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# TCA



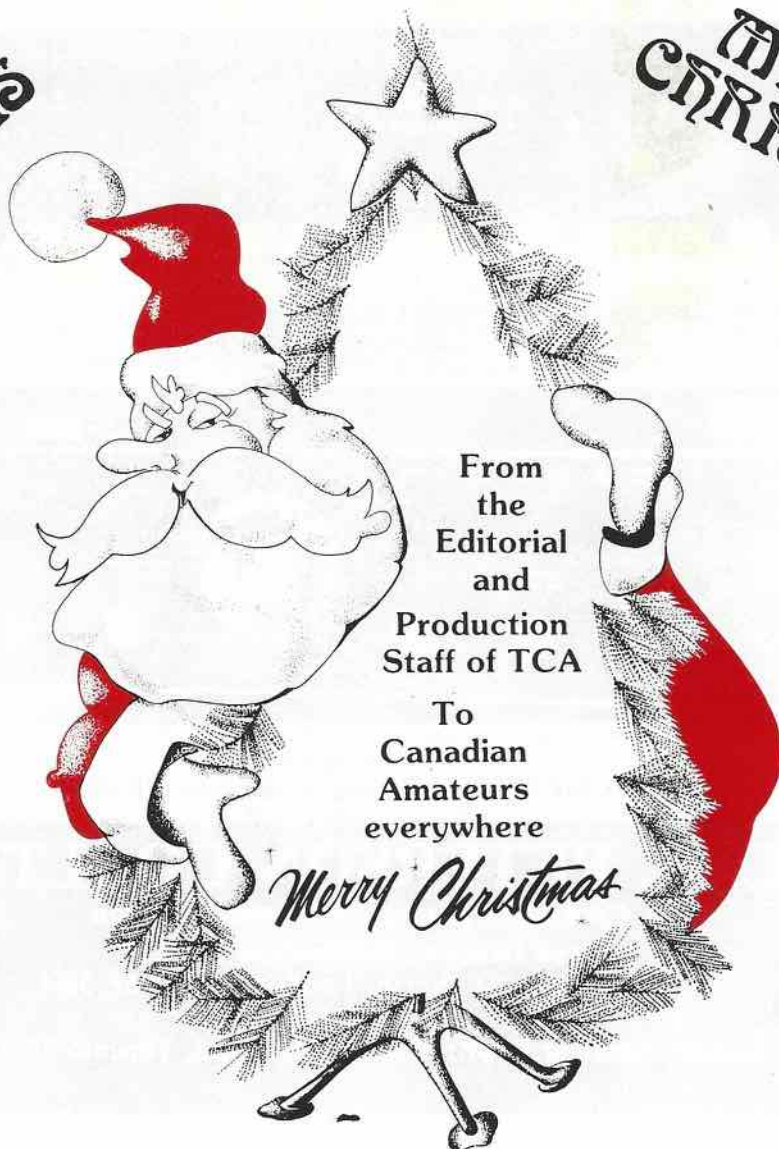
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DECEMBER  
1982

The Canadian Amateur Radio Magazine

**MERRY  
CHRISTMAS**

**MERRY  
CHRISTMAS**



From  
the  
Editorial  
and  
Production  
Staff of TCA  
To  
Canadian  
Amateurs  
everywhere

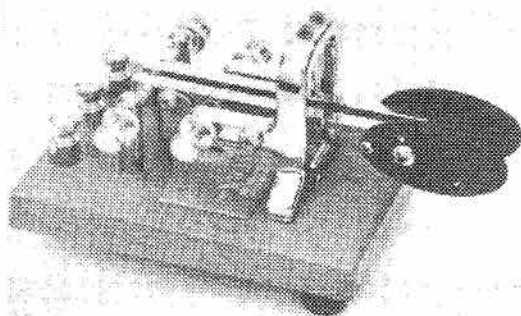
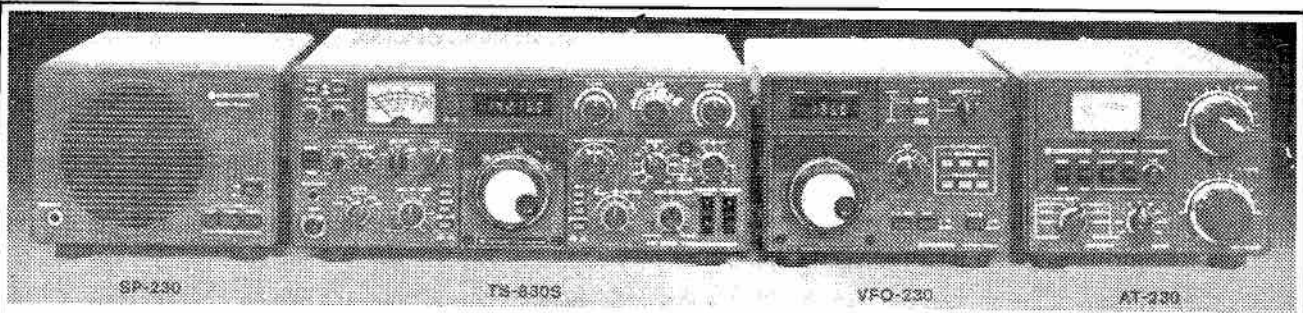
*Merry Christmas*

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YL News and  
Views

**IN THIS ISSUE**

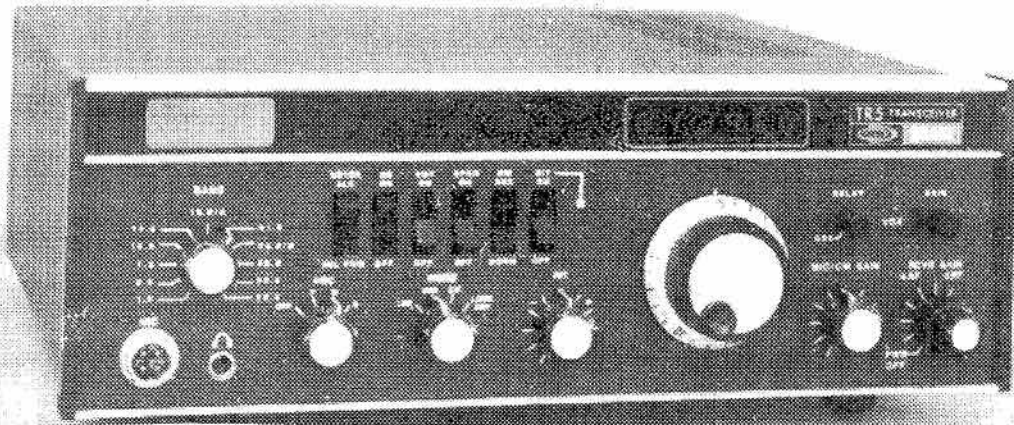
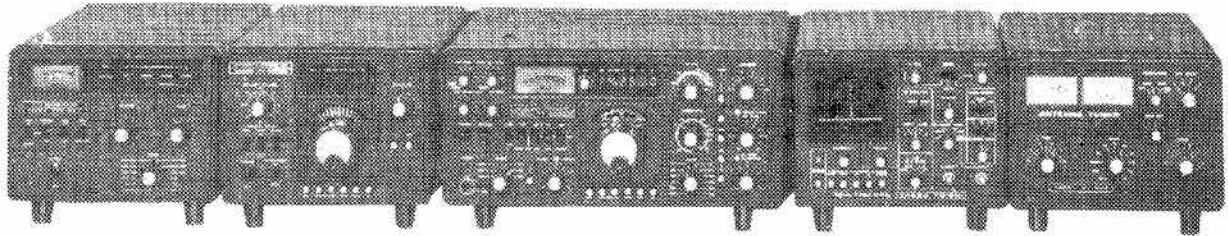
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PRODUCTION AND  
PRINTING BY  
Runge Newspapers Inc.  
Renfrew, Ont.

ISSN 0228-6513



## THE CANADIAN AMATEUR

DECEMBER, 1982 (AUGUST)

Vol. 10 No. 11

**Explanation:** July/August 82 issue appeared as July December. I didn't want to deprive you of August.

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## Next month is TCA's TENTH ANNIVERSARY!

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

Unsolicited articles, reviews, features, criticisms 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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TCA — The Canadian Amateur is published by C.A.R.F. Publications Limited, 370 King St., P.O. Box 356, Kingston, Ontario, Canada K7L 4W2. It is available for \$15 per year or \$1.50 per copy. It is recommended by the Canadian Amateur Radio Federation Inc. and members receive it automatically.

Indexed in the Canadian Periodical Index: ISSN 0228-6513

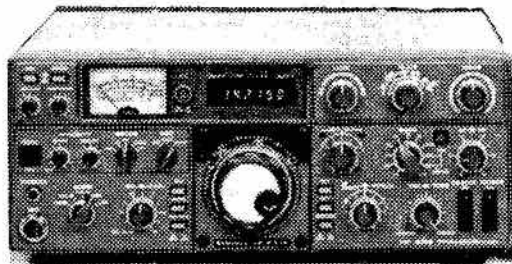
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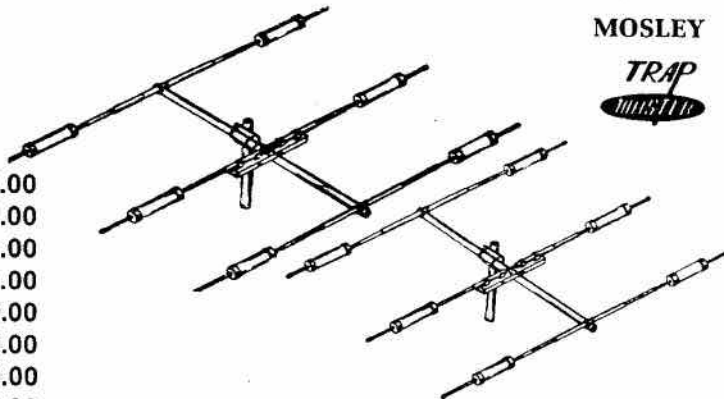
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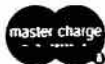
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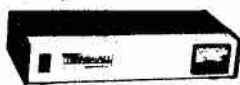
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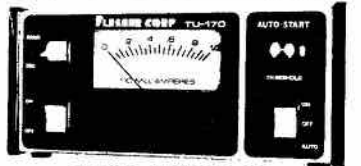
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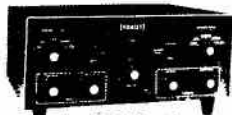
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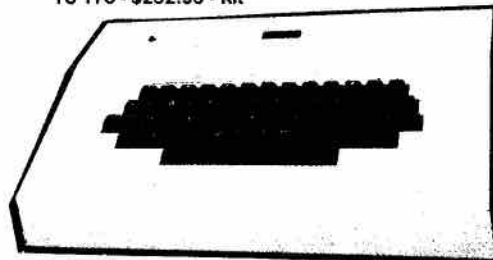
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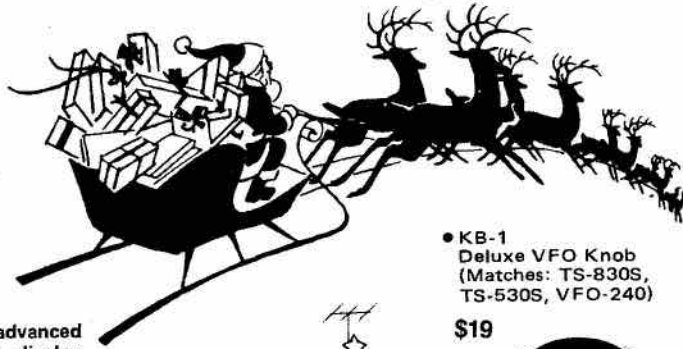
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Editor TCA, P.O. Box 2610,  
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# CALL FOR NOMINATIONS

By terms of the current By-Law, the Federation hereby requests its members to submit nominations for the positions of **REGIONAL DIRECTORS**.

The membership of CARF is divided into 5 Regions:

1. ATLANTIC — the Atlantic provinces
2. QUEBEC — province of Quebec
3. ONTARIO — province of Ontario
4. MID-WEST — provinces of Manitoba, Saskatchewan and Alberta, North-West Territory
5. PACIFIC — province of British Columbia and Yukon Territory

Each Region, with the exception of Ontario, has 1 Regional Director with Ontario, because of its large Amateur population, having 2 Regional Directors. This division gives fairly equitable representative voting powers to each Regional Director.

A valid nomination contains the name, call and postal address of the Full member nominated (who must reside in the Region for which nominated) plus a statement, signed by the nominee, that he, or she, is willing to serve in the position if elected. The signatures of 5 Full members of the Region are also required on the nomination with the completed letter forwarded to the Secretary, CARF, P.O. Box 356, KINGSTON, ONT. K7L 4W2 before 31 Dec 1982. A photograph and resume of the nominee is welcomed for publicity in TCA, etc.

The Regional Director plays a most important role in your national Federation as together they form the Board of Directors which is responsible for the formulation of policy, for overall management of CARF affairs and activities and for the selection of the Officers and members of the National Executive that are responsible to the Board for the conduct of day-to-day affairs.

D. Goodwin, VE2ZP  
Secretary.

# From the President

Don Slater, VE3BID

The title may seem a little familiar to you as the same title was used several issues ago when Fred Towner, VE6XX, was mistakenly given the post of President of the Federation. We both got a good chuckle over it. I hope that this mistake didn't cause anyone any undue embarrassment. I know of only one case of someone sending a congratulatory note to Fred on his becoming President. Mistakes happen.

