willing to buy and/or trade equipment. Please write to Chris Bisailion VE3CBK, RR#1 Old Carp Road, Kanata, Ont. K2K 1X7.

FOR SALE: FOXH 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.

WANTED: My two young sons, Mike VE7MRS, age 13, and Ronnie VE7GRS, age 11, desperately need a 10-80 metre LOW POWER transceiver each to get on the air. Must be reasonably priced. Write to: Gary VE7GJA, Box 681, Ucluelet, B.C. V0R 3A0.

WANTED: Heath HW8 QRP rig in mint condition, with or without power supply. Len Weeks, RR7 Duncañ, B.C. V9L 4W4.

FOR SALE: Kenwood TS520S 160M-10M transceiver in mint condition. This rig is in 'like new' shape with original carton and operating manual. The price of \$600 includes the installed CW filter, a Turner desk microphone, a Taylor low pass filter and a Heathkit HM-102 wattmeter. Also for sale are a Kenwood VFO820 remote VFO (works well with the 520S), \$90; and a MFJ422 keyer with Bencher paddle, \$140. Shipping extra. Chris Lorantfy VE3OEQ, 219 Water St., Wallaceburg, Ont. N8A 2G3. (519) 627-6277 weekends.

WANTED: Eddystone receiver(s) Model 958/3, need not be working. VE3KHB, Box 606, Smiths Falls, Ont. K7A 4T6. Phone (613) 283-5195.

Please send your 'Swap Shop' notices to the *The Canadian Amateur Swap Shop*, Box 356, Kingston, Ont. K7L 4W2. Single insertion is \$1.00 minimum (10 words) and \$1.00 for each additional 10 words. To renew, send copy and payment again. Please TYPE OR PRINT CLEARLY!

CONTEST SCENE

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

Listening around on the bands, especially during a contest, one frequently hears exchanges similar to the following.

"QRZ, DX1DX."

"VE1BHA."

"Victor Echo One Papa Hotel Alpha, 59."

"Roger, thank you, you're 59."

"OSL, QRZ, DX1DX."

Notice what has happened here? The station calling the DX station hasn't used phonetics when he gave his call, and the DX operator has copied his call wrongly. He did give the VE1 the chance to correct him, though, because he said the VE1 call phonetically. But for some reason, the VE1 didn't correct him, and he has gone into the log as VE1PHA instead of VE1BHA. A contact has been lost, and in a contest, this could (should) cost both operators' points.

Which of the two operators is at fault here? Clearly, in this case, the VE1 is, because he didn't use phonetics in the first place, when he called the DX station. He then compounded the problem by not correcting the DX operator.

This is only one of the many ways that a callsign can become a 'busted' callsign in people's logs in contests. Some other ways are more subtle, and it is not always clear who is at fault, if anyone is.

Until recently, it was pretty hard to really check a contest log for copying errors. But that may be changing with the advent of computerization of the log checking process. *CQ Magazine* is leading the way in this effort, which promises to be interesting. Apparently you can learn a lot by really careful examination of the contest logs; for example, you can see when operators change at multi-op stations by watching the dupe/error rate change.

The bottom line for testers is, of course, obvious. Be as certain as you possibly can that you have logged the other guy's call correctly, even if it slows you down a bit.

Well, let's hope that there weren't too many busted calls in the logs of last year's VE entrants in the CQ Contest. The phone results have appeared recently, and we find (to no-one's surprise) that VE6OU/3 was the top gun in the single op all band competition, rolling up a 3M score. Apparently big antennas are worthwhile!

On 10M, Reg VE2BNN tallied 189k points for first place, with VE3HX being the only other entrant. Fifteen metres belonged to Gary VE3XN and his 731k point score, while over on 20M, VO1QU came up with 915k, tops on that band.

Barry VE3CDX put his 40M mono-

bander to good use and ran up 366k, which was also the fifth world high score on the band. Was this before the antenna got bent, I wonder?

No one had the courage to tackle 80M, but VE3PN took a run at 160, and earned 21k points for his efforts.

MULTI-OPERATOR

In the multi-single competition, VE1DH demolished the field, with almost 3.5M. Second place went to VE5GF with 647 thousand.

Canada's multi-multi representative, VE7ZZZ turned in a respectable 1.6M effort.

Last, but not least, in a category in this contest that I too often ignore, QRP, VE1CBF talked his way to the number 2 spot in the world, with almost 1000

QSOs and 588k points. He beat out both 4M3A and N3RS, both well-known testers, in doing so. FB job indeed.

No new records were set in 1987.

CQ WW CQ CONTEST

The CW half of the CQ WW DX Contest comes up on Nov. 26 and 27. The current Canadian records, i.e. not including the 1987 contest, are shown here. Also, I should mention an IMPORTANT point about the CW contest. There is now a new trophy for Canadians to compete for in this contest, in the multi-single category. This trophy is sponsored by a new organization, the Eastern Canadian DX Association. (Some have suggested that this should be the Eccentric Canadian DX Association. It exists primarily to

1987 CQ WW DX PHONE CONTEST CANADIAN RESULTS

CATEGORY	CALL	SCORE	QSOS	ZONES	CNTRYS	
All Band	VE6OU/3	3,115,356	2450	146	388	
	VO1MP	1,363,380	1626	72	238	
	VE2AYU	660,870	846	86	229	
	VE3JGC	467,335	668	85	208	
	VE7CRW/8	449,665	1306	40	99	
	VE3BXY	157,680	263	73	167	
	VO1AW	102,837	215	54	123	
	VE7XO	96,437	279	45	75	
	VE2XY	93,525	292	42	87	
	VE4RP	67,854	195	49	80	
	VE6AGV	59,388	152	40	58	
	VE6DZ	46,513	215	36	48	
	VE2FTU	32,164	140	24	62	
	VE2XL	21,840	96	22	62	
	VE2EW	15,721	76	25	54	
	VE7ABC	15,336	74	23	48	
	VE4SK	11,285	68	26	45	
28 MHz	VE1BNN	189,090	746	25	85	
	VE3HX	3,537	48	10	17	
21 MHz	VE3XN	731,808	1605	34	134	
	VE3EVZ	88,668	289	26	82	
	VE3FWQ	67,160	412	16	57	
	VE1AGZ	51,450	249	17	58	
	VE3GRA	21,120	119	19	45	
14 MHz	VE2AEJ	3,906	46	10	21	
	VE3NBE	2,656	29	11	21	
	VO1QU	915,275	2300	35	120	
7 MHz	VE2ZP	670,670	1674	34	120	
	VE7EIK	419,292	1493	33	81	
	VE1BDK	137,461	501	26	75	
	VE4ALP	14,740	94	25	42	
1.8 MHz	VE3CDX	365,700	936	36	114	
	VE3PN	21,286	364	11	18	
	VE7IG	10,350	173	12	18	
	VE7GDM	8,848	163	15	13	
M/S	VE3INQ	1,785	64	7	8	
	VE1DH	3,498,297	3483	123	344	
	VE5GF	647,109	1102	89	154	
	VE3UOT	524,955	974	77	160	
	VE1IDX	496,752	942	64	173	
	VE3SPC	138,919	292	50	123	
	VE4SI	109,500	301	51	95	
	VE2VIP	72,924	301	35	68	
	M/m	VE7ZZZ	1,670,485	2584	113	192

sponsor this trophy, and currently has a total membership of seven. It has a very strange constitution, written by some person who also writes a contest column in a well-known Canadian Amateur radio publication.)

Finally, don't forget the ARRL Sweepstakes, held on the first and third weekends of November.

Next month: results of the 1987 CQ WW DX CW Contest. ■

Contest Information

*Courtesy Frank Anzalone
& CQ Magazine*

CONTEST CALENDAR

Nov. 5-6 IPA Radio Club Contest
Nov. 5-7 ARRL CW Sweepstakes
Nov. 11-13 Japan Int'l DX
Nov. 12 Czechoslovakian Contest*
Nov. 12-13 Oklahoma QSO Party
Nov. 12-13 Tennessee QSO Party
Nov. 12-13 European RTTY Contest
Nov. 12 ALARA (VKYL) Contest
Nov. 19-20 AOEC 160M CW Contest*
Nov. 19-21 ARRL SSB Sweepstakes
Nov. 26-27 CQ WW DX CW Contest
Dec. 2-4 ARRL 160M Contest
Dec. 3-4 TOPS 3.5 MHz CW Contest
Dec. 3-4 Texas State QSO Party
Dec. 3-4 Telco. Pioneers QSO Party
Dec. 10-11 ARRL 10 Metre
Dec. 11 ARCI QRP CW Sprint
Dec. 18 CARF Winter Contest
Jan 7-8 Hunting Lions CW Contest
Jan. 14-15 Hunting Lions SSB Contest
Jan 27-29 CQ WW 160M CW Contest
Feb. 11-12 QCWA CW Party
Feb. 11-13 YLRL YL/OM SSB Contest
Feb. 18-19 ARRL DX CW Contest
Feb. 24-26 CQ WW 160M SSB Contest
Feb. 25-27 YLRL YL/OM CW Contest
Mar. 4-5 ARRL DX SSB Contest
Mar. 11-12 QCWA SSB Party
Mar. 18 YLRL East Meets West Party
* Not Official

*Courtesy Frank Anzalone
& CQ Magazine*

ARRL SWEEPSTAKES

CW: Nov. 5-7 Phone: Nov. 19-21
Starts: 2100Z Sat. Ends: 0300Z Mon.

This is the 55th running of the Sweepstakes making it the oldest domestic competition going, and it really stirs up a lot of activity.

Operation is limited to stations in ARRL sections, which also includes the West Indies section (KP4, KV4, etc.) and U.S. possessions in the Pacific. Operation is limited to 24 out of the 30-hour contest period. Times off may not be less than 30 minutes and must be clearly indicated in your log.

In order to minimize QRM to non-contesters, it is recommended that operation be confined to certain portions of the bands. It is recommended that you check QST for details.

A new QRP category has been added this year.

There are several other regulations, including a cross-check sheet if you make 200 or more contacts. A large SASE (45¢ in

postage) will get you the 'SS Package' and Operating Aid No. 5 with enough log and summary sheets for an average outing.

Exchange: QSO no., power class, call, last two digits of year first licensed, and your ARRL section.

Stations using 150 watts or less are classed 'A' and over 150 watts 'B'. The same stations may be worked once only regardless of the band.

Scoring: Each completed QSO is worth 2 points. The multiplier is derived from the number of ARRL sections, plus VE8, worked (maximum of 74).

Awards: The usual certificates in each class and mode for single operator stations in each section and multi-operator stations in each division.

Logs must be received no later than Dec. 30 and go to: ARRL Communications Dept., 225 Main Street, Newington, CT 06111.