For the past year and a half, I have taken rather a low profile in the pages of TCA. With the exception of the "Watch Out" column in March of this year, I have thought it best to leave the writing to those who are best capable of expressing themselves on paper. This leaves me with the job of administering the Federation as President. All this includes meeting with DOC officials, formulating policy and implementing the action needed to fulfill the enormous needs of the Canadian Amateur. I do this gladly. In the past few years, CARF has developed into the largest Canadian Amateur Radio organization in Canada. TCA, under the Editorship of Cary Honeywell, VE3ARS, has become the most popular Canadian Amateur publication ever produced in Canada. Membership is continually increasing in your National Federation, and Amateur Radio in Canada is on the upswing again.

I have been busy over the past one and a half years developing our local and regional representation to the federation and I now firmly believe that CARF has more support from the Amateurs of Canada than it has ever had. That support is growing in leaps and bounds. When CARF takes a stand on an issue with DOC, it is good to know that we have the support of our fellow Amateurs. DOC knows, when CARF comments, that the Amateurs of Canada have been asked to comment as well, and CARF is presenting that opinion.

For the future, I see only great

things for CARF. More local representatives from across Canada are being brought in. Almost every major Radio club in Canada is affiliated, and almost every Radio club in Canada is using the information provided by the CARF office or the CARF News Service bulletins. International news services are using our facilities to find out what is happening in Canada. Amateurs in other countries are recognizing CARF as the Canadian National Amateur Radio organization. This is what we have worked so hard to achieve and it is now providing

Canadian Amateurs with a National organization of which they can be proud.

To all those people who over the past few years have worked so hard to gain this plateau, I offer my congratulations. Your effort was not in vain. Canada now has something it has needed for a long time! A truly National Canadian Amateur organization - CARF.

I would like to take this opportunity, on behalf of the Executive Directors and staff of CARF to wish you all a very **Merry Christmas** and a **Happy and Prosperous New Year.**

---

## Editor's Comments

VE3ARS

Once in a while, a problem comes up which seems difficult to resolve. There seems to be no reasonable excuse for the situation to remain static, but static it remains. One such problem has been sticking in a Saskatchewan Amateur's throat for almost a year now. It is not my intention to damage the reputation of a supplier of Amateur Equipment in Canada, (Lord knows they have a difficult enough time selling gear in this economy) but after a reasonable time has elapsed and no solution has been found, I think I owe it to the Amateurs of Canada to bare the facts.

In February of this year, John Holmes, VE5YC, a white caner, ordered a complete ICOM station from Ham Traders of Toronto. This included an IC720A, IC730, SP3, SM5 combination. The total amount paid was \$2555.91. On the offer to purchase was the following note:

"According to our agreement this check (sic) was (sic) not to be cashed until you have the goods ready for shipment."

The problem started when Ham Traders cashed John's cheque. The goods were not ready for shipment.!

Again from the order:

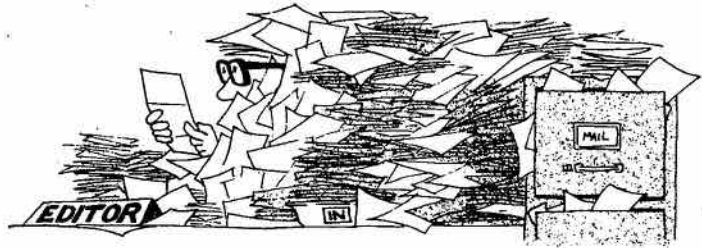
"If there's any discrepancy regarding this order, kindly notify before shipping, as I will not accept any C.O.D. charges."

Negotiations ensued for the next few months over the order. Eventually, John received an IC720A. In a letter to Don Slater, VE3BID, CARF President, John states "The rest of the goods were supposed to have been shipped later. In fact, they told me that they had been shipped already. After many more phone calls (some of which were reverse charges) Yudo, (sic) one of the owners, told me they were unable to supply me with the rest of the equipment." (They still have his money.)

A deal was worked out whereby John would receive a TR-2500 and a refund. That showed little result. Then a deal with a different 2 Metre rig and a refund of \$780.41. Still nothing. John feels, and I agree that they also owe him interest on the money as they have had it since last winter. At the time of writing (Nov. 14), nothing has been heard.

This is the third time I have encountered this sort of nonsense from the gentlemen at Ham Traders. The first time  
(continued on page 14)

# LETTERS



Anyone knowing the whereabouts or any information on the Amateurs listed below, should contact:

MR. J. NOSOTTI.  
D.O.C. Room 909, 9th Floor,  
55 St. Clair Avenue East  
Toronto, Ontario  
M4T 1 M2

William L. King	VE3 MUV
Jonathan White	VE3 MLI
Peter Carl. J. Pientka	VE3 HHP
Thomas A. MacPherson	VE3 CWM
Patrick J. Whelan	VE3 KNX
Eddy Stevens	VE3 LLY

## Dear Sir:

I was very impressed with CARF's President, Donald Slaters VE3BID response to CRRL President A. Mitch Powell VE3OT (Canadian Director ARRL) in TCA's July-August issue.

I was never aware of the connection of ARRL CRRL until Mr. Slater enlightened me. The fact that, ARRL, is speaking for all of Region 2 in the expansion of U.S. sub-band allocations is a point of interest right there. I didn't read that in OST. I was informed of it in TCA - A Canadian Amateur Magazine - and not a U.S. Amateur magazine.

Also, the figures on CARF, the total amount of \$84,000 (as you quoted) goes to the good of Canadian Amateurs. That's as it should be - you (Canadians - CARF) are the country of Canada, representing the Amateurs of Canada.

I don't feel it is fair of OST to give only one page to CRRL news. I see one full page every month in OST. I think there would be plenty of news, activities, and pictures from the Canadian Amateurs of CRRL, to warrant more pages from OST.

There is only one page of YL news that I have also noticed. I know there is plenty of YL activities, and YL achievements that could be submitted, and probably is, but is refused, for lack of space, or isn't suitable for publication. With only one page to offer the YL's, it would be almost impossible to choose. Equality for all!!

I am well pleased with the membership in CARF, and receiving The Canadian Amateur (TCA). I enjoy reading TCA very much. It is interesting and informative. TCA seems to have it's facts straight, and tells all Amateur Radio Operators what they should and shouldn't know. I also miss the puzzles, and Hidden Word puzzles that were in TCA. They were a lot of fun!

I have been an Amateur (U.S.) Radio Operator for 2 years. I have enjoyed every minute of it. Many new friends have come my way, through the wonders of Amateur Radio. Also, words of Wisdom, through the Air waves, that can be a benefit to young and old alike.

I want to thank-you for letting me express my thoughts and opinions in TCA. The Canadian Amateurs should be aware that U.S. Amateurs aren't pleased or satisfied with the handling of affairs of ARRL/CRRL. I would like to see more U.S. Amateur Radio Operators joining CARF.

Sincerely  
Carol Capozzio

## Dear Sir:

I have belonged to CARF for almost one year and must say I like the association as well as the TCA magazine.

Being an editor of our local club, paper for a few years I know how hard it is to get articles and

support, but don't despair - keep it up - we as Canadian amateurs need you. I also know how much it costs to produce a magazine like this and thought I would draw your attention to the double issue I am receiving - obvious an input error to the computer file.

Thanks for some good material and information via TCA - good luck.

Bruce Smith  
VE6BS

*Thanks Bruce: - Double issues do occur on occasion. Give your extra copy to a new Amateur (ed).*

## Dear Sir:

It has been noted that in the Repeater Directory VE1GZ (146.310 - 146.910) is still in the listing. This repeater is no longer connected with Truro; it should be changed to VE1TRO, input - 147.810, output - 147.210; it is an open FM repeater.

Sincerely  
S.T. Williams VE1BNS  
Secretary, T.A.R.C.

## Dear Cary:

Just read the article about the false distress call by Al King VE 3 HKT, a retired Bell Canada man, very disturbing and he should lose his call for a year. This is something the Provincial Societies could police and then bring pressure to bear through CARF to the DOC.

While doing volunteer work at the Marine Museum in Kingston I found this old 1913 Year-book and the article on Distress Signalling which I thought maybe of some use to you for a filler. The Marconi circular No 57 of 1904 spells the penalty for mis-use of the call



CQD, that's nearly 80 years ago. Anyway do what you want with it, and I must congratulate you on the continuing excellence of TCA.

### THE YEAR-BOOK OF WIRELESS TELEGRAPHY AND TELEPHONE 1913

#### DISTRESS SIGNALLING by G.E. Turnbull

As navigation has developed from the earliest times, means of signalling from ships to the coast and to passing vessels have been devised and improved, and have been operated under an admirable organisation, but the systems upon which they worked reached their conceivably practical limits long before the invention of Wireless Telegraphy.

Any one of the several systems depended either upon vision or upon propagation of sound, the former being the earliest known.

Lights, flags, rockets, guns and sirens have all rendered, and are still rendering inestimable service to navigation, but the disadvantages of visual signalling in the case of fog, and the limitations in range of visual and auditive signalling, even under the most favourable conditions, considerably restrict the usefulness of these methods.

No one can imagine how many lives and how much property would have been saved had Wireless Telegraphy been known of in earlier days. The sight of a pirate in the good old times would not have caused so much anxiety to the skipper of the honest merchantman had the latter been able to call some other vessel to help him with the buccaneer, and no doubt some of our favourite tales of adventure, distress and rescue would never have been written. In the place of them perhaps we would have had more thrilling stories still. Here is a field for some of our novelists of today or of the next generation.

It would not be correct to say that the older methods of signaling are superseded by wireless, but it is correct that wireless, with its enormous range of action as com-

pared with that of others, and its independence of weather conditions, is now by far the first of all means of signaling, and by its own intrinsic worth alone places these other systems of signalling in the position of accessories to itself.

When Mr. Marconi had developed his invention to such a point that its utility on board ship became obvious, the Marconi International Marine Communication Co., Ltd., was formed for the purposes implied in its title. The primary object of the new means of wartime wireless communication being to provide additional security for life and property at sea, the company have provided all its ships' stations with emergency apparatus, so that communication could still be carried on in the event of failure of any kind, particularly at the time of a serious accident which might render necessary the issue of calls for help. In this duplication of parts provision was made against the liability to interruption of the supply of electric current from the ship's dynamos, from which, in the ordinary course, power is derived to work the wireless plant, and a source of current independent of the ship's dynamos was provided as a stand-by in case of failure of the latter. Thus, almost simultaneously with the first application of Wireless Telegraphy to marine communication, the Marconi Company included in its standard wireless installations for ship purposes a suitable battery of accumulators, enabling the ship to issue distress calls, even if all the lights on board the ship were extinguished by water in the engine-room. This was over twelve years ago.

As time went on the organisation of wireless communication at sea became more and more perfect, and it was found desirable to embody in one Circular the various directions which had been given to operators regarding the use of the apparatus in the event of accident to the ship. Thus so long ago as January 4th, 1904, the famous "C..D." call was instituted by the Marconi Co. and embodied in its "General Orders." This instruction, a landmark in the

history of or the organisation of wireless communications, is reprinted below from the original, which is carefully preserved in the archives at Marconi House.

### Marconi International Marine Communication Company Limited Circular No. 57

It has been brought to our notice that the call "C.Q." (All Stations), while being satisfactory for general purposes, does not sufficiently express the urgency required in a signal of distress.

Therefore, on and after the 1st February, 1904, the call to be given by ships in distress or in any way requiring assistance shall be "C.Q.D."

This signal must on no account be used except by order of the Captain of the ship in distress, or other vessels or stations transmitting the signal on account of the ship in distress.

All stations must recognise the urgency of this call and make every effort to establish satisfactory communication with the least possible delay.

Any misuse of the call will result in the instant dismissal of the person improperly employing it.

THE MARCONI INTERNATIONAL MARINE COMMUNICATION COMPANY LIMITED, 18, Finch Lane, London, E.C., 7th January, 1904.

When the "C.Q.D." signal achieved a lasting fame on the occasion of the wreck of the S.S. Republic, many interesting stories were spread about as to its meaning and derivation. Probably the most amusing explanation of the signal was that it indicated "Come Quick, Danger," but perusal of the above Circular will show our readers exactly how it originated. "C.Q." was the recognised signal used by one ship to attract the attention to it of others within hearing, so that telegraphic traffic could be commenced and transacted, and it was thought that the most appropriate distress signal would be arrived at by adding the

letter "D." (denoting "Distress") to "C.Q.," the general call to attention.

It is a great compliment to the foresight of the Marconi Company in instituting, as they did at the commencement of 1904, a special distress signal, governing its use by stringent regulations, that the International Radiotelegraphic Convention of Berlin, which entered into force in July, 1908, ratified the practice in regard to distress signals initiated in 1904.

It is a matter of regret to some that the Berlin Convention should have superseded the old "C.Q.D." call by the new "S.O.S." This regret is shared by many of the oldest operators, and even when the new call came into force it is noteworthy that in each case of accident the "C.Q.D." call was sent out as well as the "S.O.S." The change of the call letter is, however, a sentimental regret, and "C.Q.D." is being gradually forgotten.

It is, further, instructive to note that the International Radiotelegraphic Convention which sat in London in June 1912, endorsed the Marconi practice in regard to emergency apparatus by deciding that all ships equipped with Wireless Telegraphy should have an emergency set as part of their wireless equipment. This prescription comes into effect in July of the present year, but as by far the greater number of the merchant vessels of the world at present equipped with Wireless Telegraphy have been so fitted little change to existing arrangements will be necessary. The United States of America, which was a party to the London Convention, gave effect to the ruling of compulsory equipment with emergency apparatus almost immediately after the London Convention of 1912 was signed.

Much attention has been devoted to the design of apparatus suitable for distress calls, not only of special types, but also with a view to its handling by other than skilled operators.

While it is true that a large number of passenger vessels are equipped with Wireless Telegraphy - and, indeed, only until a short time ago

nearly all merchant vessels so equipped were passenger steamers - it is also true that a considerably larger number of cargo vessels are not fitted with this means of communication. Cargo-boat owners have hesitated to incur the cost of the equipment, and the expense of an additional person to be placed on board to operate it. Gradually these objections are being overcome by the simple question of pounds, shillings, and pence, it having been conclusively proved that this expense can be recovered many times over by considerations referred to elsewhere in this volume. With a view of simplifying equipments on small vessels (which in many cases may be able to fully justify the expense of their equipment by receiving distress calls and then proceeding to the assistance of the ship issuing them) it has been suggested that ships be so fitted and the distress call be so arranged that when issued this call should cause a bell to ring or sound a special alarm on board all ships within range.

In the earlier days of Wireless Telegraphy, when very few stations existed wireless signals were registered by a Morse Ink Writer, or could be made to ring a bell. This could only be done by the use of that detector of wireless signals known as the coherer. This instrument had, however, so many inherent disadvantages, the chief of which were instability, slow rate of working, and necessity for constant attention, that it had to be replaced gradually by auditive reception, and its use at the present day, even for distress purposes only, has now become impracticable. Mr. Marconi, in answer to questions put to him at the Board of Trade Inquiry into the wreck of the Titanic, has shown how a distress call could be arranged under present methods of working to ring a bell or give some other alarm in a ship station at a distance, and the method he suggested is now being worked out. Instead of the "S.O.S.," which consists of a series of dots and dashes, several long dashes would be used in transmitting. The special receiver would not res-

pond to ordinary Morse signals made up of dots and dashes, to stray signals from other vessels communicating with each other, or to atmospheric disturbances, but only to a succession of long dashes, being actuated solely by the accumulation of energy in a long sustained dash.

It goes without saying that the sustained dash, or series of them, would have to be longer than any existing Morse sign, and would have to be retained solely for the purposes of distress.

In cargo boats, where only one skilled operator is carried, the advantage of this arrangement is obvious, while in the case of any wireless station where it would be difficult to maintain constant watch at all times its utility cannot be gainsaid.

Meantime the best possible is being done in the way of giving members of the ship's crew an elementary instruction in Wireless Telegraphy on ships where only one operator is carried, to enable them to listen at the instruments while the operator is off duty. A short practice in Morse and in the handling of the receiving instruments will enable any intelligent person with normal hearing to detect the easily-distinguishable "S.O.S." call in the event of its being sent out. He could then at once call the operator back to the station to attend to the communication.

We have referred above to lights, flags, rockets, guns, and sirens as means of distress signalling, and as accessories to wireless. We must not omit to mention as another and one of the most valuable accessories of the present day - namely, that of the Direction Finder, or, as it has been termed, the Wireless Compass. By means of this invention it is possible to detect, independent of weather conditions to which visual means of signalling are subordinate, the direction of one vessel in respect of another. The range of this instrument in the average mercantile equipment extends up to 50 or 60 miles. Neither must we omit to refer to one more invaluable accessory to Wireless Telegraphy in summoning assistance to a

distressed vessel, and that is the sub-marine signalling apparatus. The apparatus is arranged with one receiver on the port side, and another on the bow of the ship, for direction finding, but as the detection of sound by this means is limited at present to between 10 and 15 miles it can only be used as an adjunct to the direction finder, and as a check upon the readings of the latter, should it be desirable to have them up to ranges within three figures.

To describe distress signalling in all its details as it can be accomplished at the present day, and to discuss fully all its possibilities, would fill many pages more, but a general survey only has been attempted here with a view of noting the principal features.

If this essay has conveyed to the mind of the reader a fair understanding of what is actually being done and what is still possible, if it has impressed upon him that science and invention are being energetically applied in this direction, under the watchful and encouraging patronage of the Authorities at home and abroad, he will be assured that everything humanly possible is being done to diminish the perils of the sea.

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Dear Cary:

Thank you so much for your trouble in trying to locate my friend Paddy Nicholls.

Paddy did turn up at our reunion - he was located through another friend. His call is now VE3 DZZ and so my information was well out of date.

**Best wishes and thanks**  
**Derek Cox, G3KHZ.**

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Dear Sir:

I have received my husband's renewal notice for his membership in CARF.

I very much regret to tell you Don VE 2 GGT, died in June. He so much enjoyed the short time he had on the air and I must tell you it

is a great consolation to me knowing he was involved in Amateur Radio - it was a wonderful hobby for him and I also was much interested.

With my kindest regards, and many thanks to all the "hams" Don met on the air.

**Yours very sincerely,**  
**Evelyn Wilderskin (Mrs. D.A.)**

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Dear Sir:

I would like to draw your attention to the October issue of TCA...on page 14, under the heading of 'Over modulation who me' I find that my call has been given the credit...The credit I cannot accept. The originator, to my knowledge, is,

Alec D Vance...

The write up in question was taken from the RSGB Bulletin dated October 1964, Vol 40 Number 10...Page 646...

Would you be so kind as to place a correction in your next issue of TCA..This would very much be appreciated...

Thank You,

**Yours truly,**  
**G Harry "73"**

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Dear Sirs:

**re: Subscription**

I recently renewed my subscription to your magazine and am disappointed in the amount of time it takes to arrive. I received your July issue on August 17.

I wonder if you might be able to look into the matter and inform me of the results thereof.

**Yours truly,**  
**Brian A. Barnesco**  
**H484 8306**

**I shall do that. It is now Nov 9 and I have not yet received my October TCA! (ed)**

TCA WELCOMES LETTERS  
TO THE EDITOR.  
PLEASE SEND ALL  
CORRESPONDENCE  
TO EDITOR TCA.  
P.O. BOX 2610 STATION D  
OTTAWA, ONTARIO K1P 5W7

## From the President

continued from page 10

was when they failed to pay their bill for advertising in TCA. The second time occurred even before this, and before I became editor. Udo Franz, co-owner of Ham Traders, once owned "Canadian Communications". He failed to pay his bill for advertising in TCA prior to folding up that operation and joining with the Murray Lampert, owner of Ham Traders. The matter was never settled. Canadian Amateurs, or at least members of CARF, paid for his advertising.

We have always had good relations with Murray Lampert and Ham Traders, or at least have had until recently. At present, TCA no longer handles advertising from them, and will not until the financial matter is settled. We think that our members have paid for Ham Traders' advertising long enough. It is time Udo and Murray realize their responsibilities as retailers and operate in a more businesslike manner, or go out of business. When you try to rip-off a magazine like TCA, you "take on" every subscriber to that magazine. You can't afford it. Without the support of the Amateurs, you don't have a business. When you rip-off a fellow Amateur, I get angry. When you rip-off an Amateur who is also a white caner, I get furious. I am not alone.

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### Next Issue of TCA

TCA is ten years old this January, and to celebrate this event, we will be publishing some stories from past issues and examining the development of the magazine over the past decade.

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*On the following page is a letter from Mike Connolly, of DOC Toronto. Mike has attended gatherings and symposiums where Amateurs have requested publicity for DOC prosecutions. Those of us who have met Mike know he follows through with good ideas. After fielding numerous questions at the last RSO convention, he informed your Editor that he would be submitting a report on a recent prosecution. We reprint this letter in whole. Thanks Mike (ed).*





Government of Canada  
 Department of Communications  
 55 St. Clair Ave. East  
 Toronto Ontario  
 M4T 1M2

Gouvernement du Canada  
 Ministère des Communications

Your file Votre référence

Our file Notre référence

D22/3-585.1

October 22 1982

The Canadian Amateur  
 C/O Mr. C. Honeywell, Editor  
 P.O. Box 2610, Station D  
 Ottawa, Ontario  
 K1P 5W7

Dear Cary:

Thank you for your interest in our legal proceedings. The following is a brief summary of the facts which resulted in a conviction against Mr. Gary Lloyd Scott of Avonmore, Ontario for the unlawful possession of radio apparatus (contrary to subsection 3(1)(b) of the Radio Act) and for refusing to permit inspection of a Radio Station (contrary to subsection 114 of the General Radio Regulations Part II).

Responding to information concerning the operation by certain individuals on frequencies adjacent to the General Radio Service band without a radio licence, our Ottawa Office had issued cautionary letters in several instances.

As a follow-up to these warnings, departmental inspectors visited Mr. Scott on October 23, 1981. Since entry was refused, reasonable grounds existed to believe that Mr. Scott was in the possession of unlicensed radio apparatus. With this information, a search warrant was obtained and executed resulting in the seizure of a modified G.R.S. transceiver and a G.R.S. external radio frequency amplifier.

On May 11, 1982, Mr. Scott was tried before a Provincial Court in Cornwall. As a result of the conviction, he was fined \$100.00 for the violation of subsection 3(1) and \$25.00 for the violation of subsection 114 mentioned above. In addition to this, a forfeiture order was issued by the Minister for both pieces of illicit equipment.

Should you require any further information, please call Mr. Jack Holt in Toronto at (416) 966-6274.

Yours truly,

M.D. Connolly  
 Regional Manager  
 Spectrum Control  
 Ontario Region

Canada

# CONTEST SCENE



## Contests Calendar

December 4 - 5 ARRL 160m CW  
11-12 ARRL 10m

## 19 CARF CANADA CONTEST

January 8-9 73 Mag 40/80 SSB  
15-16 73 Mag 160m SSB  
15-PVRC WCY Contest  
15-16 HA DX CW  
28-30 CQ WW 160m CW  
29-30 REF CW

February 5-6 RSGB 7MHzSSB  
12-13 YU DX WW  
19-20 ARRL DX CW  
25-27 CQ WW 160m SSB  
26-27 RSGB 7MHz CW  
26-27 REF SSB

The CQ WW DX SSB has come and gone, and as this is being written just after the contest, I have little solid score information. Conditions were, well interesting. Saturday conditions were generally poor, with K-indicies in the 3-4 range. No substantial opening to Japan from the east was noted on 10 or 15 metre, propagation to Europe through the night on 20, 40 and 80 was poor. Saturday morning produced only a very poor opening to Europe on 10 and 15 metres, with 10 best suited to collecting multipliers. The following 24 hours sounded very good indeed, very much like the excellent propagation we had during last year's contest. The only disappointment of the second day was the relatively shaky opening to Japan on 10 and 15 metres.

Scores should generally be down from what they were last year. The apparent leader of the single op all band entrants may have been Garry VD 3GCO. That special prefix apparently took a good lot of hard work on Garry's part, and hopefully it paid off. As conditions were still a little shaky to the west throughout the con-

test, I did not notice VE6OU or VE7WJ, regular single op entrants, but VE3IY was on at least in spirit, having his operating hours reduced by work. Yuri VE3BMV, using his new stacked 5 element Razor Beams made the biggest noise on 20 metres, and may have been one of the few to break any of the standing records. If Yuri succeeds on breaking the 20 metre record, he will hold 5 of the possible 6 single band records in this contest. VE3EEW appeared to lead all comers on 80, and VE3MFA held down 160.

VE1DXA ut in a superb multi-single performance, rolling up a 6.1 Meg score with about 4800 Qs and 510 multipliers. VE3PCA with a similar multiplier score, our 1500 fewer Qs yielded about 4.2 meg, 1 meg down from last year. Other MS entrants included VE3CYX, VE5GF (maybe 2 Meg) VE7ZZZ, and two seperate Zone 2 expeditions. VE2HQ, with help from VE2s EZU and FU operated from VE2DS's station, and W80K/VE 2 with an American crew went head to head in what is probably the first MS competition in Zone 2. There was also a rumour of a group of VO1s/VE2 on Zone 2, but I don't remember hearing them.

On top of all this VE activity, this year there was a fantastic number of Contest Expeditions, with many MM and MS efforts among them. Such contest rarities as OH, FO8, 5Z4, HC8, OA made things interesting, along with activity from M1, VP8/South Orkensy, 4S7, and plenty of other semi-rare countries.

November CQ included high claimed scores for the WPX CW contest. Again, as with the SSB contest, there are 'early bird' scores, and more than a few of the leading Canadians missed the

publishing cutoff. The few scores that were published are noted below. It is worthwhile noting that there were 5 Canadian MS entrants in that contest with scores over 2 Megv, but the high claimed scores show only two above that mark. Neither one from Canada. I might suggest that the CPW committee think about waiting the extra few weeks to take those high claimed scores list more reflective of the final results.

The results of the ARRL DX Contests appeared in October QST, and results with updated records tables appear below. Congratulations to VE3 KKB, VE3BMV, VE7DLM and VE1AXT for setting new 28, 21, 14 and 1.8 MHz records on the CW contest. In the SSB contest, the only new records were set by VE3BVD with a fine single op all bands score, and VE7VX, nudging up his won record on 14 MHz. Canadians seemed to place fairly well beside their USA competition. In the CW contest, VE3KKB was 7th place on 28 MHz, VE3BMV No 2 on 21, VE2ZP No 10 on 7, and VE1AXT No 7 on 1.8 MHz, VE3BMV No 2 on 21, developed between VE3BVD and VE6OU for SSB single-all honours, placing No 9 and No 11, with VE6WQ placing No 4 on 28 MHz, VE3CYX No 9 on 21, VE7VX No 7 on 14 and VE1YX No 4 on 3.5 MHz.

## CARF CANADA CONTEST

Competition this year should be better than ever. Rules were published in last month's TCA. A big change this year is that there are three new trophies to be handed out to high scorers this year. TCA editor Cary Honeywell, VE3ARS will sponsor a plaque for single op, single band scorers. As well, two of TCA's regular advertisers will sponsor awards for this

contest. Glenwood Trading Co. Ltd. of Vancouver will sponsor the first place Multi-operator, single transmitter plaque, and C.M. Peterson Co. Ltd. will sponsor the Amateur class single op all bands trophy. As well, Dollard Electronics / Icom of Canada and Atlantic Ham Radio will sponsor major awards, with details to be worked out soon.