JAPAN INTERNATIONAL DX CONTEST

2300Z Fri. to 2300Z Sun., Nov. 11-13

This is a new one organized by the Japanese *Five Nine Magazine*. It's the JAs working the world on SSB only, all five bands, 10-80 metres (no WARC bands).

Classes: Single operator, single and all band, multi-operator all band only. Single operators are limited to 30 hours out of the 48-hour contest period. Off periods of at least 30 minutes must be clearly indicated in the log. Multi-operators can operate the full 48 hours. Stations must remain on the same band for at least 10 minutes before exchanging bands.

Exchange: RS plus a Prefecture number (1-50) for JAs, RS plus a progressive 3-digit QSO number for DX.

Points: Two points for 80 metre QSOs, 1 point for 40-15 metres, 2 points for 10 metres.

Multiplier: Total number of JA Prefectures, plus No.48 JD1 Ogasawara Is., No.49 JD1 Okino-Torishima Is., and No.50 JD1 Minami-Torishima Is. (maximum of 50 per band).

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 class in proportion to the number of entries from each country and each call area in the U.S. and Japan. Plaques to the continental winners in each class, single and multi-operators, and to the three U.S. CQ zones. And a special award to the U.S. single operator, all band winner of a round-trip ticket to Japan (LA or SF to Tokyo). (That should stir-up the bands, Wow!— Ed.) Stations working all JA Prefectures (1-47) during the contest can request a special award with their entry.

Logs: Use a separate sheet for each band. Indicate the multiplier in a separate column only the first time it is worked on each band. Entries with more than 500 contacts must include a cross-check dupe sheet. There are the usual penalties for taking credit for duplicate contacts; more than 2% means disqualification.

Mailing deadline is Dec. 31 to *Five Nine Magazine*, Japan International DX Contest, P.O. Box 8, Kamata, Tokyo 144, Japan.

CQ WW DX CW CONTEST

0000Z Sat. to 2400Z Sun. Nov. 26-27

Just a reminder, as if you needed one, that the CW section of the WW DX Contest is coming up the last weekend of this month. The phone section, of course, is past history. There are no changes from those used in previous years, as they are well established worldwide. The contest trophies list has been updated and well-covered in the rules.

All logs, both Phone and CW, must be sent to the CQ office: CQ World-Wide DX Contest, 76 North Broadway, Hicksville, NY 11801 U.S.A.

Deadline for logs for the Phone section is Dec. 1, and Jan. 15 for the CW section coming up. Be sure to indicate Phone or CW on your envelope. This will avoid your log from being entered in the wrong section. ■

Tornado Warning Devices

When a tornado warning has been broadcast for your area, you can use your TV set or AM radio as a warning device. Use the TV set first. Turn set on and tune to channel 13. Darken the screen to almost black using the brightness control. Next, tune to channel 2 and turn the volume control to minimum. Your detection device is now ready for use.

Lightning will produce momentary white bands, or coloured bands on a colour TV, of varying widths on the screen. A tornado within 20 miles will cause the screen to become totally white. If the screen whites out, turn off the TV, take your battery powered AM radio, and seek shelter.

The AM radio will provide instruction in times of emergency. Lightning will produce intermittent static on the AM radio while a tornado will produce continuous static.

Unfortunately, these instructions

were not in print in time to help Edmonton residents. Perhaps it would be worthwhile for subscribers of *The Canadian Amateur* to make copies of these instructions and distribute them to local broadcast agencies, newspapers and EMO facilities.

—ARES Handbook

DIGITAL EMISSIONS

Communications Canada has passed Regulations for Digital Emissions from microprocessor-controlled equipment. Effective January 31, 1989.

—VE3BBM

TECHNICAL ARTICLES

The Canadian Amateur welcomes technical articles. Please send them to the Technical Editor, Bill Richardson VY1CW, RR1, Site 20, Box 63, Whitehorse, YT Y1A 4Z6.

QRP

Moe Lynn VE6BLY
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Who says Morse code is dead?! How many read the Reuter new item from Peru during the latter part of August? My version is not too clear whether or not the trapped submarine sailors answered back in Morse Code but it was certainly clear that their rescuers used it. Anyway let's chalk up one more group in favour of us teaching the Morse Code to any and all comers regardless of their leanings towards Scouts, Guides or Amateur radio.

Still on the international scope, but this time our display depicts a DCD (Data Carrier Detect) indicator for the AARPA C64 TCN featured in *The Canadian Amateur* sometime ago. The idea, by David VK2KLX in *Digipeat* being AX.25 Packet News letter for June 1988 is passed along here for TCA readers. To affect the XR2211 modification, unsolder R8 and connect to the base of a 2N3906 or similar transistor, solder the emitter in the hole that R8 came from leaving it connected to pin 5. If your LED is mounted some distance away on a panel, use a wire from the collector to the anode and ground the cathode of the LED.

AARPA reported 412 members of which nine are from ZL and eight from overseas with only one from VE. Do we have any readers who have built their own TNC or otherwise using their PC with a disk program? QRP or QRO does not matter but please drop the Editor-In-Chief a line about your activities.

QRP HOMEBUILDERS

Some good news for those of us who have been plagued with back orders, minimum quantities or not available notations. From Small Parts Centre, 6818 Meese Drive, Lansing, MI. U.S.A. 48911 comes their 20-page catalogue, summer flyer No. 1 and a nice newsy letter.

Chris KM8X and his XYL Deb N8DHR run the operation and both offer to find whatever you need that is not yet listed. Their flyer already lists the TWOFER transmitter kit featured in *CQ Magazine* for June '88 plus a diode detector RF wattmeter kit. They expect to have kits available shortly for an improved TWOFER and matching

receiver, a Neophyte RX and T/R switch with sidetone. Don't forget a 'green stamp' along with a SASE when writing Chris and Deb for a catalogue or special parts.

Being able to order ferrite or iron powder toroidal cores and beads in lots of one or 100 is the big plus factor, for me at least! And wire by the foot instead of a reel has to be the next best thing to ice cream on steak! Where else can you buy 1N914s at 25/\$1 or 5% silver micas at 30¢ for 2pF up to 75¢ for 2200pF, or three 150 ohm 2W 5% metal oxide resistors for 48¢? The latter makes a neat 5W dummy load and there is no minimum order but they ask for U.S. funds and \$3 from VE for postage. This should make ordering by clubs or groups especially attractive if enough people can make up their minds what to start building.

Now is the time to get your own home-built on the air and nothing could be simpler than the TWOFER. If you gather up your own parts, just order the printed circuit board from Chris along with those special items. If you need a reprint of the article, send me a business size envelope and return postage for three photocopy sheets.

Try to get on the air for the Dec. 11 Winter Homebrew Sprint (2000-2400 UTC). Keep your rig handy for the other QSO Parties put on by ARCI where bonus points are awarded for each band and various power outputs.

GLEANINGS

For those QRPers bent on following up the VESTX (does anyone know his first name?) article on sunspots, here is the Space Environment Services Centre forecast for 1988-94 in table form. It is presented thus as the beginning for those homebrew artists in preparing their own personal graph.

According to the June '88 SOWP newsletter *QTC* there is a book, *Genius at Riverhead* by Alberta T. Whallen, about the life of Dr. Harold Beverage. He could well have been the world's first QRP'er although known today more for his antenna and the contributions it made to trans-Atlantic communications. The book was published this year by the

North Haven Historical Society, Maine, U.S.A. See page 40 in Jul/Aug *The Canadian Amateur* where Bob VE7BS tells a little about Dr. Beverage who is a life member of SOWP having been issued membership No.14.

Also in the newsletter were results of the bi-annual certification tests run at 40 to 60 wpm. They issue a very attractive certificate (mine is 45 wpm for using a stick) and all are encouraged to participate whether they are members or not. Anyone wishing more info should contact a SOWP member or sent a SASE to the Editor for schedules of practice and certification runs.

Even though a new world record of 76 wpm has just recently been established, it bodes well for aspiring new operators to get their speed up a little. Reading 70 wpm in one's head is easier than typing it down correctly which requires more practice. The code is still a prerequisite for an Amateur licence and should be taught more every day, not just to save submariners.

OTHER ACTIVITY

Lois and I left on our trip September first. The Valor mobile antenna is a bit disappointing in that it is impossible to QNI CHN (County Hunters Net) on 14066-7 even during good conditions. It did not get any sort of use in the higher phone band portion so the assembly is only being used on 80 metres CW with the modified whip section. Ten metres was a complete flop as no contacts ever did materialize during two days effort including FM, AM, SSB in the present configuration. The 40 metre section is adjustable and gives fairly good results on the lower CW portion. Changing frequencies on 80 and 40 both were difficult as it involved Allen head screws and wrench.

Some good usually results from any endeavour, which was the case while looking for Allen wrenches in my local Princess Auto store. They have just started displaying a number of soft and hard cover books recently and for \$3.99 you can buy *The Giant Book of Computer Software* by the Editors of *73 Magazine*.

Continued on next page

FORECAST—1988-94

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
'88	39.5	42.0	44.6	47.8	51.1	55.1	59.8	64.3	68.6	72.6	75.7	77.9
'89	81.4	84.9	88.1	91.2	94.2	97.3	100.3	102.9	105.2	107.7	110.7	113.5
'90	114.6	115.4	115.5	114.8	114.8	114.4	113.4	113.9	114.3	114.8	114.3	112.4
'91	111.8	112.8	115.3	118.0	118.6	118.0	117.3	116.1	114.2	113.0	112.7	113.3
'92	112.8	110.4	107.1	103.7	101.5	100.2	98.7	97.3	96.4	94.9	91.8	88.6
'93	85.5	82.9	80.5	78.5	76.9	75.5	74.2	72.5	69.7	67.4	66.8	66.2
'94	65.5	64.5	63.3	61.8	59.4	56.5	53.5	51.2	49.9	48.6	46.8	44.7

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

LOOKING AROUND

During the time of writing this column, Hurricane Gilbert has been marching across the Caribbean and into the Gulf of Mexico. Many fine tributes have been given in the media to the invaluable work of Amateurs in establishing, and maintaining, communications with the areas affected. I have spent many hours monitoring the frequencies used for the Gilbert Nets. My hat is off to the excellent way that the various net controllers have managed their position and is on to the numerous Amateurs who contributed confusion, not assistance, in the first days that these nets were operating.

For myself, as no traffic was heard for the Kingston, Ont. area and other VE Amateurs were capably handling Canadian traffic, no transmitting was done, except on the daytime provincial phone nets, where information on the situation and nets was passed.

On 'normal' topics, I am pleased to note, from correspondence received and from letters appearing in *The Canadian Amateur*, that previous articles on Restructuring have caused readers to consider the need for Restructuring and make suggestions how it could best be carried out. There are some who also feel that there is no need for change, i.e. the lowering of current standards.