Choose your competition carefully, and you would come away from this contest with a nice piece of hardware for your efforts. As well, if any of the provincial societies would like to sponsor awards for these contests, we'd love to have you. These are our contests, and we would like to have as many Canadians participate as possible. See you on the 19th.

## ARRL DX Contest CW Canadian Results

Class	Call	Score	QSOs	Mult
A	VE1AI	408,915	699	195
A	VE3DZV	358,146	491	202
A	VE2AYU	338,146	558	202
A	VE3DAP	207,726	389	178
A	VE2WA	159,198	338	157
A	VE1AEG	119,601	291	137
A	VO1MP	114,600	382	100
A	VE6OU	101,442	319	106
A	VE3MUV	100,098	249	134
A	VE1AIH	57,720	185	204
A	VE3LDT	36,378	141	86
A	VE4ADV	33,417	141	79
A	VE6CNV	7,308	58	42
A	VO1AW	5,076	47	36
28	VE3KKB	94,185	455	69
28	VE2AEJ/3	17,787	121	49
28	VE2JR	12,000	100	40
28	VE3NBW	11,094	86	43
21	VE3BMV	201,051	753	89
21	VE1FW	31,104	192	54
21	VE3JTQ	25,896	166	52
21	VE3LMX	6,138	66	31
21	VE3GWM	2,829	41	23
14	VE7DLM	32,661	191	57
14	VO1QU	11,760	98	40
14	VE3IKG	6,435	55	39
7	VE2ZP	38,613	211	61
7	VE5RA	11,439	93	41
7	VE3CUI	9,108	92	33
3.5	VY1DD	144	12	4
1.8	VE1AZT	561	17	11

CQ WPX CW 1982  
High Claimed Scores  
Canada  
Call Class Score

VC3IY	A	1,016,785
VE3JTQ	A	572,904
VC3BMV	14	992,718
VC3CRD	7	195,696
VC3KZ	3.5	25,900

## ARRL DX Contest CW Canadian Records

A	VE3IY	1,296,000	81
28	VE3KKB	95,185	82
21	VE3BMV	201,051	82
14	VE7DLM	32,661	82
7	VE1AI	71,622	80
3.5	VE1AXT	14,784	81
1.8	VE1AXT	561	82
QRP	VE3KKB	112,125	81
MS	VE6OU	1,462,500	81

## ARRL DX Contest SSB Canadian Results

Class	Call	Score	QSOs	Mult
A	VE3BVD	1,825,920	1920	317
A	VE6OU	1,808,136	2283	264
A	VE5RA	1,500,048	1894	264
A	VE1AI	821,100	1190	230
A	VE7WJ	810,405	1305	207
	(VE7ZB op.)			
A	VE7AWT	450,543	839	179
A	VE2AYU	370,110	730	169
A	VE3MUV	313,236	678	154
A	VE3LDT	254,904	559	152
A	VE3SV	68,502	233	98
A	VE2PD	49,446	201	82
A	VE2WA	46,170	190	81
A	VE5AE	32,550	175	62
A	VE4PR	32,412	146	74
A	VE2JO	26,970	155	58
A	VE3FEA	18,180	101	60
A	VE3GWM	8,547	77	37
A	VE6CGY	8,436	76	37
28	VE6WQ	407,349	1269	107
28	VE3MFT	359,073	1287	93
28	VO1MP	200,073	867	77
28	VE3FWQ	134,640	561	80
28	VE3UOT	56,019	263	71
	(VE1BCZ op.)			
28	VE3NBE	40,260	220	61
28	VE2AEJ/3	2,898	46	21
21	VE3CYX	225,720	792	95
21	VE3JTQ	128,160	480	89
21	VE3BMV	58,653	343	57
21	VE7DLM	58,578	355	55
14	VE7VX	118,698	542	73
14	VE5ADA	88,209	363	81
14	VE2FGS	82,536	362	76
14	VE1CEG	77,544	359	72
14	VE3DYB	11,934	102	39
3.5	VE1YX	3,276	42	26
3.5	VE4SL	312	8	13
3.5	VY1DD	54	6	8
MS	VE5GF	341,712	678	168
MS	VE2CUA	200,100	575	116

## ARRL DX Contest SSB Canadian Records

A	VE3BVD	1,825,920	82
28	VE3BMV	564,750	81
21	VE7IN	491,892	81
14	VE7VX	118,698	82
7	VE7WJ	55,266	80
3.5	VE3IKN	10,260	80
1.8	VE3BBN	300	80
QRP	VE3KKB	162,060	81
MS	VE1DXA	1,908,930	80

### 73 Magazine 40 and 80 metre SSB

Period: 40 metres: 0000z to 2400z  
8 Jan.

80 metres: 0000z to 2400z 9 Jan.

Entry Classes: Single op, single or both bands; Multi-op, single or both bands. Single op stations may use a maximum of 16 hours each 24 hour period.

Exchange: RS and province to territory. US stations will send their state, and DX will send their country.

Multipliers: Total of provinces, territories, states and DXCC countries worked on each band.

Contests: Each station may be worked once on each band. 1 pt./QSO with Canada and the USA, 2 pt./QSO with others. Point value are doubled for contacts made from 1000 to 1400 Local time.

Entries: should include dupe sheets, multiplier checklists and a score summary. Include an SASE or SAE with IRC with your entry, to be mailed by 11 Feb to Whidbey Island DX Club, 2665 Busby Rod., Oak Harbour, WA 98277, USA. Awards: Certificates will be awarded to the top scoring entrant in each class in each Multiplier area.

### 73 Magazine 160 metre SSB

Period: 0000z 15 Jan to 2400z 16 Jan.

Entry classes: Single operator or multi-op. Single op stations may work only 26 hours out of the contest period.

Exchange: RS and province or territory. DX stations will send their country.

Multiplier: total of Provinces, states and DXCC countries.

Contacts: 5pt/QSO with Canada and the Continental USA, 10 pt/QSU with others. 5 bonus points may be claimed for each QSO made from 1000 to 1400 Local time.

Entries: Should include dupe sheets, a multiplier checklist, and score summary. Include and SASE or SAE and IRC with your entry, to be sent by 18 February to Dan Murphy WA1 GZB, P.O. Box 195, Andover, NJ 077821, USA.

Awards: Certificates will be awarded to top scoring entrants in each class in each multiplier area.

## Potomac Valley Radio Club

### World Communications Year Contest

Period: 0000z to 2400z 15 Jan.

Bands: all Amateur bands 1.8 MHz to 24 GHz, except the 10 MHz band.

Entry Clases: Single or multi-op, all bands only.

Exchange: Send only your ITU region and Zone. Do not sent RST. The exchange should be sent as follows: VE1DXA, in ITU region 1, ITU Zone 09 would send '209'. VE7BTV in Zone 01, would send '202'. All of Canada is in ITU Region 2, so just add your ITU Zone number, and that is the exchange you send.

Multiplier: Total of different 'exchange groups' worked.

Entries: Should be sent within 30 days of the contest to:

PVRC, PB 337, Crownsville, Md., 21032, USA. Complete information is available for an SASE or SAE and IRC.

### CQ WW 160 DX

Period: CW 2200z 28 Jan to 1600z 30 Jan

SSB 2200z 25 Jan to 1600z 27 Jan

Entry Clases: Single or multi-op.

Exchange: RST serial number and Province or territory. US will send state, and DX will be identified by their call sign.

Multipliers: Provinces Territories, States and DXCC countries. Contacts: 2 pt/QSO with Canada and the USA: 10 pt/QSO with others.

Entries: should be sent within one month of the contest to CQ Magazine 160 Metre Contest (indicate CW or SSB). 76 N. Broadway Hicksville, NY 11801, USA. Include Dupe sheets, Multiplier checklists and score summary. Official forms are available for an SASE or SAE and IRC.

## QRZ WHY?

### QRZ QRZ QRZ

#### This Is ZE9xxx

Rowland  
VE3AML

What does this mean?

Listen over the bands and you will hear this latest quirk. Where did it originate? Perhaps the use of C.Q. needs explanation.

It is very funny to hear someone calling QRZ QRZ and then someone answers by a QRZ. The result is SILENCE. QRZ - Should be used on CW only, and then only after having called CQ and then not getting all the call-sign of the other station correctly.

The commercial meaning has been used by AMATEURS for years on CW but not the way it is being used now.

The full Q CODE can be found in THE HAND-BOOK FOR WIRELESS OPERATORS, revised in accordance with the International Radio Regulations (Atlantic City 1947) and the Merchant Shipping (Radio) Rules, 1952.

Taken from the Handbook, QRZ WHO IS CALLING ME?

ANSWER, or ADVICE. - YOU ARE BEING CALLED BY...(ON...KHz (or Mc/s))

So.

QRZ QRZ THIS IS VE9XXX OVER OFF AND OUT.

This brings up another very common problem on 3.7 MHz, DOUBLING. Listen around and you will be amazed how no one listens to no one, and it is rarely mentioned by the other station, half of the conversation is lost, and the other guy says, OH YES although he never heard a word. The usage of VOX has been overdone and not used judiciously. If more stations were to use push to talk, a lot of this problem would be eliminated, but perhaps no one wants to admit that DOUBLING exists.



# HQ staff publishes book

The HQ staff has always wanted to publish an Amateur reference publication. However, we did not want to duplicate the work in the publications already available. We also did not want to publish a book which would be out of date every year. We also did not want to publish a book which would provide information you did not need but had to purchase to get the book. We thus decided to publish a book which would hold any other CARF publications. The result was the **Canadian Amateur Reference File**.

The Canadian Amateur Reference File is a 2" Commercial quality "O" ring binder. It has a fold under cover, pocket on the inside cover and clear identification pocket on the spine. Inside you receive 5 dividers and a general information section. The general info section contains info on CARF officials, publications, contests, awards, and services. It also contains a repeater and HF NET Directory. This section can be updated from TCA or by forms printed at CARF Headquarters. Thus, you are always current!

In addition, you may purchase any of the other sections we publish. It may appear more expensive, but if you purchase only what you need; you save money. Also, updating is cheap since we only need to reprint selected pages or detail. You end up with a book which suits you. In addition, we can publish a section on anything which you, the Amateurs need. You save money by not having to buy a whole new book and we save money by not having excess copies of outdated books. Another way in which CARF tries to watch your budget.

The list which follows is the complete set of available sections. We encourage your suggestions as to what we should print and we are always happy to receive offers to write for CARF. Those wishing to write a section should contact our General Manager Art Blick VE3AHU at CARF Headquarters.

Canadian Amateur Reference File (Commercial O ring binder 2") \$9.50

(Dividers)

(General Information Section)

## SECTIONS —

BASIC ANTENNAS - VE3AHU - All you need to know on basic dipole, wire and vertical antennas. \$2.50

DX - VE3KKB - A basic guide to working DX from TCA's

DX Editor \$2.50

ESTABLISHING AN AMATEUR RADIO STATION — VE3UD — A guide for new Amateurs so they can get started properly (This was written by Bud Punched before his death and CARF publishes it as a tribute to this noted Amateur.) \$2.50

OPERATING PROCEDURES — VE2ZP — \$2.00

AMATEUR BANDS CHARTS — VE2ZP — \$2.50

CONTESTING — VE2ZP — A guide to the new or experienced contester for your TCA Contests — Editor! — \$2.00

MONITORING AND REFERENCE FREQUENCIES — VE3IDW — A list of Amateur and non-Amateur frequencies used for weathery public service, code practice etc. — \$4.00

(In the work) — EMERGENCY COMMUNICATIONS!

## Note:

1. Prices include postage and handling.

2. Also, if you order more than one section or if you order other sections with the Reference File, deduct 50 cents per **additional** section from your cost. This is the result of our saving mailing and handling costs.

e.g. order 2 sections save 50 cents

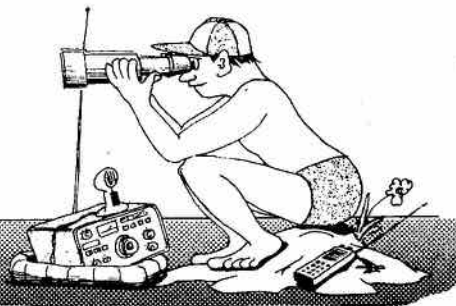
order 3 sections save \$1.00

Binder and one extra section save 50 cents.

This is another way CARF is attempting to serve the amateurs of Canada.

# DX

by D.W. Griffith, VE3KKB



It is hard to believe that another year is almost at an end. Several well-known, and respected Amateurs passed away during the course of 1982, and somehow, the hf bands are just not going to seem the same without them. There were several major DX'peditions this year, some of which were very successful, both in terms of the numbers of Amateurs worked, and the quality of the operations, and some which left a lot to be desired on both counts. Fortunately, the former outweighed the latter. Hopefully, in spite of a declining cycle 21, 1983 will see a good many expeditions to the rarer DXCC countries.

Speaking of the rarer countries, the DX BULLETIN recently published it's annual list of the top ten most wanted. They are:

1. BY...CHINA
2. VK...HEARD IS.
3. VU...LACCADIVES
4. ZA...ALBANIA
5. XU...CAMBODIA
6. 70...SOUTH YEMEN
7. 3Y...BOUVET
8. VU...ANDAMAN & NICOBAR
9. XZ...BURMA
10. CE0X. SAN FELIX

It is unfortunate that the reason most of these countries are not on the air is political. Although China has been intermittently active, BY1PK still has only been worked by a few, and the future of amateur radio there is questionable. After the KF10/CE0X fiasco earlier this year, it is unlikely that San Felix will be heard from for a while, and despite numerous attempts, Albania does not look too promising in the foreseeable future. Although there has been activity from Burma, in the form of XZ9A, and XZ5A, they do not count for DXCC, as they are located in a rebel province, not

recognized by the Central Rangoon government, which still holds a moratorium on Amateur radio. About the only likely candidate in the near future, is Heard Is., and the early 1983 DX'pedition to Heard is still on schedule.

During the CQ WW PHONE CONTEST, held at the end of October, a fair amount of choice DX was about. A sampling of what was worked from the multi-single station, VE3PCA, follows: FH8OM, 5T5CJ, 6W8DY, KX6OB, CO7AM, OH0W, VQ9CI, TU2HJ, FR0FLO, 5Y4ITU, 5W5DM, S79WHW, HZ1HZ, 3V0AA, 9L1DR, D44BC, H44R, CN8CX, M1Y, ZS3HL, WB6WOD/CE0Z V3DX, T32AF, FK8CE, HL9AZ, VP8ADE, 5N22ATT, ZD7AL, J28DP, TR8JD, TC2BSF, AH8A, CE0AE, 5H3BH, 7Q7LW, A22GM, ZK1CG, Z21GH, and ZB2GR. In addition to these, were a host of Carribean, C. & S. American, European, and Soviet countries. There is no doubt that contests are an excellent arena in which to work lots of DX in a hurry. In fact, there are many contesters who work DXCC in a weekend, on several bands. Try listening sometime, and see what you can pick up. A good choice might be the ARRL 10M Contest, which is in early December (see Dave Goodwin's Contest Column for details).

In a recent letter from Brian Summers, VE3JKZ, I was informed that he has now worked in excess of 120 countries on 80M. Using a shunt-fed tower, and lots of patience, he assured me that it really wasn't all that bad (especially since he did not plan to do it all over again). Some of the countries worked include: ZK2, T2, T30, ZL/C, and lots of VK's and ZL's, and JA. A hearty congratulations,

and I hope your 5B DXCC award arrives in time for Christmas. Brian also reminded me that I had once written that I would be reviewing the "DX EDGE" at some time, and I will early in the new year.

Speaking of reviews, I had a chance to try out a new Yaesu FT-102 during the CQ WW DX Phone Contest, and it will be the subject of a review article which will appear in the January issue of TCA. During a QSO on the subject of new equipment with Mel Martin, VE2DC, I found out that Mel had recently started his own dealership (DC ELECTRONICS, STE. MARTINE, P.Q.), and he generously offered to send down the Yaesu for the contest. As it turned out Mel is not only a generous soul, but also a very astute businessman. The FT-102 will not be making a return journey to La Belle Province.

Without giving away too much, suffice it to say that it has a receiver that is second to none I have ever used, and a front end that handles overload like a unit worth thousands of dollars more.

It also has a noise blanker that proved extremely useful on eliminating our friend "Comrade Woodpecker." Many thanks Mel.

I would like to take this opportunity to wish everyone Season's Greetings, and best wishes for a Happy, and Prosperous New Year. I hope that Santa manages to get that new rig down the chimney without damaging any of the knobs. Good DX in 1983, International Telecommunications Year (should be good for a few prefixes eh Garry?)

12-01-82

## QSL MANAGERS-82

CALLSIGN	QSL VIA	CALLSIGN	QSL VIA	CALLSIGN	QSL VIA
1A0KM	10MGM	D68AAB	G4DYO	T32AG	K7TI
3A2GX	10YAE	DA1XR	N3BOR	T32AH	KE0A
3B8ZZ	W0TT	DA2AR/HBO	DA2DC	T32AI	KE0A
3D2AB	VE10YS	DA2CK/HBO	KA2JFY	TA2KS	G3SCF
3D2DX	SM3CIS	DF8MP/LX	DL2KAO	TI2EY	DF6EX
3D2EH	K8VIR	DJ6SI/3X	DJ6SI	TI2JIC	AG1K
3D2TI	VE10VX	DK2GZ/5Z4	DK2GZ	TI2WX	K4WVX
3D2TN	W03WJ	DL7RT/EA6	DL7RT	TL8CK	F6EVM
3V8AL	DL10BY	DX6NRA	DU7EM	TL8CK	F6EWM
3V8DX	G35TK	EA6JD	EC6AL	TL8DC	F6EVM
4D9RG	DU7RC	EF5SSC	EA5BAA	TU2HU	W3GHK
4S7AJG	K5AJ	EJ0RTS	EI7CC	TU2IE	DL4BAM
4S7MX	SM3CIS	EJ3AK	EI3AK	TU2LE	F6ESH
4X2BYB	VE1WOU	EL2AG	WA4VDE	TYA11	ON5NT
4Z4KX	VE10KE	EL8N	SM4CWY	UFOL22	UA0QFY
5B4IJ	DL10PSK	EL9B	KA8BXA	UY4L	UA4LM
5B4JE	DF4FX	EP2TY	JR3WRG	V2ADX	W9SWM
5H3BH	SM0EAI	F08GM	WB6GFJ	V2AN	KA1JP
5R8AL	WA4VDE	F0DYM/ES	W3HNC	V3ME	G3OGO
5T5RR	FLANH	F0FOO	N6RA	V3TV	G3ATK
5W1DC	DL10CV	FB8WG	F2CL	VK0DX	VK7LJ
5Z4CL	W0309	FG0CA	N6ZV	VK6ZX/LH	VK6ZX
5Z4CM	W0309	FH8CL	VE2FOU	VK9YE	VK6NE
5Z4CS	DL10LV	FK0AF	FK8DD	VK9ZD	VK6YL
5Z4CS	WA4VDE	FK8CW	K2IJL	VK9ZG	VK6YL
5Z4CV	W0309	FK8DD	KA3E	VK9ZH	VK6YL
6W8AK	WB4LFM	FM7CF	WB3AKI	VK9ZR	VK2BJL
6W8AR	WB4LFM	F00JO	K6HHD	VP2EC	N5AU
6W8DY	VE4SK	F00KP	W6SZN	VP2ED	AD8J
8Q7BC	DL10BC	F00OJ	W6GO	VP2EE	AA4NC
8Q7BQ	K9AJ	F00WA	W6SZN	VP2KAV	N7KA
8Q7DL	DL10EAF	FP0FEZ	VO1FB	VP2MIX	W01JN
8U5JM	WA4VDE	GD4INU	VE3IUI	VP2MKV	N7KA
9J2JN	WB21ZN	GU5DSD	WA4WPO	VP2MO	KA4BOT
9J2NO	DL10RLI	GU5EHF	K2UO	VP2VIC	KA2IXW
9J2TS	DL10LZB	H5AIR	ZS6BSK	VP2VIH	KD3P
9K2BE	DL10LR	H5HAF	ZS6BSK	VP2VII	W5SJ
9K2DX	N4TR	HC8SL	HC2SL	VP5JEX	W4DR
9L1EX	DL10EX	HH2A	AJ9D	VP8AEO	G3VPW
9L1LS	N3ADC	HH2KR	W4AJX	VQ9CW	WB1DQC
9M8WF	DL10DC	HK0EHM	WD9DZV	VQ9SB	WA6IJZ
9M8WR	DL10DC	HK0QA	K4TXJ	VQ9WB	WD9GIG
9Q5ZA	DL10FN	HR1JSH	WB6WOD	VQ9XX	N6BFA
9X5SP	DL10DA	HS5AID	AG6N	VR6KY	LA7JO
9Y50VU	W0309	HV2VO	10GPY	VS5DO	G4EFE
A22GM	N4FD	IU8ITU	I8MPO	VS6JW	G4LRG
A22ZM	DL10CU	J20/D	F2GA	VU2YOU	K4YT
A35JL	K9AUB	J20/Z	F6ATQ	W4MNG/3B8	WA4VDE
A35RF	W0309	J20Z	F6ATQ	WB0MKR/KH3	KB2RV
A35TN	W0309	J28CB	F6HFS	WB6WOD/CE0Z	WB6WOD
A35WH	DL10KH	J3AVT	W8UVZ	WD8QGQ/KH7	KH6JEB
A35WM	DL10WM	J5HTL	SM3CXS	YB0PG	KB5AS
A4XYB	G4KH	J6LOV	K2QIE	YB1CD	WA1ROI
A92DD	K7DVK	J6LZA	K4LTA	YJ8VU	DK5EX
AH2E	N9AVY	JA1DNG/YI	JA1CJF	YK3AB	OE1DH
AH3AC	KB2RV	JW5VAA	LA7JO	ZD8CC	W9CN
AH6DY/KH6	KW6HF	KH6AC	WF2ACL	ZD8DZ	AB4B
AH8AA	W4FCX	KH8AC	WB2ACL	ZD8JGN	W9CN
C30LG	EA3BDW	KH8AC	WF2ACL	ZD8MJH	G3GIQ
C30LM	EA39KZ	LG5LG	LA7XB	ZD8MJH	G8MPP
C30MK	EA3VZ	LX1BI	KB3MC	ZD8MW	G3GIQ
C30MS	EA3MS	N8ET/VP9	AD8P	ZD8MW	G8MPP
C31HD	F6BII	OA4JR	KA9FKL	ZD9BV	W4FRU
C31JX	DL10FE	OD5LX	SM0DJZ	ZF2BN	W4HET
C31XO	F6GOW	OH0BA	OH2BAZ	ZF2CD	W3ODJ
C53CC	WA4VDE	OH0W	OH2BAZ	ZF2GC	W4UY
C53DZ	DJ6SI	OJ0MR	OH0AA	ZK1AF	SM3CXS
C6ADV	N7YL	OX3GH	WA2TTI	ZK1XG	DL1VU
CE0ZAD	WB6WOD	OX3PT	WA2TTI	ZK2BA	VK3VU
CN8BX	AK3F	OX3TT	OZ6UT	ZK2BB	VK3VU
CN8CY	W03IEQ	OX5RD	N9BEM	ZK2KH	DJ9KH
CO7AM	EA1GF	P42C	PJ2FP	ZK2WM	DJ1WM
CP6IM	WB1DQC	PZ9AB	W1KSZ	ZLOAEO	WB8WMS
CR9T	WA4IKZ	R6L	UK6LAZ	ZL4GF/C	ZL4KI
CT2ARA	AD1K	S79ARB	WA4VDE	ZL4QY/A	VK3DWJ
CX5AO	DL10BY	T32AB	N7YL	ZM7VU	F6DYG
CZ3PCA	VE3KKB	T32AF	WH6AIF		

# 28 MHz Beacons

<u>FREQUENCY</u>	<u>CALLSIG</u>	<u>LOCATION</u>
28.175	VE3TEN	OTTAWA
28.205	DL0IGI	MT.PREDIGTSTUHL
28.205	ZS5VHF	DURBAN
28.2075	WD4HES	ENGLEWOOD FLA.
28.210	3B8MS	MAURITIUS
28.215	GB3SX	CROWBOROUGH
28.215	ZD9GI	GOUGH IS.
28.2175	VE2TEN	CHICOUTIMI
28.220	5B4CY	ZYYI
28.225	VE8AA	N/O QTH CHANGE
28.230	ZL2MHF	MT.CLIMIE
28.235	VP9EA	SOUTHAMPTON
28.2375	LA5TEN	OSLO
28.240	OA4CK	LIMA
28.245	A9XC	HAMALA
28.2475	ZS1CTP	CAPETOWN
28.250	Z21AN	BULAWAYO (U/C)
28.2525	VE7TEN	VAN.RESERVED
28.2575	DK0TE	KONSTANZ
28.260	VK5WI	ADELAIDE
28.262	VK2WI	SYDNEY
28.270	ZS6PW	PRETORIA
28.2725	TU2ABJ	ABIDJAN
28.280	YV5AYV	CARACAS
28.285	VP8ADE	ADELAIDE IS.
28.290	VS6TEN	CAPE D'AGUILAR
28.295	VU2BCN	NEW DELHI
28.3025	ZS1STB	STILL BAY
28.315	ZS6DN	JOHANNESBURG

N/O means Not Operational at this time

U/C means Under Construction

That's it for this month (and year). Good DX in 1983. Thanks to Long Skip, DX Bulletin, CQ Magazine, and a host of anonymous off-the-air sources for much of the information appearing here.

'73

Doug, VE3KKB

## What Is Seefars???

Art Sylva  
VE3 FMB

Recently I bought a 45 transistor, super deluxe model radio. After listening for several days on the Short Wave bands I have come to the conclusion that something is very, very wrong.

Every day I hear people from CFARS (which I presume is a new planet) talking to others who have apparently landed on earth and are scattered from St. John's to Victoria. They seem to be in daily contact with some station which operates from a Cyprus tree - which must be quite a trick as well as uncomfortable. They must be infiltrating the movie industry since they talk about Bert Lahr, though they never use his first

name - probably for security reasons. And they must be practising for some kind of race, with their favorite entry some guy by the name of Lan. They continually cheer him on with cries of "go Lan, go Lan."

They appear to have acquired one of earthlings bad habits - drinking. Their favorite potion seems to be Charlie Whiskey which must be very potent since they lose their voices as soon as someone says Charlie Whiskey. (Charlie India Whiskey is also mentioned.)

They abide by some set of laws called 2700-22, DCEO 2-3; though, at times, they have many

disagreements on the interpretation of them.

They must be up to something, because they have an emergency coordinator. Surely emergencies are bad enough without somebody coordinating them!

One of the prominent members is named Roger. He is called more often than anyone. Sometimes he answers as Roger 'D'.

They must be studying English literature since Romeo and Juliet are often referred to.

They've recruited some person by the name of Zulu to keep time for them.

They continually go "over" or "out" but they never say over what, or if they're going out to lunch or to the sand box.