In actual fact, in the 1985 DOC proposal and the joint submission made to this by CARF and CRRL, you will note that lowering of standards is not mentioned, rather changes so that the current standards could be more readily achieved. As this column has noted previously, there are some requirements which are not needed to establish, operate and maintain an Amateur station; the depth of technical knowledge now required to obtain the initial certificate should be reduced to enable an average citizen to pass the

examinations after attending a course of 40 to 45 hours of classroom instruction; and a code free licence should be available, without the depth of knowledge needed to obtain the current Digital certificate, to better attract today's young adults into our hobby. Present-day standards for the top class of certificate should be maintained but with a comprehensive review of knowledge that should be required for all classes.

For example, should a basic knowledge of power supplies be an initial requirement? Should a basic knowledge of integrated circuits be required for the advanced? If you are interested in this, I recommend that you obtain a copy of the latest issue of RIC-24—Information on Amateur Radio Operator Examinations—from your local Communications Canada office, study its content, discuss it with fellow Amateurs and would-be Amateurs and forward your considered comment to the Federation.

Recently, I was able to review the set of Advanced Amateur examination questions that is now in effect and noted that, although until recently being employed in the technical field, I would be lucky to pass any of the current examinations. The RI, also an Advanced Amateur, agreed that he had the same opinion and both of us felt that requirements should be reviewed to enable a better pass rate. One of us did remark that the scope of the questions was more applicable to examining technicians/technologists in the communication field than to Advanced Amateurs.

Another topic that is being discussed in letters and on-the-air is the possible release of the lists of Canadian

Amateurs. This was normal procedure until recently when the Government ceased the release of information as it may be against the provisions of the Privacy Act. The lack of this information has caused many problems to active Amateurs and Amateur organizations and some of the pros and cons of releasing these lists are noted.

PRO

Amateurs make extensive use of the lists, appearing in various Call books to aid in QSLing and contacting friends when touring. The lists also enable Amateur organizations to contact Amateurs to advise them of Amateur affairs and to solicit membership and enable distributors of Amateur equipment to publicize their affairs by direct mail. For my part, I cannot recall ever receiving 'junk mail' through my name being listed in Callbooks.

CON

Operator chit-chat, particularly on 2 metres, with many instances of telling fellow Amateurs that the operator will be away from home with the family for a period of time, can be picked up on a scanner in disreputable hands, and the information used to facilitate a break-in of the operator's home using the information re: QTH in a Callbook. This is not, however, the fault of releasing these lists but the fault of the operator's broadcasting the information!

A fresh bulletin informs us that Communications Canada, at the request of CARF and other organizations, will again release their listing of Amateur Radio stations. The preceding comments are still noteworthy, in particular the reference to the problems that 'operator chit-chat' my cause. ■

QRP (cont'd)

My copy is soft cover and contains over 500 pages which from a cursory look appears to be a companion for anyone following Antonio VE3NXQ in TCA. For those interested in the construction of almost any Amateur radio computer program, this book is a must even if used only as a reference.

Al VE6AXW is using by IC 761 during our short holiday trip so he may have some interesting findings next month.

Remember, the QRP QRGs, 1810, 3560, 7030/40, 10106, 14060, 18106, 21060, 25906, 28060, 24 hours daily and 1400 on Sunday at 1900 UTC for VE QRP gathering then ARCI TCN at 2300 on or about the same frequency. ■

Hams help Hurricane Heroes

Once again Ham Radio has come to the aid of the Red Cross and other relief agencies during a major natural disaster. Hurricane Gilbert's swath of destruction through the Caribbean resulted in a total loss of commercial communications. Amateur Radio was the only link to the Island of Jamaica for a period of days. A few Jamaican stations (the real heroes here) were on the air during the storm and relayed news of the situation to the world. Almost immediately, Health and Welfare nets as well as a weather watch were set up and maintained for almost a week. Many Canadian stations were involved in the traffic handling throughout the ordeal.

The involvement of Hams has, through the press, intrigued people

around the world. Although many Amateur Radio operators have been interviewed on various radio and television stations, we'd like to pass along our congratulations to two in particular.

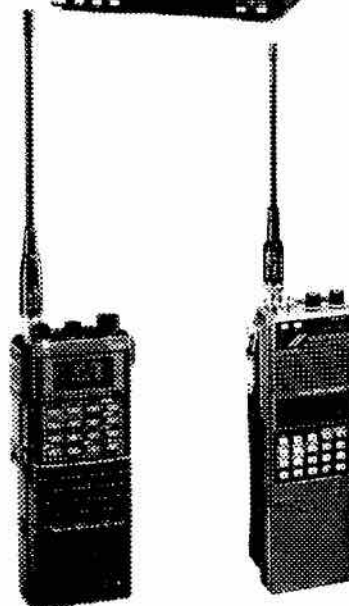
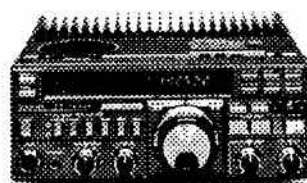
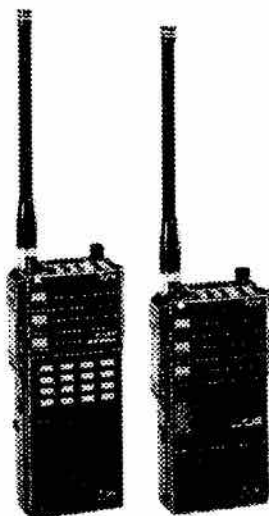
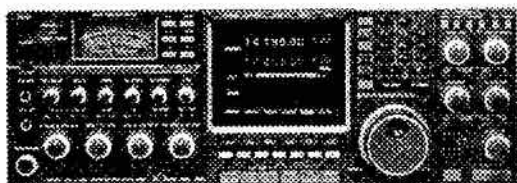
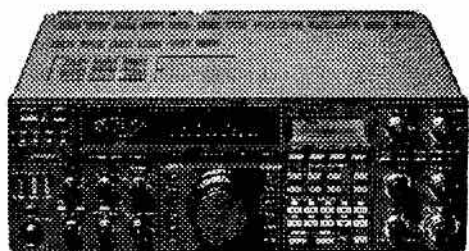
Cathy Hrischenko VE3GJH of Toronto and Wally Garrett VE7CJT of Burnaby were the guests of Lorne Saxberg on CBC radio's *Ontario Morning*. The interview, which lasted for about 15 minutes, covered many aspects of Amateur Radio and did much to spark the interest of prospective hams.

Congratulations from CARF to Cathy and Wally for an excellent interview. They made Amateur Radio sound interesting and fun but at the same time were able to impress upon the listeners the serious side of our hobby. ■

Visit our new Toronto store!

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Canada's Short-wave store!

Hobbytronique Inc.

Sheldon Harvey
79 Kipps St., Greenfield Park,
Quebec J4V 3B1

At press time, Sheldon was preparing for a trip to Turkey. The trip is the result of a contest sponsored by the Voice of Turkey, which he won. The Canadian Amateur will be privy to all the details upon his return... Editor.

With more and more radio Amateurs acquiring new, general coverage gear, shortwave radio monitoring or SWLing is going through a rebirth among the Amateur community. Over the last few months I have had the opportunity to meet many hams who were once avid SWLers who have now returned to the hobby. The birth of this column is an indication of the increasing popularity among hams to simply sit back and listen to their radios. Hopefully this column will help to broaden your knowledge of what is going on between the ham bands on your equipment.

COUNTRY OF THE MONTH

We'll begin our country-by-country journey with Great Britain. One of the most important countries in the world, Great Britain is home to one of the oldest and most respected broadcasters in the world today. London is the base of operation for the British Broadcasting Corporation, or the BBC as it is better known.

The BBC began broadcasting back in 1922 as the British Broadcasting Company. It was set up as a non-commercial operation and remains that way today, being the official voice of all radio broadcasting in the United Kingdom. In 1927, the name was changed to the British Broadcasting Corporation.

From the early days, discussions continued on the possibility of an external broadcasting service using shortwave. In late 1932 the first shortwave transmitter from the BBC began service from Daventry with one of the first broadcasts being a Christmas message from King George V. This royal message has become an annual tradition of the BBC. The shortwave service operated under the name of the BBC Empire Service.

By 1945 the BBC was broadcasting in 45 languages worldwide. The name was eventually changed to the BBC World Service and it now broadcasts 24 hours a day in English to all parts of the world. They currently produce over 750 hours of programming each week in 36 languages. The BBC has an estimated audience of over 120 million listeners per week. The World Service news is, by far, the most listened-to broadcast worldwide.

Listening to the BBC not only gives you the opportunity to log a shortwave station from Great Britain, but by using

Listening to the World

relay transmitters around the world, the listener to the BBC can hear broadcasts from shortwave transmitters in West Germany, Ascension Island, Lesotho, Cyprus, Oman, Hong Kong, Singapore, Canada, U.S.A., Antigua, Montserrat. The BBC will shortly be adding transmitters on the Seychelles Islands.

In addition to their superb news coverage, the BBC offers the listener some of the highest quality and widest variety of programming anywhere on the shortwave bands. Programs on science, history, music, theatre, literature and more, supplemented by specials or limited run series make listening to the BBC an educational and entertaining pastime.

To stay on top of the broadcasts of the BBC, it is recommended that you subscribe to their monthly program schedule, *London Calling*, a bulletin of programs, times and frequencies. For details of this publication write to the BBC Public Relations Dept., Bush House, P.O. Box 76, London WC2B 4PH, England.

Due to the number of transmitters and various transmitter locations, together with the volume of broadcasts around the clock, it is impossible to give the complete time and frequency schedule here. I will provide you with some of the prime times and frequencies to tune into the BBC World Service in English. The times are in GMT (UTC) and the frequencies are in kilohertz.

17760-2000-2100
17705-1300-1500
15400-1800-2000
15260-1600-1800
15260-2000-2230
15070-1700-2230
12095-1000-0030
11775-1100-1330
11775-1600-1730
11750-1000-1100
9915-2200-0430
9640-0600-0800
9590-2200-0030
9515-0000-0330
9510-0430-0530
9510-1100-1330
9410-0200-0730
7325-2200-0330
6175-2200-0330
5975-2300-0730
5965-1100-1130

SHORTWAVE INFO ON THE HAM BANDS

A ham net has been set up by the Association of North American Radio Clubs (ANARC) to assist the shortwave listeners. The net is operated by Bob KW3F in Pennsylvania and goes under the name of the ANARC SWL Net. It operates every Sunday morning, beginning at 1400 UTC and runs from

one to two hours. There are many check-ins and all radio hobbyists are welcome to tune in and participate. Check-ins usually give a summary of their loggings of stations for the past week and a number of listening tips and information about stations, clubs and publications are supplied to the participants.