They appear to have made widespread investments across the country. Some stations talk of their "facilities" (sometimes referred to as "the magic means") while others talk of "going commercial."

They must be very hard workers or very religious. They continually mention "patches," but never indicate on what part of their clothing they're being applied.

Apparently they are unionized and expanding rapidly, since many "locals" are referred to on a daily basis.

Some military affiliation is suspected since queues are frequently mentioned - queue RM, queue XL, queue RX, etc. It has not been determined whether the word is **queue** or **que**. They may be speaking of a perfectly harmless game similar to our game of pool and the cues belong to RM, XL, RX etc.

They seem to be a fun loving group and hold many parties. Apparently they have to apply to the head honcho to hold these affairs and permission is never denied - it's always "Put your party on, put your party on."

(If you wish, Mr. Editor, you may add that Art has promised to do a serious follow-up article on the Canadian Forces Affiliate Radio System - CFARS - in a future issue of T.C.A.)



# VHF/UHF News

John Dudley VE5JQ

## VE3 LNX

Victor of Ontario sent a most welcome tape letter describing his station equipment and activities. Victor operates all bands 160M to 2300 MHz. VE3LNX has been quite active in the VHF/UHF contests especially in the multi-operator category and can be counted on for a good score from VE3-land.

Equipment and antennas is in abundance at VE3LNX including towers and linear amplifiers for most of the bands.

Victor would like to pass on two points to our readers. Firstly, he believes there should be no FM contacts allowed in the VHF/UHF contests, as these are basically weak signal mode activities. Any comments? Secondly, the crew at VE 3 LNX is looking for more contest ops, any takers contact Victor.

## • ARRL JUNE VHF QSO Party

Canadian stations made a good showing in the June contest although many more stations were active than submitted logs. The eastern stations had the bigger scores as usual and there were some truly outstanding efforts (see VHF/UHF column Sept/82 for details on VE 3 ONT).

### Single OP:

VE3ASO 49,495	VE1UT 3,146
VE3LNX 21,842	VE3VW 3,096
VE1YX 17,248	VE3CPU 1,780
VE3BFM 16,128	VE7ASI 1,548
VE3FGN 8,935	VE3ADJ 1,332
VE3EYR 7,800	VE2AJ/3 920
VE2BXF 3,800	VE6IP 480
VE5JQ 3,420	VE2CUA 182

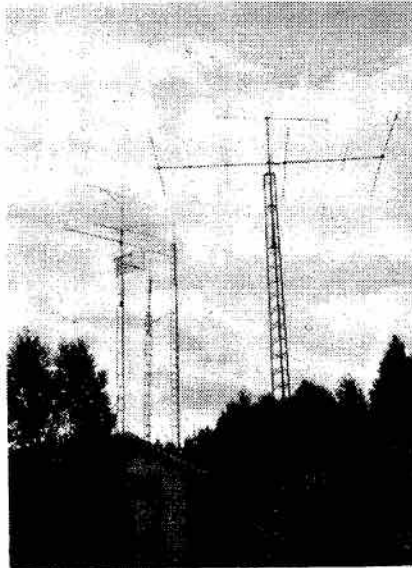
### Multi-op:

VE3ONT	182,592
VE1DEQ	410

Congratulations to VE3ASO and VE3ONT for setting new single and multi-op Canadian division records.

## AURORA

Early autumn has seen a few auroral openings on 6M. On September 6th, VE1YX, VE3DSs and VE3FGU were worked from here during an auroral E opening. The eastern stations were reporting contacts to the western United States and Canada.



### VE3LNX

First Tower TH6-S Element for 6m Delhi

Second Tower 1) Dish for 2304 MHz

TV Tower 2) 15 element yagi for 220 MHz Homebrew

3) 45 element loop yagi for 1296 MHz

4) 21 element yagi for 432 MHz F9FT

3rd Tower Hf ANT 40 m 80 m 160 m

TV Tower 2m vertical & TV ANT

4th Tower Delhi 2m Boomer 19 element 75'

September 5th saw a few two metre aurora QSO's here with VE4MA, VE4AU (Winnipeg) and VE6SW (Calgary) and WA7ZZG (Washington). South Dakota and Minnesota were heard also. I understand the eastern part of the country had auroral QSO's right up to 432 MHz! Reports would be appreciated.

## VE3ONT RIDES AGAIN

VE3ONT was active again with a big multi-op effort in the SEPTEMBER ARRL VHF Contest. Dana, VE3DSS, one of the founding members of the contest group forwarded me details of their activity.

The operators included Dana VE3DSS, Hans VE3CRU, Paul VE3FIB, Vic VE3AIA, Tom VE3MFT, John VE3CVX and Bob VE3KZ who also supplied his FB QTH again.

Dana reports spotty conditions but aurora did supply QSO's right up to 432 with Indiana and Illinois being worked. There was also some tropo to Tennessee worked. The final score was 89,302 - a new high for the VE3ONT group in this contest.

Statistics for the operation breakdown as follows:

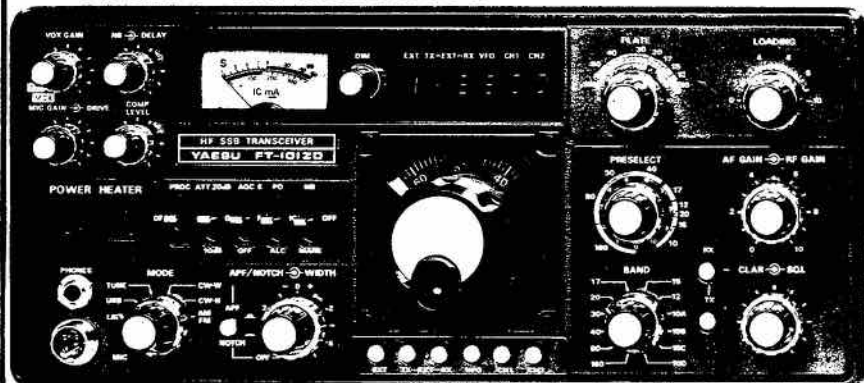
Band	Total QSO's	VE's Sections Worked	VE's
50	233	38	26
144	394	27	132
220	38	15	5
432	61	18	11
1296	7	4	3
10GHZ	7	1	7

Well done fellows and we will be looking for you in the January contest.

continued on page 32

# FT-1012D

## HIGH-PERFORMANCE HF TRANSCEIVER



ACCESSORIES: YE7A HAND MIKE \$15; FA9 FAN \$29  
SP901P SPEAKER PATCH \$99; FV1012 VFO \$229

**Last Chance**

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+10% (DC 200W)  
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Carrier sup: 50%  
Unwanted re: 60dB  
Better than 100dB  
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Less than 100kHz  
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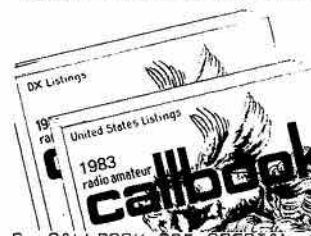
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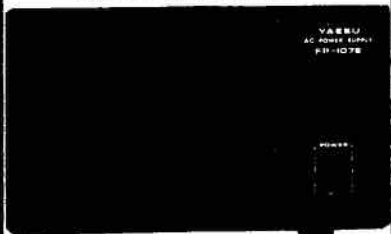
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# YL News and Views

Cathy Hrischenko VE3GJH  
56 Stockdale Crescent  
Richmond Hill, Ontario  
L4C 3S9

A YL page in The Canadian Amateur. *Deja vu.* That's right. On January 1959 the original TCA published a YL Page for the first of many that were written by Lois Gillespie VE7AUF, now a silent key. Lois was well-known as an active participant of the British Columbia Emergency Amateur Radio Net. Lois had great leadership qualities and a lot of good ideas.

Although I wasn't licensed at that time, I did enjoy reading her column. There were few Canadian YLs at that time and they were spread sparsely across this great land of ours. Lois said, in her first column; "Just having a YL Page would bring YLs together."

Let us go through some of her ideas and see if we have, indeed, come a long way. She asks, "Do you think the time is near when YLs should be organized? Do you think they would like to be?" We certainly proceeded on those questions. In 1965 The Ontario Trilliums was formed. In 1966 the Maritime Sparkettes was formed for the eastern YLs. In 1967, as a centennial project, the national YL organization called the Canadian Ladies Amateur Radio Association was formed. Most provinces have their own YL nets as well as the organizations mentioned above. We will tell you more about these organizations another time. These organizations were started with mixed feelings. No, they didn't want to be separatists, but they did feel they needed something to link them together. Although the OMs were very supportive, the YLs found they had a different set of problems that they thought best be worked out with other YLs who were having the same type of problems. These YL organizations filled that link. Remember, even a live wire needs to have connections!

The next question Lois asks: What do you think about a certificate for hams who have worked

a specified number of Canadian YLs?" The Ontario Trilliums have one certificate and CLARA sponsors three certificates that are well worth having. All three organizations have an annual contest.

Another question asked by Lois. "What specifically do you think YLs could contribute to ham radio, or what assistance would they receive through this magazine? I could go on for pages answering the first part of this question. Let me put it as simply as I can; YLs are active net controls on many nets - YLs are always heard operating and working behind the scenes on field day - YLs are always on hand in time of need, helping in whatever way they can for the betterment of Ham Radio. Just think how many of our YLs have become Amateur of the Year for various clubs. In answer to the second part of her question, let me say that by having a YL column, both YLs and OMs will become aware of the various YL activities, contests and certificates. It will keep us in touch with each other and give us encouragement to keep learning and helping. To develop friendships around the world and across Canada with other YLs. Most of all, to express our ideas and thoughts and do what we can to keep Amateur Radio the great hobby that it is.

I hope that both YLs and OMs will send me any info they think might be useful for this column. If there is something special you'd like to hear about regarding YLs, please let me know.

I received my 5-Band DXCC in July, number 1290. I believe I am the first Canadian YL to achieve this award and am now looking to find if any other YL anywhere else has done the same. Any info would be appreciated.

A reminder to send in logs for CLARA AC-DC (annual Clara Day Contest). Deadline is December

31, 1982. Send logs to Lynn Boothroyd VE3LQL, 673 Tackaberry Dr., North Bay P1B 8R1, Ontario.

Deadline for the Trillium Weekend contest is also December 31, 1982. Send logs to Audrey Cuthbert VE3ILT, 87 Parma Crt. Unit 2, Toronto M4A 1A5, Ontario.

I'll leave you with this thought: There are three things that we should know. Where we are going. Where we have been and where we are.

73/33/88 as the case may be.

---

## Halifax Club's Intervention Curbs Cable TV

Doug Burrill VE3CDC

After a lot of time and effort, including extensive and detailed monitoring of two-metre interference from the local cable TV system, the Halifax ARC's intervention in a recent hearing held by the Canadian Radio-Television and Telecommunications Commission (CRTC) paid off when, at the Commission's suggestion, the company vacated cable channel 'E' which is put on the cable system at 145.25 MHz. Further good news for Leigh Hawkes, VE1ZN and the others who worked on the case, was the company's announcement that it was embarking on an equipment up-grading program to minimize RF radiation ('leakage') out of its cables and the ingress of Amateur and other radio transmitters into its system.

In a similar maximum effort in the U.S. a California Amateur group, getting no co-operation in a cable TVI case, amassed enough evidence and backing of the FCC

continued on page 33



# How to Flunk the Code Test — Part 2

Doug Burrill VE3CDC

## The Scene of the Crime Re-visited

In October 'TCA' we told of the far-from-uncommon problem of trying to pass the code test under unreal and distracting conditions. Large echoing halls, hi-gain speakers and very poor tapes, complete with key clicks were cited as factors in the high failure rates. In that article we quoted a letter which Ray Fleury, VE3KND, wrote to the Minister of Communications describing the fiasco he witnessed at the June set of exams held in a large metro area and we outlined a CARF proposal to DOC that would see selected Amateur volunteers permitted to give the Morse test and to monitor and possibly even mark the written exams.

CARF has had no reaction from the Department at the time of writing but Ray received a reply from the Minister which ended up by saying that Ray's suggestion that "Amateur code testing be conducted by various clubs throughout Canada under departmental supervision is being considered by officials of the Department."

Ray was invited to audition the tapes again, which he did by attending the next set of exams held at the same office on October 20th. This time the echo problem was not present as a more suitable room was used he said, but there were still key clicks and some bad spacing of characters and words.

The DOC letter unfortunately questioned Ray's original assessment of the Morse test tapes as "trash" and "the worst sending I had ever heard in my fifty years of reading Morse from all over the world" by saying that "both the recorder and the tape have been evaluated by senior staff members" and that "the quality and speed are within generally accepted standards."

Questioning the opinion of one of Canada's top professional CW operators and a long-time military

instructor provoked the tart comment from Ray, "I would suggest that if your senior staff thinks that the tapes used for sending the test were within generally accepted standards, your personnel should be tested to ascertain their ability to read and send Morse code."

While the excerpts quoted so far may seem to be somewhat acrimonious and negative they do set the scene for the positive comments from both the Minister's office and Ray. As the latter noted, "My concern is not to qualify as many candidates as possible, but rather to qualify only those candidates who meet the high standards to become Radio Amateurs. To achieve this aim, it follows that proper tests must be carried out. As a matter of fact, none of the candidates were tested to ascertain their ability to send the Morse code as per your regulations in TRC 24, dated 30 April, 1981."

Part of the problem is that the DOC personnel involved are no longer required to know the code and hence rely on tapes for the receiving test and they no longer run sending tests.

Ray's letter concluded, "I am appreciative of the fact that my suggestion to carry out code testing at various club levels is being considered by your Department. If future testing as recommended is approved, I will feel that I have not been wasting my time in bringing the matter to your attention."