Another net is run at the same hour by the Ontario DX Association (ODXA), one of Canada's shortwave radio clubs. It is operated by Steve VE3SRE, an ODXA member. The net operates between 7070-7080 kHz or 7150-7160 kHz, depending on conditions. Most check-ins are members of ODXA, but all others are welcomed. Give these two nets a try and let them know that you heard about them right here in *The Canadian Amateur*.

SHORTWAVE RADIO CLUBS

The best way to stay on top of what is going on in the world of shortwave radio monitoring is to become a member of a shortwave radio club. There are three major clubs in Canada, two English and one French. The nationwide English club is the Canadian International DX Club (CIDX). I just happen to be the President of this club. The club is 26 years old and publishes a monthly bulletin, *The Messenger*.

The club covers all aspects of radio monitoring, including AM, FM, shortwave broadcasts and utilities. We also have feature columns devoted to programming, QSLing, technical topics and station schedules. We also run two columns devoted to ham radio. The 5n9 column is devoted to members' loggings of ham stations. The Ham and DX Tips column gives details of upcoming rare stations or DXpeditions taking place. We also have a computer column, a radio stamps column and a unique column called Arctic DX. For an information sheet about the club and a sample bulletin, please forward \$2 to my address above.

The other English Canadian club is the Ontario DX Association (ODXA). This is classified as a regional club, with the majority of its membership being based in the province of Ontario. Membership is open to radio hobbyists outside of Ontario as well. ODXA publishes a monthly bulletin, *DX Ontario*. Their bulletin covers mainly shortwave and utilities. They do not have any domestic AM or FM coverage, but they do have an international medium wave column. There is no ham coverage in this club at this time.

ODXA has a membership over 800

Continued on next page ▶

NYBLES AND BITS

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The questionnaires of the May issue are slowly starting to come in. If you did not send me one, please fill one in and send it to me. So far, I am very surprised at the results: 50% of the respondents own PC clones, 40% Radio Shack machines and *only* 10% own C64 and other Commodore machines. If this trend continues, my articles will concentrate on PCs, so please make sure you are represented.

WATCH THOSE NUMBERS!

Wow! Was I embarrassed! Just as the column had its debut, I noticed in the same issue that I had made an unforgivable mistake in calculating my Canada Contest score. When I saw the printed results I noticed that my score seemed to be a trifle low in comparison to other contestants that had made fewer contacts and had worked fewer multipliers than I did. I had made 154 QSOs and 45 multipliers; why was my score so low? A quick check with my *calculator* showed me that 2,172 points multiplied by the 45 multipliers was certainly not 32,204 but should have been 97,740 placing me second in the all-band mixed category and first in

Ontario for this category. Why had the *computer* made a mistake in the calculation?

I looked at my program, written in Pascal, but noticed no error. The calculations were indeed correct; what then was the matter? This is the type of frustrating situation that computer professionals find themselves in every day. After about ten minutes of soul searching, I realized that my mistake was an unforgivable one about which I warn all of my computer students at the university: when dealing with numbers on a computer you must watch the size, representation and storage capacity of the numbers that you are dealing with.

What does this mean? Let me try to explain. Each number in a computer is stored in a small box in memory called a *word*. This box has a finite capacity, usually 16 bits for a microcomputer. Each of the bits can be on or off. Hence at most, from 16 bits we can get 65,536 combinations. This means that the largest number that you can store is 65,536 (2^{16} for the more mathematical readers). What happens if we add one to this? The answer would be 0 because

you would have exceeded the size of the box and everything would restart at zero.

So let us see how the machine calculated my score: it got to 65,536 and since this number was exceeded it went back to 0 and kept going on to 32,204. My true score was $65,536 + 32,204 = 97,740$ —the correct answer! I should have realized this before sending in my results!

How can you correct and guard against such problems? In several ways. First, you must always keep track of the size of the numbers you are using. Be conscious of their relative size and try to avoid using large and small numbers in the same calculation. Secondly, you have to watch the representation. In my program I used an *integer* representation, which means that whole numbers are kept track of *accurately* for as long as the numbers are small, i.e. less than 65,536 (this number will vary on different machines).

If you are going to use larger numbers, then you have to use a real representation which is slower and loses accuracy. This accuracy loss may be insignificant for most calculations but can be very important in certain circumstances.

Let me give you an example of what I mean. If you were the president of a large company you may talk in terms of millions of dollars here and there. You are not really interested in dollars and cents. If you build a 25 million dollar complex you don't really care if the final accurate amount is 25,000,102.34; for all intents and purposes you can ignore the \$102.34. However, if you were the president of CARF dealing with dollar and cents issues, you had better watch all of your pennies.

Let us put together a short program to investigate this issue on your own computer. Try running the program in Fig. 1.

In the program I introduced a new concept: *looping*. Looping is a technique by which a program repeats an operation over and over again until a

Figure 1— Computer Accuracy Test

```
10 REM PROGRAM TO TEST COMPUTER ACCURACY
20 REM
30 P = 1
40 FOR I = 1 TO 25
50     P = P * 2
60     PRINT P
70 NEXT I
80 END
```

LISTENING (cont'd)

and was founded in 1974. They publish a high-quality bulletin with usually over 80 pages each month. You can obtain a sample copy of their bulletin together with subscription information for \$2 from ODXA Membership Secretary, P.O. Box 232, Station Z, Toronto, Ont. M5N 2Z4.

The French language club is Club Ondes Courtes du Quebec (COCQ). Their bulletin, *L'Onde*, covers all types of broadcasting including ham coverage. You can write for information about the club and a sample bulletin. Their address is COCQ, 160 Prieur St. W., Montreal Que. H3L 1R5.

It should be pointed out that both CIDX and ODXA now have their bulletins available on cassette subscription basis for those hobbyists who may be visually handicapped.

Please contact the clubs for further information on these special services. The shortwave radio clubs are the best way to stay on top of what is happening in the world of radio monitoring.

These clubs also carry various shortwave publications available at special prices to members. Clubs and their bulletins are useful in helping you to find those stations or services which you may be looking for. They can also help in reviewing equipment or supplying you with technical projects designed to help improve reception. The directors and editors of these clubs are well-experienced in the hobby of shortwave monitoring and they are willing and able to assist you with any questions you may have about the hobby. Best of all, the clubs will put you into contact with hundreds of other people who have a common interest in the world of radio monitoring. ■

Fig. 2— The results of the program

```
2
4
8
etc
4194304
8388608
1.677722E+07
3.355443E+07
```


THE PROGRAM

The program may be run on a C64 as it stands with the exception of line 1420— DO NOT enter this line. IBM users only need to make two simple changes to the program. Do not enter line 1100 and change all PRINT# 4, statements to LPRINT.

Lines followed by Explanation:

1000-1090— Opening remarks for the

program. You may ignore these if you wish. Make sure your printer is set for IBM Graphic/Proprinter mode. See last month's column.

1100— This is only used by C64 users. It gets the printer ready for printing.

1120— This sets the printer for expanded print. This is used for your call at the top of the page.

1140— Use your own call in place of VE3NXQ

1160— Stop expanded print.

1170-1220— Some of the special form outline characters that are used; HL = horizontal line; VL = vertical line; DT = downward T; UT = upward T; CR = cross. 1230-1350— These lines produce the two boxes for the month and year.

1380— We next change to Elite print to get 95 characters across the page. Replace this line with the specific one for your printer.

1420— Remove this line unless you are using an IBM or compatible machine.

1430-1520— Draw the top line of the form. Note that the various for loops give you the size of each heading. You may change these to suit your needs. However if you change them you must change all subsequent entries for this heading.

1530-1640— The title lines at the top of the form.

1650-1730— The last line of the form header.

1740— This loop determines how many lines our form will have. It will have 25# 2 i.e. 27 lines per page. You can make this smaller if you wish. For example if you want 25 lines per page then use 23 here instead of 25.

1750-1890— The code to generate each row in the form.

1900— Ends the loop started in 1740.

1910-1935— The last row of the form.

1940-2040— The last line in the form with all of the upward Ts.

2050— The end of the program.

I hope you find this program useful. If nothing it should save you some money making your own log forms. When you are printing it I suggest that you align the paper as far to the left as possible on your printer. This should give you plenty of room to punch three holes on the left of each sheet and place the sheets in a three-ring binder.

Those of you who really want to economize can print about 20 sheets then carefully remove the paper from your printer, turn it around and print another 20 on the back of the first.

Please let me know if you run into any problems. I would especially like to hear from those of you who may have unpopular printers. What codes did you have to use to make the program work?

NEXT MONTH

Next month we shall feature a special article on Bulletin Boards by Michael Hill VE3OYM. If any of you want to write an article on a topic that interests you, please do so. I more than welcome such articles. Those of you who have been writing to me about specific problems will all be answered publicly in some future article. Please be patient. Sorry but I cannot answer each person individually. To those who have not already done so, please send in the questionnaire in the May 1988 issue— a photocopy or equivalent will do fine. Thanks.

```

1360 REM Set for Elite print - check your printer manual
1370 REM
1380 PRINT# 4, CHR$(27)+"M"
1390 REM Lines 1400 - 1420 are only needed for IBM NOT C64.
1400 REM Set for 95 characters in line - DO NOT enter for C64.
1410 REM
1420 WIDTH "LPT1:",95
1430 PRINT# 4, CHR$(218)+HL$+HL$+HL$+DT$;
1440 FOR I = 1 TO 13 : PRINT# 4, HL$; : NEXT I : PRINT# 4, DT$;
1450 FOR I = 1 TO 10 : PRINT# 4, HL$; : NEXT I : PRINT# 4, DT$;
1460 FOR I = 1 TO 18 : PRINT# 4, HL$; : NEXT I : PRINT# 4, DT$;
1470 FOR I = 1 TO 9 : PRINT# 4, HL$; : NEXT I : PRINT# 4, DT$;
1480 FOR I = 1 TO 6 : PRINT# 4, HL$; : NEXT I : PRINT# 4, DT$;
1490 FOR I = 1 TO 4 : PRINT# 4, HL$; : NEXT I : PRINT# 4, DT$;
1500 FOR I = 1 TO 9 : PRINT# 4, HL$; : NEXT I : PRINT# 4, DT$;
1510 PRINT# 4, HL$+HL$+HL$+DT$;
1520 FOR I = 1 TO 9 : PRINT# 4, HL$; : NEXT I : PRINT# 4, CHR$(191)
1530 PRINT# 4, VL$+" "+VL$;
1540 FOR I = 1 TO 13 : PRINT# 4, " "; : NEXT I : PRINT# 4, VL$;
1550 FOR I = 1 TO 10 : PRINT# 4, " "; : NEXT I : PRINT# 4, VL$;
1560 FOR I = 1 TO 18 : PRINT# 4, " "; : NEXT I : PRINT# 4, VL$;
1570 FOR I = 1 TO 9 : PRINT# 4, " "; : NEXT I : PRINT# 4, VL$;
1580 FOR I = 1 TO 6 : PRINT# 4, " "; : NEXT I : PRINT# 4, VL$;
1590 FOR I = 1 TO 4 : PRINT# 4, " "; : NEXT I : PRINT# 4, VL$;
1600 PRINT# 4, " Signal "+VL$+"QSL"+VL$+" "+VL$
1610 PRINT# 4, VL$+"Day"+VL$+" Call Sign "+VL$+" Name ";
1620 PRINT# 4, VL$+" Location/Country "+VL$+"Frequency"+VL$;
1630 PRINT# 4, " Time "+VL$+"Mode"+VL$+"Sent/Rcvd"+VL$;
1640 PRINT# 4, "S/R"+VL$+" Comment "+VL$
1650 PRINT# 4, CHR$(195)+HL$+HL$+HL$+CR$;
1660 FOR I = 1 TO 13 : PRINT# 4, HL$; : NEXT I : PRINT# 4, CR$;
1670 FOR I = 1 TO 10 : PRINT# 4, HL$; : NEXT I : PRINT# 4, CR$;
1680 FOR I = 1 TO 18 : PRINT# 4, HL$; : NEXT I : PRINT# 4, CR$;
1690 FOR I = 1 TO 9 : PRINT# 4, HL$; : NEXT I : PRINT# 4, CR$;
1700 FOR I = 1 TO 6 : PRINT# 4, HL$; : NEXT I
1710 PRINT# 4, CR$+HL$+HL$+HL$+HL$+CR$+HL$+HL$+HL$+HL$+CHR$(194);
1720 PRINT# 4, HL$+HL$+HL$+HL$+CR$+HL$+CHR$(194)+HL$+CR$;
1730 FOR I = 1 TO 9 : PRINT# 4, HL$; : NEXT I : PRINT# 4, CHR$(180)
1740 FOR J = 1 TO 25
1750 PRINT# 4, VL$+" "+VL$+" "+VL$+" ";
1760 PRINT# 4, VL$+" "+VL$+" "+VL$+" "+VL$;
1770 PRINT# 4, " "+VL$+" "+VL$+" "+VL$+" "+VL$;
1780 PRINT# 4, " "+VL$+" "+VL$+" "+VL$
1790 PRINT# 4, CHR$(195)+HL$+HL$+HL$+CR$;
1800 FOR I = 1 TO 13 : PRINT# 4, HL$; : NEXT I : PRINT# 4, CR$;
1810 FOR I = 1 TO 10 : PRINT# 4, HL$; : NEXT I : PRINT# 4, CR$;
1820 FOR I = 1 TO 18 : PRINT# 4, HL$; : NEXT I : PRINT# 4, CR$;
1830 FOR I = 1 TO 9 : PRINT# 4, HL$; : NEXT I : PRINT# 4, CR$;
1840 FOR I = 1 TO 6 : PRINT# 4, HL$; : NEXT I : PRINT# 4, CR$;
1850 FOR K = 1 TO 3
1860 FOR I = 1 TO 4 : PRINT# 4, HL$; : NEXT I : PRINT# 4, CR$;
1870 NEXT K
1880 PRINT# 4, HL$+CR$+HL$+CR$;
1890 FOR I = 1 TO 9 : PRINT# 4, HL$; : NEXT I : PRINT# 4, CHR$(180)
1900 NEXT J
1910 PRINT# 4, VL$+" "+VL$+" "+VL$+" "+VL$;
1920 PRINT# 4, " "+VL$+" "+VL$+" "+VL$+" "+VL$;
1930 PRINT# 4, " "+VL$+" "+VL$+" "+VL$+" "+VL$;
1935 PRINT# 4, " "+VL$
1940 PRINT# 4, CHR$(192)+HL$+HL$+HL$+UT$;
1950 FOR I = 1 TO 13 : PRINT# 4, HL$; : NEXT I : PRINT# 4, UT$;
1960 FOR I = 1 TO 10 : PRINT# 4, HL$; : NEXT I : PRINT# 4, UT$;
1970 FOR I = 1 TO 18 : PRINT# 4, HL$; : NEXT I : PRINT# 4, UT$;
1980 FOR I = 1 TO 9 : PRINT# 4, HL$; : NEXT I : PRINT# 4, UT$;
1990 FOR I = 1 TO 6 : PRINT# 4, HL$; : NEXT I : PRINT# 4, UT$;
2000 FOR K = 1 TO 3
2010 FOR I = 1 TO 4 : PRINT# 4, HL$; : NEXT I : PRINT# 4, UT$;
2020 NEXT K
2030 PRINT# 4, HL$+UT$+HL$+UT$;
2040 FOR I = 1 TO 9 : PRINT# 4, HL$; : NEXT I : PRINT# 4, CHR$(217)
2050 END
    
```

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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.

Have you ever wondered how a major metropolitan area should organize its emergency communications? Metro Toronto has an area of 820 square kilometres and 2.5 million people. It has about 20 VHF and 15 UHF Amateur repeaters serving it and its immediate surroundings. There are about 2500 Amateurs in the area. There are four fire departments, one Metro police force, one Metro ambulance service and ten Amateur radio clubs. The ARES Emergency Co-ordinator for this area is Gord Fraser VE3HSF. We asked him for a run-down on his setup and his problem areas. Here is his report:

How does an EC educate a large and diverse population of community professionals in the services that can be offered by ARES? It took lots of work to find out who is really running things from an emergency point of view in Metro. It took the establishment of an ARES monthly newsletter called *Update* which is sent to all of our ARES members. *Update* is also sent to community professionals such as police, ambulance and fire in Metro Toronto, so that they can become aware of our organization and its capabilities.

It took the creation of a Missions Manual which outlines each communication mission that Metro ARES can carry out. It will require another manual yet to come, the Operations Manual, which will outline all of the operations requirements for everything to fit together.

What follows is a snapshot of the status of our ARES group in its drive to get accreditation and a place in the official Emergency Plan for the Municipality of Metropolitan Toronto.

Each mission in the ARES Missions manual is defined under the following headings: Definition, Duties, Critical Tasks, Equipment, Skills, Miscellaneous Information, Network Diagram

The missions that have been defined to date are as follows:

- **BASE** - establish and maintain a 25-watt voice link into an ARES serviced site.
- **PORTABLE** - establish and maintain a portable radio station.
- **MOBILE** - establish and maintain a mobile radio station in a designated vehicle.
- **DATA** - establish and maintain a packet data node at an ARES serviced site.
- **NTS** - provide the interface between the BASE or DATA network and the National Traffic System. Access can be by either phone or CW. This mission can be carried out at an Amateur's home station.
- **AMTOR** - provide the interface between the packet data network and an HF AMTOR link between Toronto and the rest of the country.
- **HF CONTROL** - provide net control for the HF phone network set up to handle voice and data traffic for outside the Metro area. This mission can be carried out at an Amateur's home station.
- **SITE MANAGER** - responsible for the management of all ARES activities at an ARES serviced site.
- **NETWORK MANAGER** - the top ARES management official on duty. He is responsible for the establishment, operation and maintenance of all networks in use at the time. He is also responsible for the interface between ARES Toronto and the management of the agencies to which ARES is providing communication services.

Other missions that are being planned but are not yet in the Missions Manual are:

- **DUPLEX** - provide a portable full duplex voice repeater to be stationed at a location specified by ARES.
- **VIDEO** - provide a video link from a remote site into a video duplex repeater.
- **SATELLITE LINK** - provide a duplex link via Amateur satellites for voice and data traffic to other parts of the country and the world.

At present Metro ARES is not part of the official Emergency Plan for Metro Toronto. That means that if there is an emergency declared by the Municipality, ARES will not receive a call from anyone. ARES will, however, be called if the Red Cross is called out and they need our assistance.

According to Metro Bylaw 52-84, an emergency is defined as "...a situation caused by the forces of nature, an accident, an intentional act or otherwise that constitutes a danger of major proportions to life or property."

In practice, the police are the ones who direct the emergency response in Metro. *At this time, unless we get involved via Red Cross, we cannot conduct our own*

emergency response in Metro Toronto. In fact, the Bylaw prohibits any emergency operations except those that are conducted by the municipality. The police are quite impressed with our capabilities, but they do have several very pertinent questions about us. These are:

Command Structure. Can the members of ARES take orders? Ask yourself— if you are told to do something but you think you know what *really* needs to be done— will you do what you are told or will you ignore the command and do what you want to do? Can you obey orders from someone you dislike or someone who belongs to a rival radio club?

Membership Size. We have about 52 ARES members out of a possible 2500 or so Amateurs in Metro Toronto. This suggests that emergency work is not very high on the priority list of the average ham. It may also suggest that the work that ARES can do is not well-known by the average Amateur (the average Metro Amateur does not belong to any radio club). To be effective, we must have a membership of around 300. The police have real questions about our capability because of our small manpower resources.

ID Cards. The police are pleased with our photo ID cards. They will ensure that the card is registered and that officers know about them and recognize them if and when ARES is recognized as an official emergency community resource.

Proper Training. The police indicated that our Missions Manual will enable them to effectively integrate our manpower and skills into their overall organization. They told me that "ARES members familiar with their operation plan would be clearly more valuable to them than would just any Amateur offering assistance."

Gone are the days when a group of Amateurs can get together and deal with an emergency, flying by the seat of their pants, making ad hoc plans to deal with each problem as it arises. Here in Metro Toronto, only properly trained, accredited and indoctrinated Amateurs will be of value during an emergency or an exercise. Other Amateurs offering their services will be turned away. Without their ID card they cannot go anywhere, without training they cannot know what is required of them, and without indoctrination they cannot understand what is going on.

If you would like a copy of the Missions Manual for your own ARES or club library, send \$5 to cover printing and mailing to Metro Toronto ARES, Box 234, Postal Station R, Toronto, Ont. M4G 3Z9. ■

USER REPORT— ICOM 761

BY MOE LYNN VE6BLY

My HF All-Band Transceiver (SSB-CW-RTTY-AM-FM) came as almost a complete surprise. When I arrived home from the hospital it was sitting on the desk among a few homebuilt gadgets. My wife had ordered it through a TCA advertiser just before Christmas, without delivery guarantee. The same dealer had originally installed an ICOM R71A in my first hospital room, which contributed more than a little towards my being out of bed in nine days.

I do not wish to forget Jack VE6BOX, who kindly checked in to a few nets each night after getting me on the land-line, as well as my many other visitors and callers. Then, to have 'A New Era Dawn' on my homecoming was another big boost in morale and contributed to a more rapid recovery. The most pleasure so far has been derived from the very efficient QSK system, in traffic handling especially, which works up to 60 wpm.

QSOing with others, Al VE6AXW for example, who uses his own QSK design, offers another distinct advantage and is quite enjoyable. It was tested against users of 'other' equipment, who usually claim theirs is the best, and performed admirably. Another plus, and maybe the most amazing, in the notch filter with 45 dB notch attenuation, worthwhile in itself for you to take the 761 in hand for a spin.

32 memories has got to be another plus, even if it just speeds up switching between traffic nets when you are trying to keep track of 50-60 nets per week plus CHU and WWV. It may also be a DXer's delight when it comes to jumping around on one band or more. My habit is to switch out the built-in Automatic Antenna Tuner during any amount of band or memory changes simply to keep it from hunting. This may be an old-fashioned idea applied to modern solid state equipment but still could prevent unnecessary maintenance in the future.

Another personal preference is that of keying the transmitter briefly at the recommended 15 W setting with the tuner off, then engage the tuner at the same output and allowing it to arrive at a 1:1 match or near thereto. All this can be done while calling your distant station, QNIing, CQing or any other manoeuvre including, but not recommended, 'laying on the key'!

Filter specifications are impressive and would take up another two pages just to describe and list them in chart form (which ICOM has already done in the latest brochure). Suffice it to say all filters work in conjunction with the

passband tuning and IF shift except in AM and FM modes. On CW filter OUT, the standard bandwidth is 2.4 kHz and filter IN it is 500 Hz, entirely adequate when coupled with the filter between my ears for traffic or DXing...

ICOM has graciously installed compensating capacitors under a top hatch cover which allows you to 'preset' each band in RTTY mode for your particular antenna while observing the meter readings. The Auto-Tuner still has to be the answer to quick frequency changes and allowing operation in any part of the band, using my GSRV for example. It is not in the circuit when you chose General coverage SWL or some easy listening on the broadcast band tuned to CBW or an out-of-town station.

Too bad it will not fit in the console of our motorhome in place of the IC745, but we should not look a gift horse in the mouth at this stage. After all this, Lois still asked, "Why didn't we wait for the 781?" when she saw a full size picture in a recent Amateur radio magazine.

The 761 has a newly designed SWR meter and protection circuit which is calibration-free and operates in SSB mode. The protection circuit monitors SWR, temperature and current of the finals. A built-in temperature detector cuts in a high performance cooling fan that has four separate speeds. This cooling system permits 100% duty cycle in CW and RTTY operations not only for the power amplifiers but also bandpass filters. It has yet to be heard running at any speed in the last five months.

This old dog has to learn some new tricks again because ICOM has included a built-in electronic keyer controlled from the front panel. It means you can have your favourite semi-automatic key (mine is a vintage 1930s Vibroplex), hand held (sparkless WW II), and homebuilt CMOS keyer plugged in along with the paddles.

The new trick not only involves learning how these things operate but also their construction.

One keyer follows no particular pattern but is somewhat iambic, the other is a touch paddle style and both use RCA phono plugs (do you recall seeing the idea in *The Canadian Amateur* some time ago?). Well, the IC-761 calls for two different standard earphone plugs: one is stereo if you want to use paddles and the other is mono for straight key or bug. Being of Scots descent and not adverse to experimenting, I chose the stereo plug and wired it to the homebrew paddles. Then, by wiring an RCA phono jack such that you access the straight key

contacts, everything works just by pressing one button on the 761 front panel.

ELEC-KEY switch engaged will give you dots and dashes on the paddle and dots only on the other keys plugged into the RCA jack. Disengage the built-in keyer and you can sideswipe the paddles on the dot side as well as send continuous dashes, (but who would do that when it denotes the international safety signal?) or you have normal access to the bug, key and any others you have in parallel.

Press another button to disengage the VOX and you can listen to yourself or send along with someone on the air. Also, with the VOX off and ELECT-KEY 'ON' you can practice with the paddles. Don't forget too, there is a control on the front panel for your Monitor Gain, and there are Marker, Calibrator, VOX Gain and Anti-Vox controls. The main dials has a lock with a panel lamp that glows red when engaged, just in case you get over-anxious and bump the dial while copying traffic.

A red light also indicates Transmit, a green light indicates Receive and the Function selector glows with an amber hue. The latter is engaged if selecting Reverse of LSB, CW or RTTY Narrow filters and FM. A Speech button is included for use when you subscribe to that particular option but ICOM Canada did not include prices when they sent me a copy of the Voice Synthesizer Unit instruction manual for evaluation. The same applies to the other options such as the Satellite Interface Unit, Communication Interface System, and CI-V Level Converter, the latter of which is used to convert signals from any RS-232C level to ICOM and vice versa.

The key pad that you see in most pictures is used for setting up your memory bank, which is then switched using the knob in the lower right hand corner. Beside it is the RIT/XIT offsetting knob. The selection is memorized unless you return the knob to zero before disengaging the offset switch. Clear will wipe out either offset or transfer the RIT offset to your main frequency display when pushed after using the Func button. Write buttons are beside this Clear button and afford access for writing to the memory or VFO which becomes a bit complicated unless one reads the book with the icons.

Following up the right side are two more knobs, Notch on the right then PBT/IF Shift on the left with more buttons above to select IF Shift, Filter, Notch, Scan, Mode Scan, and Ham or

Gene coverage. The window above the dial displays frequency, RIT and XIT in LCD soft white, Memo and other functions are red LED.

One thing lacking here is a dimmer control for both the readout and meter lights. Above the keypad are five more pushbuttons reading left to right, TS 'on' (displays a green light on the push-button) for tuning speed increase to 1 kHz, A = B which equalizes both VFOs, Split permits simplex operation when the button is out and duplex on separate frequencies when engaged. Next is the VFO A/B for selecting either A or BVFO and last is the VFO/Memo button allowing you to exit memory and go to your separate VFOs. Band change Down and Up buttons are below the keypad and select Amateur bands unless you see Gene in the frequency display panel in which case the changes are then in 1 MHz steps. Mode switches as mentioned earlier, lie to the left of the tuning knob and in descending order are SSB, CW, RTTY, AM.

The Power switch is located top left on the front panel and next to it is the Tuner, green light for engaged and red for Wait, while it tries to find the lowest SWR. A Transmit-Receive switch is provided for those who never will get accustomed to VOX. Alongside of which is the proverbial speech

MANITOULIN ARC

The National Director of the New Horizons Program has just announced funding of \$13,500 for the Manitoulin Amateur Radio Club by Health and Welfare (Canada).

This club, a Senior Citizens endeavour, was started in February, 1988, to develop a 2 metre Amateur radio repeater link for Senior Citizens who are interested in Amateur radio in the Manitoulin and North Shore areas.

Communications Canada has issued licences for a repeater unit at Little Current on frequency 147.880 down 6.00 kHz and identifier VE3RMI as well as another repeater at Elliott Lake on frequency 147.000 up 6.00 kHz and identifier VE3TOP.

The approved funding will be used for the purchase of repeater radio units and necessary antennas and auxiliary equipment.

Since early in March, the Club has been conducting classes in Morse Code and Radio Theory at Mindemoya Public School for Seniors and other Club members who are interested in preparing for the qualifying examinations required by Communications Canada for Amateur radio licencing.

C.M. Smith VE3CHS
President

Compressor on/off, Monitor on/off and Tuner on/off. You then have a choice of AGC off, fast or slow and a meter switch alongside that for SWR, Power Out, ALC, Compressor, Collector Current and Voltage.

There are two noise blankers, first being NB to take care of pulse noise such as automobile ignition used in conjunction with the NB Level control. Blanking time is taken care of with the NB Wide button and when engaged it will do wonders with OTH pulses normally referred to as the 'woodpecker'. Some distortion of the signal is observed when the Level control is fully clockwise and the only remedy is to reduce the level or set the NB WIDE switch in the normal or 'out' position.

The Electronic Keyer Speed and selector button are located in proximity to one another, so this should be self-explanatory. VOX Delay is last in this row, but suffice it to say it is there and likely too late for me to explain it as being a voice operated relay, judging from the amount of doubling that one hears on the air. Besides, my microphone was misplaced a long time ago: a rather important item when utilizing the VOX effectively although not necessary on a QSK rig to CW. The button to select Full BK-IN is next to the VOX on/off selector button and again is self-explanatory.

The last row of prominent knobs on the left side of the front panel read from left to right after the earphone jack, ATT which is the attenuator/preamp selector with centre off. PRE appears to provide at least two S-units of gain and the 20 dB position seems to do just that but disengages the S metre! Next is the receiver AF Gain and RF Gain, then the Squelch and Tone. Last but not least is Mic Gain and RF Power which is just that: we reduce it from full 100 watts output to whatever level is necessary to maintain communications. Unless, of course, you are someone who enjoys a little Quaint Relaxing Pleasure, we then turn it full off, which the book says is 11 watts. We all know our antenna feeders, joints or connections allow for a considerable loss so we are very likely putting about five watts into the ether.

You can dig inside, taking both top and bottom covers off to change the output power switch from high to low. My thoughts are to ask the dealer to bring this switch out through the accessory plugs while the warranty is still effective or do it myself afterwards. Then measurements could be taken to establish low/high power levels in both positions.

ICOM 761 'warm-up drift' is kept to plus or minus 100 Hz at -10 to +60°C by incorporating a temperature-compensating oven heater for the built-in high stability crystal unit. In order to test the built-in Electronic Keyer it was

necessary to assemble a set of paddles. This was done using war surplus silver contacts that were replacement parts for relays in days of yore. Anyone interested in a set needs only send a SASE with a request for one pair of contacts from a remaining stock of ten pairs.

Another paddle was thrown together that utilizes touch paddles mounted flat side by side about half an inch off the desk. It, too, uses the same style silver contacts with magnets in place of return springs. After about ten minutes of practise, my call materialized in the monitor for some reason.

Needless to say, both units tested the IC-761 built-in keyer to the satisfaction of those stations worked on RN7 and other nets. No electronic measurements were taken, for it seems about this time the set decided to pack up insofar as CW was concerned. Some other malfunction was beginning to rear its ugly head and the conclusion was drawn by my local dealer that it should be returned to ICOM Canada once again. Trouble was being experienced while trying to tune up the Butterfly HF4B without using the internal built-in automatic Antenna Tuner. When resorting to the IC-745, the HF4B performed admirably for the frequency settings it happens to be tuned to for now.

I am not too pleased at this stage and am waiting for ICOM to return it. They may not have returned the original unit as evidence points to the serial number plate having been replaced, dust inside the readout window, scratches and stains on the top cover, original performance much degraded, plus some internal accoutrements left out of place to float around inside the top cover, and the frequency calibrator is still not performing the proper function. No accessory plugs were supplied nor was a microphone included, so in order to test my homebrew packet it was necessary to 'jury rig' the hookup cable for the eight pin accessory socket. I had also wanted to test my WEFAX disk using the same IC-761 but this may now have fallen by the wayside, so back to the IC-745 for that test too!

Since writing this report I have received three back issues of the *ICOM Newsletter* published by International Radio and Computers Inc., 751 South Macedo Blvd., Port St. Lucie, FL. U.S.A. 34983. They also publish newsletters for Kenwood and Yaesu and have an index available: Kenwood 15 pages \$4, ICOM 16 pages \$4, Yaesu 4 pages \$2, or all three for \$7 postpaid U.S.A., Mexico and Canada. Buy one or more indexes and deduct the purchase price from any back issues purchased, offer good for 30 days after receipt of the index. Write them for more information, include your 'green stamp' or order your index and tell them you saw it here first!

PCB's in Dummy Loads and Capacitors

BY VE3OZW

The hysteria created by the news media and some pseudo-environmentalists regarding PCBs has caused many radio Amateurs to become concerned. Many suspect that their dummy load contains a PCB and that the same might be true of some of the W.W.II surplus oil-filled capacitors which many of us have. These are often found on sale at hamfests.

I have discussed the subject with some journalists, but my suggestions fell on stoney ground. I can only conclude that the truth makes a dull story; it is not what they want to write about and perhaps it does not help to sell the newspapers. Correct information is available in most public libraries; it is not contributed by journalists or some environmentalists, but is contained in technical electrical and chemical handbooks. Of course, the terminology in these books is such that some journalists are bound to conclude that it couldn't be anything but dull.

During my working career however, I have relocated many times and found that movers will not accept a number of inflammable or corrosive items for transport for obvious reasons. Included in these are paints, solvents, oils and wet batteries. Because of this, I always had to empty my dummy load and buy some new coolant at the next location. It is not possible to purchase a one gallon container of transformer oil; I always had to buy a 5 gallon pail of it at the new location. I then had to sell or give away the balance after filling my one gallon Heathkit dummy load. Subsequently I was accused by some of the recipients of having sold them PCB. This was because of the improper use of terminology by certain writers, particularly those not capable of discerning the difference between a mineral oil and a PCB!

Now, let's deal with some facts. PCBs in this instance are not Printed Circuit Boards but Poly-Chlorinated Biphenyls. The type most commonly produced in large volume was developed for use in the cooling of large electrical transformers. The purpose of such development was to

create a fireproof liquid coolant to replace a mineral oil called transformer oil. Transformer oil has been around since near the turn of this century and is used in large power and smaller pole-type transformers. Primarily it convects the heat away from the winding and iron core which comes from the I²R losses in the copper and the hysteresis losses in the iron. It also has a high dielectric strength and makes possible closer spacing between turn and windings within the transformer.

The big problem with oil is that it is inflammable and would create a fire hazard in indoor installations. If such transformers are located indoors, the Canadian Electrical Code requires that they be in a tub capable of containing all the oil and be surrounded by a fire resistant vault. Of course all this is very expensive so there was an incentive to come up with a liquid coolant which would not burn and would have all the desirable characteristics of transformer oil.

PCBs of another type had been developed for other purposes in the 1920s, but the quantities required were small when compared with the volume required for transformer coolant. A PCB having the desired insulating and heat transfer characteristics was developed in 1932 but did not reach the market in any significant volume until after WWII. Probably most installations were made during construction of industrial and commercial buildings in the 1960-1972 era. Although transformers cooled with it were considerably more expensive than oil filled types, it was more economical than building a vault.

This product was sold under various trade names, for example. GE called it Pyranol, Westinghouse called it Interteen and many used the generic term of Askarel. The important thing to remember is that it is not an oil. It is a synthetic chemical compound created for a specific purpose.

It was not known at the time that continued exposure at high levels of concentration of PCBs (and many other substances) would produce cancer in rats. When this was

established, an ideal subject for inflammatory journalism was created.

Here is a comparison of two important characteristics of the two liquids:

Trans. oil	Askarel
Specific Gravity	
0.88	1.56
Flash Point (degrees)	
135 C (275 F)	None

The specific gravity indicates that Askarel is almost twice as heavy as oil and is heavier than water. Oil, of course, is lighter than water. This provides a method of finding out what is actually in your dummy load. Put some water in a glass container and take the lid off your dummy load. Dip a piece of wire into it and shake a drop off the wire into the water. If it sinks, it is most likely a PCB. If it flattens out on the surface, it is oil.

The lack of a flash point indicates that it is very difficult to destroy a PCB but it can be converted to a different substance at extremely high temperatures.

Askarel is a strong solvent for some of the varnishes and other materials used for insulation in oil-filled transformers so different materials had to be used for Askarel-filled transformers. This meant that it was not possible to simply drain the oil from an oil-filled unit and substitute Askarel to obtain an indoor transformer. The reverse process is possible but some way to locate the transformer outdoors would then be necessary. There has been mention in the news media of oil contaminated with PCBs. The small number of parts per million found suggests that this may have been caused by the fact that during the early days of its use, the same hoses and pumps were used for both oil and Askarel in many cases. This may have caused some journalists to create a new term 'PCB oil'. There is no such thing.

Askarel for use in capacitors is more viscous than that used for transformers and has a higher dielectric constant. Although Askarel was more expensive than oil, its use produced a

Continued on next page ►

smaller capacitor for the very large units required for power factor correction in industrial and utility applications.

The relatively small oil-filled capacitors used in radio and electronic circuits (0.1 mf to say 10 mf) do not fall under the CSA and NEC code requirements for vaults, etc. They are still made and may be purchased new today. It says 'oil filled' on the case and that means mineral oil. PCBs are now forbidden by law. The cost of Askarel was always higher than that of oil when it was

ELECTRON HOLE THEORY EXPOSED AS FRAUD

Have you been bemused and confused by the electron-hole theory? Do charges, valence bonds, and the 3/2 power law make you nervous? A startling discovery by Mark Persons invalidated all of this claptrap! In a recent issue of *Radio World*, Mark reveals how electronic equipment really works:

"For many years, young electronic technicians have been taught the 'hole' theory of electronics. This theory explains how electrons move along conductors and semiconductors. The explanation has been good enough to satisfy or keep at bay anyone who might otherwise question the theory.

"However, after a number of years working in the broadcasting industry, I have come to realize the 'hole' explanation may not be correct.

"My theory, which has been proven time and again by personal observations, is that electronics works on smoke. Yes, that's right. I recently learned that every manufacturer encapsulates a certain amount of smoke in every piece of electronic equipment he builds. The smoke is what does the work.

"You have probably noticed that a component will quit working when the smoke leaks out. I've documented this many times and it conclusively proves my theory. My theory sure beats that 'hole' theory. I've never seen holes in a wire, and why don't electrons pour out of the end of the wire, if the wire is broken?"

Most electronics users have seen smoke many times, but never seen an electron. This is an important discovery that will likely be celebrated every April.

—Niagara Peninsula Feedline

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permitted to be sold, so small capacitors having no need for code requirements were not filled with Askarel. Likewise, because of cost, Amateurs did not purchase Askarel for use in dummy loads but some may have been sneaked out the back door of some industrial plants or utilities.

Power capacitors are used in industry and by utilities for power factor correction. We use smaller, usually variable capacitors in transmatchers to do exactly the same thing but we call it cancelling out inductive reactance or impedance matching. Power capacitors at 60 Hz and on 600 volts would consist of three banks, each of 74 mfd, rated for 600 volts AC and connected in a three phase wye connection. Such capacitors are often

100 KVA and more in industrial applications and even larger at higher voltages in utility applications. You can see why the fire hazard develops if such large capacitors are installed indoors and use oil as a dielectric.

If you want some transformer oil for your dummy load, Imperial Oil and probably others have it in 20 litre pails. Imperial oil call their's 'Voltesso 35'. Have a talk with someone in the sales department at a main distribution terminal. They will tell you that their product is pure mineral oil and does not contain any PCBs. Some may tell you that they have given up on trying to educate the news media. ■

— Feedline

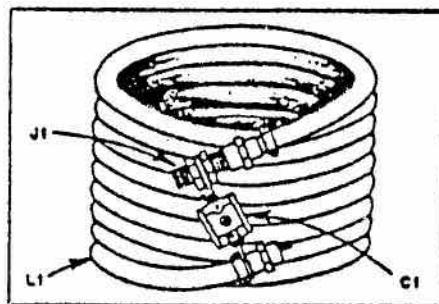
Another TVI solution

Often cable TV can present some difficult problems of TVI. The following idea can often solve hard to cure cases. The cable can act as a parasitic conductor. To eliminate the interference, the conductor has to be broken.

A coil consisting of 2.4 metres of 75 ohm coax formed into 9 turns as shown in the diagram is formed and secured with PVC tape. A 150 pF trimmer capacitor is connected between the shield on either end of the coil. Both ends of the coil must be terminated in F type connectors.

The completed device is a resonant circuit and is tuned by the variable capacitor. When connected in the TV transmission line, it displays a high impedance on the outer surface of the coax which reduces parasitically induced currents.

If no other solutions solve your TVI problems, this might prove to be the answer. ■



The Compact Breaker Loop Assembly. C1— 150 pf ceramic trimmer (Radio Shack 272-805), J1— F-81 bushing (RS 278-213), L1— 8' 75 ohm coax with F-59 connector each end.

Electric Eels

The wonders of nature never cease to amaze. Consider the electric eel. The electric eel has a voltage gradient between its tail and its head. The eel's peak voltage is at its head. Touch it farther back and the voltage is gradually reduced. When looking for food, electric eels like to sneak up on their prey from behind to get maximum stunning power from their head.

Electric eels have one electrical system for navigation and one for attack/defence. With the attack switch on they produce up to 650 volts at one ampere. In the navigation mode they emit pulses at a rate of 1 to 5 per second.

There are three pairs of organs

covering 4/5 of the eel's body which contribute to its natural bioelectricity. One pair of organs is used to vary the pulse repetition rate in order to better define the location of objects entering the electric field.

Electric eels need to stun their prey because they are breathers and a wriggling morsel could well interfere with needed air.

Now what enterprising Amateur will take a couple of these fellas along on field day and claim his power is one kW from two eels in a bathtub?

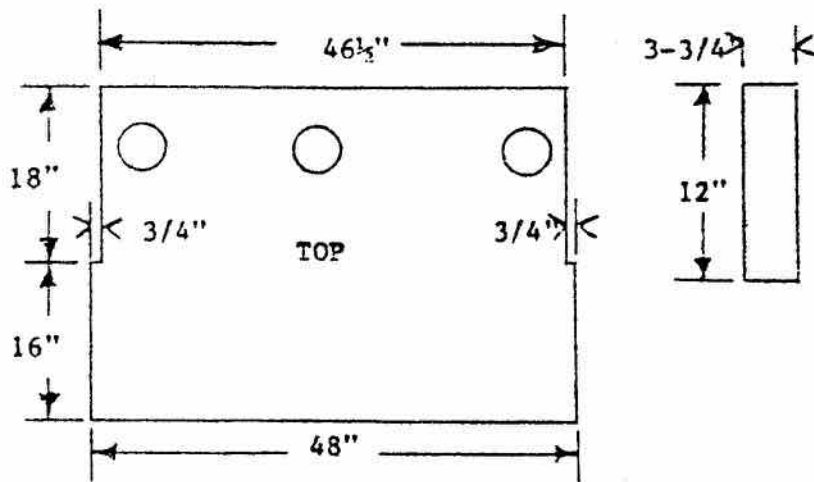
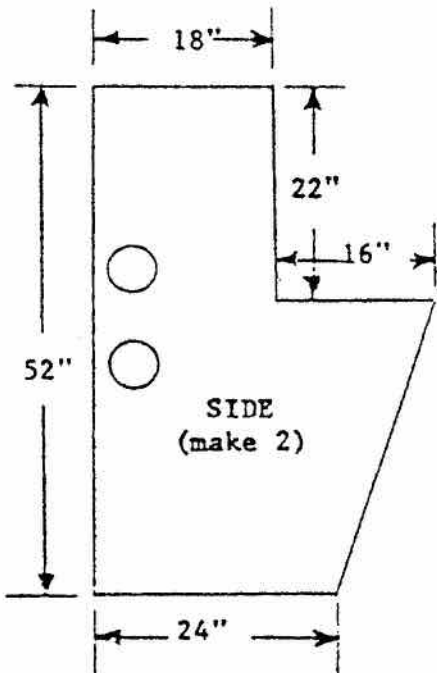
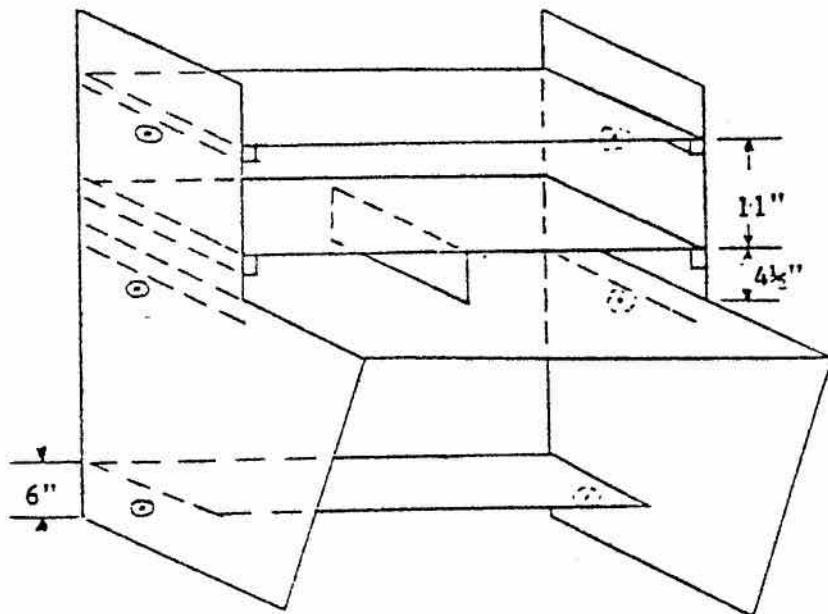
(The above information was excerpted from *Tekweek*, an internal house organ of Tektronix Inc.)

— Ralph Cameron VE3BBM ■

Operating Position

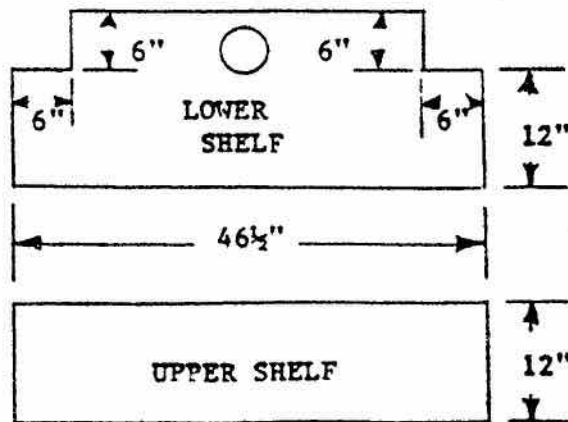
BY FRANK VE7AFJ

Made from two pieces of 4x8 3/4" plywood. It is for portable use, but can be glued or screwed together for permanent stations.



NOTES

1. Secure with wire & turnbuckles at ⊙
2. Access holes 2" to 4".
3. Bottom shelf 2 x 12"
4. All sections except bottom shelf 3/4" plywood.
5. Cover top of table with formica.



TX-- Update

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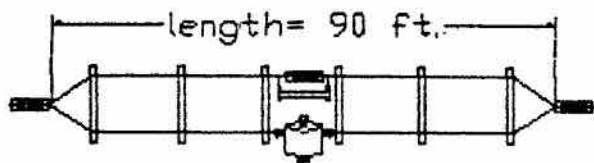
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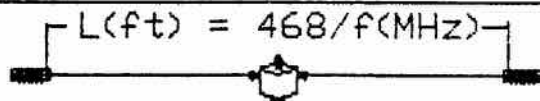
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Our November items include: Floor model light table, plate glass top 22x28, fluorescent lights, NuArc Model VL 723F \$95.00; Simpson 10KV probes, Model 0161 for use with Simpson VOM Models 255,260, 270, 261 and similar \$10.00; WW11 tank periscope assembly, contains two large prisms, **not** mirrors, Model M4A1 \$40.00; Here's a bit of history for the collector, large Royal Navy signal flags, excellent condition, approx. 6x7' in various colour combinations, \$40.00; Kearfott vertical gyro units, full of parts for the experimenter, \$30.00; HP oscilloscope Model 140A with plugins 1803A diff DC offset amp., 1801A dual channel vertical amp., and 1821A Time base and delay generator, \$475.00; HP-Boonton RX 250A bridge, .5KHz to 250MHz with coax adapter kit and manual, \$275.00; Boonton RF voltmeters Model 91C and 91CA, either model \$75.00; Northeast Scientific regulated high voltage supply Model RE5020, fully adjustable from 0.5 to 5KV, \$100.00; Enlarger Model Prolab D6 Omega with triple lense turret, 150, 105 and 50mm Schneider Componon lenses, Omegalite D head, standard head, negative holders, aux condenser, main condensers, power focus, 12x14 easel, Simtron colour analyzer, \$680.00; Metal shaper, Rockwell Delta Model 100-183 with motor, work light and speed change pulleys, \$500.00.



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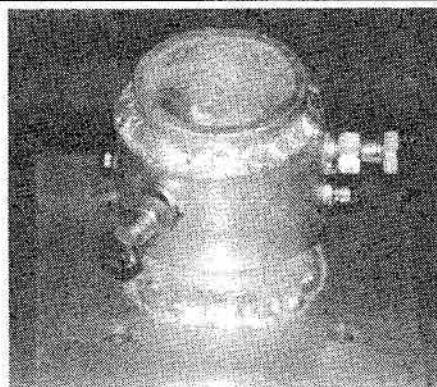
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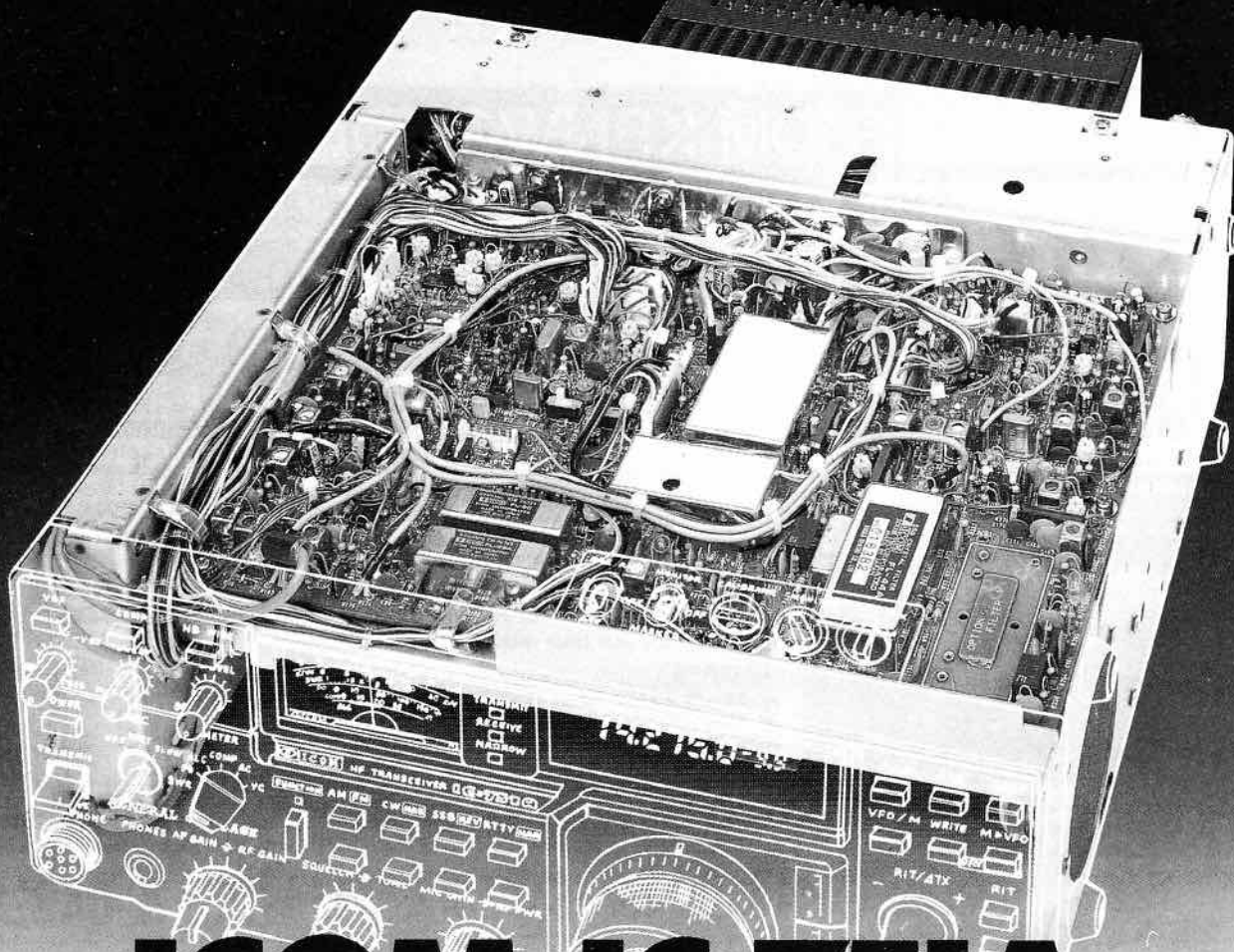
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