As said in Part 1 of this article; the correlation of poor code testing procedures appears to occur in a number of centres across Canada, judging from comments heard from a number of people during the past year.

The solution to this problem seems simple enough; *let approved Amateurs do the code testing.* There is plenty of precedent for this in the examination procedures in other countries where the national societies participate to one degree or another in the certification process. Japan and Norway come to mind and the most recent one is the U.S. where

Congress has passed legislation permitting the FCC to delegate the administration not only of the exams but other functions related to the Amateur Service, including monitoring and reporting of violations.

It is hoped that the Department will proceed to confer with the Amateur community on ways and means to initiate a similar system here, not only saving money but at the same time removing a sore spot with Amateur fraternity and those who, through no fault of their own but rather due to the unreal simulation of CW as it is in the actual world of radio, have had a tough time to make the code exam.

*('TCA' invites comment on the code tests from those who have had to put up with the exam conditions described by Ray. The more, the merrier...all will help to clinch the argument for Amateurs to be involved in the testing process...Ed.)*

## Now You've Got It

An All Canada Call Book will be available in early 1983. This thanks to the efforts of Pen Publishing. The book will be available through the Canadian Amateur Radio Federation and major retail outlets across Canada. The book is in the 8 1/2 by 11 inch format and comes with a detachable binding in case you wish to put it in your 3 ring binder cover. The size of type and spacing will be more readable than is usual for this type of book. If your club is not located near a dealer you can contact the publisher about a bulk order and correspondingly reduced rates. The suggested retail price will be \$10.95.

Pen Publishing is the effort of Ed Charlesworth VE3ZF of Burlington and Fred Robinson VE3GCP of Hamilton. The Call Book is compiled, designed and printed and published by them, and they can be contacted at Box 4386, Postal Stn. "D", Hamilton, Ontario. L8V 4L8.

# Life on the Ocean Wave or "Sparks" SEA SAGAs

Bill Deacon  
VE3BDO  
Ottawa

Many tales can be, and have been, told by sea-going radio operators (known by their ship-mates as "Sparks") about their adventures and experiences; and these can range from light-hearted reminiscences about "Love Boat" experiences, through less joyous tales of monotony, misery and discomfort, and through to recollections of intensely exciting and sometimes fearful moments when one's whole future seemed to be in great doubt.

Many of my past moments in the merchant marine fall into each of those categories; and I will talk about them at the slightest indication of interest to my talks to two Ottawa clubs, we now see how it goes via the written word.

Most Amateurs (and many commercial operators) can only try to imagine what operating was like over a half century ago. The preponderance of ship-board equipment was spark - synchronous and asynchronous rotary gaps, and quenched gaps. I don't propose to dwell on the technicalities of these units, I will, however, point out that they were very noisy units when transmitting; and the old saw was that the sound waves carried about as far as the RF - a comment on both the level of sound and the inefficiency of the systems generally.

Worse than this was the paucity of tools and spare parts, particularly on the vessels sailing the B.C. Coast. Continuity was checked by using earphones and a battery. These were placed in series with the circuit or unit to be tested, and were operated in "make" and "break" fashion. If you heard continuous clicks, you had continuity. No clicks - no continuity. To check capacitors, you listened to the level of the clicks. If clicks continued at a high level, the capacitor had "blown." If the clicks faded in level, you knew the condenser or capacitor was charging and thus OK.

On one occasion, I joined a deep-sea tug that was chartered to proceed to the Queen Charlotte Island to pick up a very large raft of high-grade spruce logs; and to tow it to Vancouver. A radio operator played an important role on such a charter because towing could not be conducted in rough water. Consequently, we had to make sure we had the latest weather reports at all times, so that we could make for shelter if poor towing weather was imminent.

A few hours after departure from Vancouver, a high-pitched tone poured steadily from the receiver's output; and I immediately diagnosed it as an open audio transformer. (Remember, we are back into the early 30's, with a very simple tube receiver operating TRF and all that old stuff). The only trouble was that I had no tools and no spare parts with which to effect repairs. That is perhaps an overstatement - there were some odd little pieces of wire in a desk drawer. Because of the very competitive situation in towing in those depression days, as well as the hard-nosed attitude of the charterer, there was a danger of losing the charter if we returned to Vancouver for repairs. Consequently, I decided to try to repair the receiver if at all possible.

I reasoned that, although the secondary of the audio transformer was open, it still would be producing an audio output; but, due to the open in the circuit, the grid had piled up a fat negative bias because it could not discharge back to the filament (cathode to you). So, what I needed to do was find some way of letting that discharge take place. Old timers will remember that we used "grid leaks" for that purpose. However, I had no resistors with which to do this. However, like the housewife who borrows a cup of sugar from one neighbour and

baking pan from another, I canvassed the engineers and the galley, coming back with some tools, a glass of water, and a salt shaker.

I attached wires to each side of the audio transformer secondary; and placed them in a glass of water. Then I shook in salt until the resistance lowered to the point where signals were readable (i.e. reducing the grid bias), EUREKA! the first signal I heard was radio station JOAK, broadcasting from Japan, I was in operation!

Now we were entering Queen Charlotte Sound and starting to pitch in the heavy Pacific Ocean swells. The glass wanted to slide around the operating desk; and water was slopping over the rim of the glass. This wouldn't do...back to the drawing board! I found a small piece of bakelite (remember that stuff?) in a drawer with a few holes in it. I wound the two wires around each of two holes and then, line by line, drew pencil marks between the two holes until the resistance once again lowered to an appropriate operating point. Now I could return the borrowed tools, glass and salt shaker and finally relax into normal operating routines. It was no work of art, but it performed very well for the several weeks of that voyage.

Upon my return to Vancouver, I reported the event to the Canadian Marconi Company so that they would make proper repairs. My youthful pride was injured in finding that the report was accepted as routine, with no praise for what I, in my biased judgement, considered to be a truly innovative performance. Oh well, good human relations were never the Company's strong point in those days. We had to be grateful that they paid us the princely sum of \$70 per month to agitate the ether in their behalf.

Here endeth the First Epistle of St. William.

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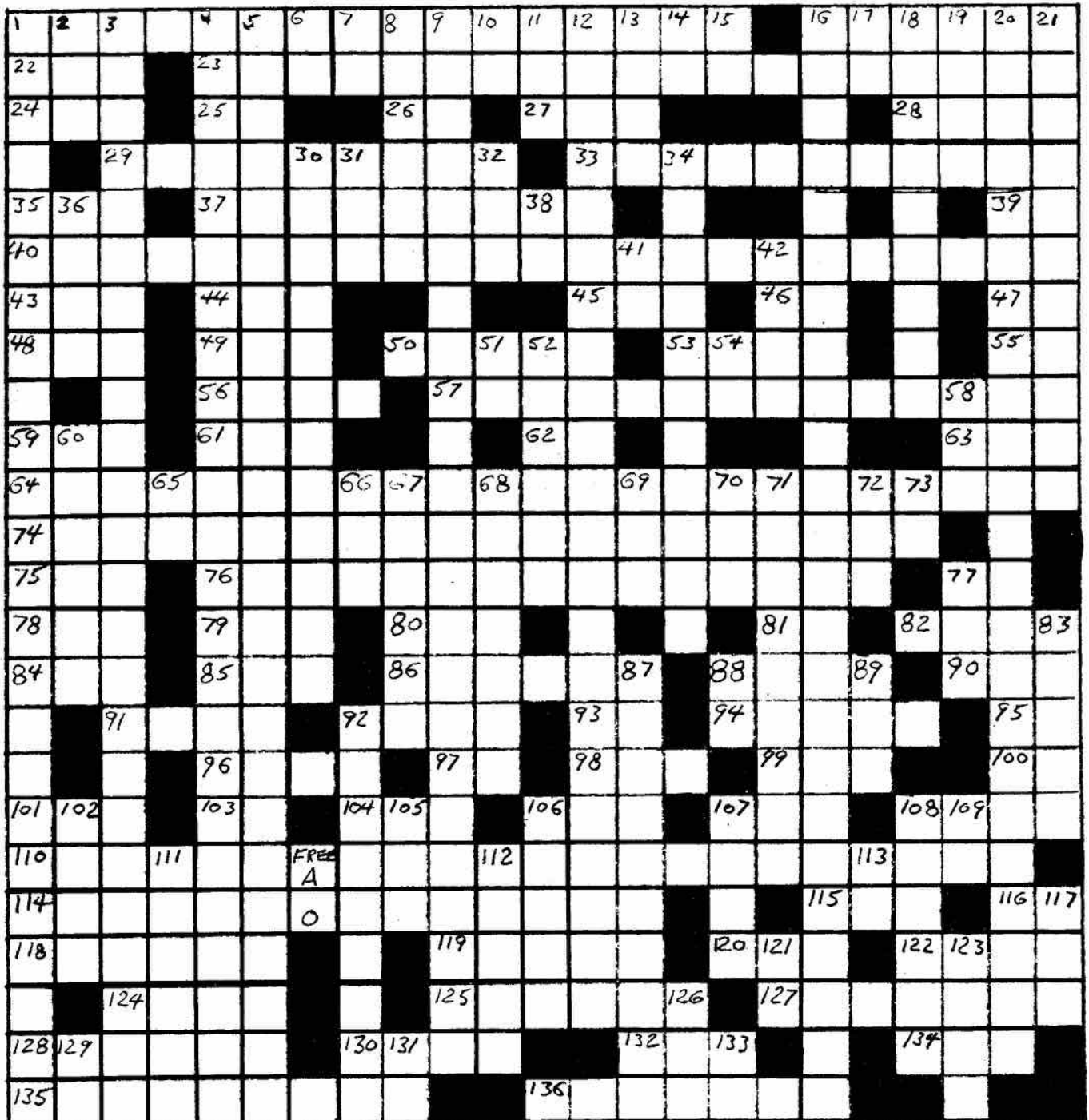
## Next Issue of TCA

TCA is ten years old this January, and to celebrate this event, we will be publishing some stories from past issues and examining the development of the magazine over the past decade.

# Another Amateur Crossword Puzzle

by Jim VE1BCI

This puzzle features an "Amateur Radio circles the Globe" theme. An Amateur's Atlas or map will aid in solving.



- Always two clues given to accommodate the novice as well as the experienced.

Jim VE1BCI



ACROSS:

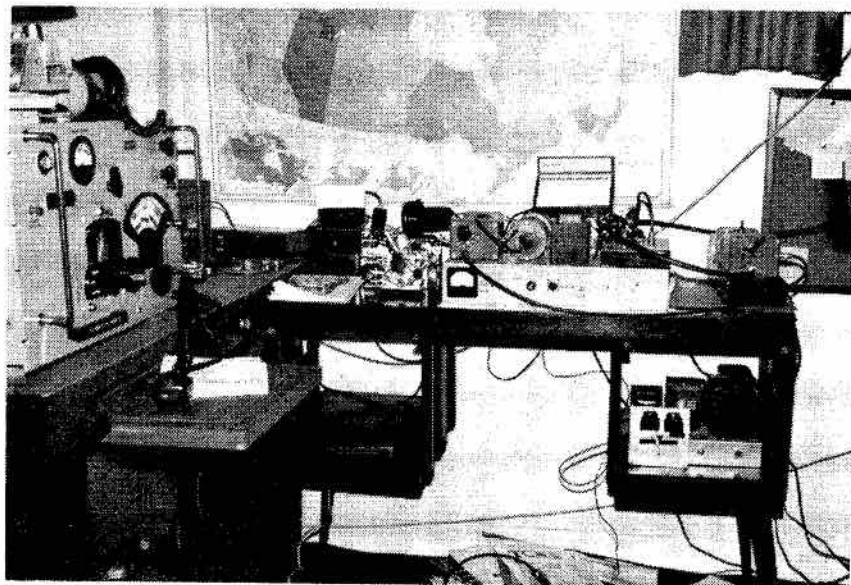
- 1 (a) Standard words used to distinguish alphabet letters (pl) followed by "To return a computer word to its initial value." (2 wds)  
 (b) --- our faith in a youngster's ability to learn to read.
- 16 (a) To regulate or control as the speed of a motor.  
 (b) Followed by or this could be the Lieutenant --- of Canada.
- 22 (a) Found in 3X Land.  
 (b) Electrical Unit Indicator
- 23 (a) ...a PNP Transistor as free electrons are to an NPN. (6 wds)  
 (b) Not only do electrons fall into holes but I may have fell into a deep one here by this statement. Clue ?H?H?F?I?T?
- 24 (a) A unit equal to one ampere-turn per magnetic line of force.  
 (b) I'd be reluctant to divulge this answer.
- 25 (a) Seen in Greece.  
 (b) Electrical Engineer.
- 26 (a) Tandy Leather Co. trade name.  
 (b) Resistor symbol (pl)
- 27 (a) Abbrev. for the amount of heat required to raise the temperature of one gram of water one degree centigrade.  
 (b) Low --- is a diet beverage.
- 28 (a) Most transmission lines come --- from the antenna to the rig except for those that may go the other way.  
 (b) The fine soft plumage of birds under the outer feathers.
- 29 (a) The sawtooth appearance of vertical lines in a T.V. picture caused by different starting points during the hor. scan.  
 (b) Your in the army and chow rations consist of ser. only. This is then known as a ---.
- 33 (a) Material that can't be attracted by a magnet or refuses to be magnetized, is a --- material.  
 (b) A person with no class has a --- personality.
- 35 (a) What a quarter watt bulb produces.  
 (b) Extremely low wattage.
- 37 (a) Describing current resulting from chemical action (pl).  
 (b) Hams from Galveston?
- 39 (a) Symbol for Sodium.  
 (b) Slang for no.
- 40 (a) Referring to magnetic tape recording. Think of the non-magnetic tape used for splicing to the ends to allow threading. Now if this tape was slightly magnetic, made of Al. and two tracked it may be called (4 wds)  
 (b) Loud mouthed twins running a foundry?
- 43 (a) Tube or transistor.  
 (b) A young child.
- 44 (a) Prefix for plex.  
 (b) A "B" part would be too simple.
- 45 (a) Interrupted Contacts Pit  
 (b) See - You learned something too!
- 46 (a) Start and finish of alkali.  
 (b) didah didit
- 47 (a) The load connected to the output terminals of a power supply in terms of resistance can be shortened to ---.  
 (b) How the Lone Ranger signs his initials.
- 48 (a) Any amateur who copies code perfectly from W1AW can receive a --- to prove it.  
 (b) PAC-MAN; first half (scrambled)
- 49 (a) Angle of incidence  
 (b) Any other ideas?
- 50 (a) One of two words found on many control switches to designate on and off.  
 (b) If you --- now, you may finish by five.
- 53 (a) Energy dissipated without accomplishing useful work.  
 (b) My gain is your ---.
- 55 (a) Int. prefix for Ireland.  
 (b) p = - x -.
- 56 (a) Older meter movements used a fixed and moveable magnetized iron strip called a ---.  
 (b) The weather --- obediently turned to face the wind.
- 57 (a) While ... no responsibility for deficient devices owned by neighbours they are generally willing to offer advice in lieu of sympathy. (2 wds. 1st pl)  
 (b) While Hams take upon themselves no---etc.
- 59 (a) Last third of wave guide, backwards.  
 (b) Electronic Detection Instrument.
- 61 (a) 3 Watts = -6x500 --- ---.  
 (b) Electrical Manufacturers Association.
- 62 (a) What stands out in "Defeat went over defense before detail?"  
 (b) "This is" in morse.
- 63 (a) The Canadian confirmed the query is this --- ---? and the C.W. Station answered back with a single acknowledging ---.  
 (b) Found in Vancouver.
- 64 (a) All amateur stations must satisfy the rules as set out in the (3 wds).  
 (b) Fido can't tell you but he can say GRR!!
- 74 (a) For some operators ... month. (4 wds)  
 (b) A month - a wireless - a mode of using numbers.
- 75 (a) Middle of Output.  
 (b) Middle of input.
- 76 (a) ... rig satisfies most of us but many do use two. (4 wds. 4th abbrev.)  
 (b) Code delivery - opposite of off - a quantity - freq. descrip.
- 77 (a) First letters of Norway and China's call sign areas.  
 (b) Found in Dolby.
- 78 (a) Appears in both ground & groove (scrambled).  
 (b) Get on rig.
- 79 (a) Appears in both capitals of OK and PA Lands in the same places and proper order.  
 (b) Remains by removing Victor and Lima from Value.
- 80 (a) NFDL's call sign prefix plus the 10th letter in her name.  
 (b) Voice Operated Apparatus.
- 81 (a) Filament voltage was usually written this way.  
 (b) Solutions generally begin with effort.
- 82 (a) Hand held paging units cry.  
 (b) Road runners famous for theirs.
- 84 (a) Appears in YV Land.  
 (b) Chemical suffix (sometimes with Benz).
- 85 (a) Injecting some voltage and current into this will certainly give it some reverse drive.  
 (b) Voltage Rated Device.
- 86 (a) All letters can be re-arranged to spell a word describing a person with an I.Q. of 140.  
 (b) All found in genuine (pl) put the grid after the current and drop the rest. (pl)
- 88 (a) Prefix for axial (referring to s.s. layers).  
 (b) A voltage Dump?
- 90 (a) C.W.T.  
 (b) One of two morse characters.
- 91 (a) Usually before a code test or C.W. practice a series of --- is sent (pl).  
 (b) Famous goose flight formations.
- 92 (a) Math subj. (scrambled)  
 (b) The resistor is 25 so color it??
- 93 (a) Really tough rigorous training will see you right through.  
 (b) Receive - Transmit.
- 94 (a) One of the more mis-quoted words you hear even by some Hams.  
 (b) Phonetic Meaning Received.
- 95 (a) Begins KX6 Islands.  
 (b) Milliamphere.
- 96 (a) Reciprical of the resistance unit (p1).  
 (b) Conductance Unit. I resisted the temptation to include certain fictious fur-bearing animals.
- 97 (a) Center of speech.  
 (b) Keep an --- things while I'm gone.
- 99 (a) A fastening device between a wire and a terminal block and held there by a machine screw.  
 (b) To haul or carry.
- 100 (a) Put an I-U-E with it and we could make an issue out of it.  
 (b) Solid state.



- 101** (a) Germany and Fiji prefixes share the first two letters. The 3rd is a recent addition to the U.S.A.s prefixes.  
(b) Front - middle or back - and front again of dimension.
- 103** (a) Class designated for an oil-immersed self-cooled transformer.  
(b) Peru's prefix.
- 104** (a) Middle of a word meaning to fall.  
(b) Source to heat vacuum tube filaments (abbrev.)
- 106** (a) A resistor used to lower the o/p Z of a device. (abbrev.)  
(b) You could say it was a radio used by the police dept.
- 107** (a) Through by or by means of, for each.  
(b) Prefix for cent or annum.
- 108** (a) Has size and shape associated with signal strength.  
(b) Part of the human anatomy.
- 110** (a) A dying art kept alive today by Hams alone.  
(b) Started by Samuel and promoted by WIAW.
- 114** (a) A method of verifying simple mathematics. Past tense.  
(b) The "Cat-O-Nine-Tails" solved other things.
- 115** (a) Legendary bird of mythology.  
(b) Found in crystals of Rochelle-salts.
- 116** (a) Symbol for Terbium.  
(b) A disease is known by these initials.
- 118** (a) Greek letters used in electronics (1st full name 2nd abbrev.)  
(b) Still contained in "Our English Alphabet."
- 120** (a) 97 Across would put some reverse thrust into this.  
(b) Detector Probe (pl).
- 122** (a) What Mrs. Franklin told Ben to go and fly.  
(b) That should be the key to it.
- 124** (a) 55 Across (reversed) plus 113 Down.  
(b) Integrated Equipment Components Only.
- 125** (a) Element (Atomic No. 28 wgt. 58.71)  
(b) Metal used in magnets and batteries.
- 127** (a) Communications system giving teletypewriter service to the business community (past tense).  
(b) Trade mark of C.N.C.P.
- 128** (a) Add some vitamin "C"; scramble and get "Electrode."  
(b) Liberia + Gabons call sign prefixes + the first halves of Germany's and Greenland's.
- 130** (a) Foreign suffix meaning smaller or less.  
(b) Suffix for a MARR Connector.
- 132** (a) Age; indefinite time period.  
(b) Found in one but not in two.
- 134** (a) 1st half of the 1st half of D-C.  
(b) Spelled backwards it means a pest repellent.
- 135** (a) Automobile bulbs fit into (2 wds).  
(b) Don't try it with a tulip bulb but it sounds like greasy pockets.
- 136** (a) If the load is a pure resistance of a value equal of the Char. Z of the line, the line is said to be ---.  
(b) It's hard to keep your socks ---.
- DOWN:**
- 1** (a) The resulting figures were (3 wds).  
(b) (1) A portion of 100 (2) Measurement device (3) Shown.
- 2** (a) Colors (dominant wave length)  
(b) Try to say "Big" another way, like gigantic, large...
- 3** (a) Another way of saying "a petroleum product connection changing stops contact burning." (4 wds)  
(b) Scrambled order clues: (1) Peach stones (2) Black gold (3) Red traffic lights (4) Use of beach cabanas.
- 4** (a) A true statement concerning the application of energy conservation methods (6 wds).  
(b) Scrambled order clues: (1) To conserve (2) Opposite of less (3) Current with a one track mind (4) One who conserves (5) Current with a two track mind (6) Capacity for performing work.
- 5** (a) Printed by the A.R.R.L. since 1925.  
(b) Source of everything a Ham needs to know about his hobby.
- 6** (a) The last thing heard on old MacDonald's farm.  
(b) The 5th and 4th letters of the 2nd word in 5 Down.
- 7** (a) Without --- and --- RYSTA wouldn't be one.  
(b) Clearly a classy gift.
- 8** (a) Usually found with number.  
(b) Your Rig should have one and you should have it recorded for I.D.
- 9** (a) The difference between a ... Line is usually its S.W.R. (4 wds).  
(b) Deals with the X1 = Xc effects.
- 10** (a) Prefix for code and close.  
(b) Start of end.
- 11** (a) Slang for a time period.  
(b) There are 3600 each hr.
- 12** (a) A ... Detection System should be removed and replaced by a receiver where it would be better suited to the system. (5 wds)  
(b) Scrambled clues: (1) Opposite of off (2) Osc. + PA will make one (3) Tube element (4) What a cracked water pipe will do (5) Article.
- 13** (a) These letters are all used (some twice) to form a word meaning the number one followed by 100 zeros. (Scrambled)  
(b) Czech. - British - Lux. - Finnish 1st letter prefixes.
- 14** (a) A 24 ohm resistor colors.  
(b) A color T.V. signal.
- 15** (a) Appears together in the mountain range between France and Spain.  
(b) Same as 97 Across but backwards.
- 16** (a) A large number may be a mathematician's demise.  
(b) (1) The word describing the figures in 13 Down. (2) Opposite of isn't (3) Article (4)  $2 + 2 = 4$  is simple --- (abbrev.) (5) One who figures things out. (6) Conclusion.
- 17** (a) Class of I03 (a) Across if it's water cooled.  
(b) XE country turned upside down and looking at the 1st and last letters.
- 18** (a) An amplifier giving wide band operation between roughly 15 - 5 MHTZ. (2 wds. 2nd abbrev. P1.)  
(b) Screen presented as a --- game plus units of current.
- 19** (a) 1st 4 letters of UR2 land. Reverse 3 & 4 letters.  
(b) Equipment Stored Over There.
- 20** (a) Are two radiator concentrated rays superior? (5 wds)  
(b) (1) -. (2) Double (3) Weather related (4) Large wooden rafters (5) One up on 2nd best.
- 21** (a) An entity incapable of carrying an electric charge through a solid. (p1.)  
(b) Not a wave that can be modulated. (p1.)
- 30** (a) Insulation ceramic used in vacuum tubes put on the outer walls of a feed-through could be called (2 wds).  
(b) Major part of a light-weight element A1. followed by the soldiers --- up for inspection.
- 31** (a) Television Antenna.  
(b) Found in Trivia.
- 32** (a) What my credibility will be with any Hams who get into this puzzle.  
(b) Nothing.
- 34** (a) Motor braking caused by reversing the line voltage polarity causing a counter torque thus slowing the motor. A motor without this feature is called ---.  
(b) Someone stole your spark plugs. Your car is ---?
- 36** (a) Last word in PLL.  
(b) Shaped like a ring (or a hangman's noose).
- 38** (a) Element (# 29 Atomic) symbol.  
(b) Slang for policeman or cent.
- 41** (a) An electronic circuit contained entirely within a single chip of silicon.  
(b) Works best in cool temps. (Ice-cream?)
- 42** (a) The quantity of material in an object.  
(b) Widespread as "--- Hysteria."
- 51** (a) Found stamped on a radio dial glass usually just below F.M.  
(b) Morning part of day?
- 52** (a) Misspelled word that goes after 51 Down.  
(b) Water reservoir in a car plus the decimal notation of one hundredth to 3 places.

- 54 (a) A logic gate that produces a YES o/p.  
(b) 32 ohm color abbrev.
- 58 (a) Soviet - Canadian - Faeroe Is. Prefix 1st letters.  
(b) Under Voltage Only (relay).
- 60 (a) Heavy Hydrogen nuclei used as atomic projectiles in atom smashers.  
(b) All found in proper order in Deuteronomy.
- 65 (a) Ahead of rope spells a continent.  
(b) Found in 60 Down.
- 66 (a) Found in rides (Scrambled).  
(b) Has no vowels.
- 67 (a) I'd rather use ... in a chassis than a bolt. (2 wds).  
(b) Fastening device looks like a nail but not installed with a hammer.
- 68 (a) A tool for measuring the inside diameter of objects such as bearing bores and pipes.  
(b) Identification (abbrev.) plus last word of A.W.G.
- 69 (a) Found on end of capital of CX land. (Scrambled).  
(b) Found by the Do and Do Nots.
- 70 (a) Start with the middle of 2 Down and spell the same word the clue suggested (meaning Big).  
(b) Armenian call sign plus dit.
- 71 (a) Dead stator windings = armature resting.  
(b) Dead stator windings = armature turning. (2 wds).
- 72 (a) Turkey and France call signs.  
(b) Found in waht after?
- 73 (a) Found in Berlin but not in Bern. (Backwards).  
(b) Not enough to make you ill.
- 77 (a) Without it TF would be ican.  
(b) A pn junction that emits light when turned on.
- 83 (a) The angular relationship written 0.  
(b) First word of PLL.
- 87 (a) Elements that can break antennae. (2 wds).  
(b) Atmospheric disturbance accompanied by rain and snow.
- 88 (a) One r short of a mistake.  
(b) In ohms law  $I = \dots$
- 89 (a) Dit in the center of Guatemala's call sign.  
(b) In integrity.
- 92 (a) A T.V. tuner using a rotated drum (of coils) ... Tuner. (3 wds)  
(b) ... better than a fixed coil tuner?
- 102 (a) Terra Firma word spelled backwards.  
(b) Dedicated novices always listen.
- 105 (a) George Brown College used to be called ... where we studied electricity.  
(b) Provincial Institute of Trades.
- 106 (a) Every home and business should have a --- button to use in emergencies.  
(b) A natural reaction when you sit down to write you tickets totally unprepared.
- 107 (a) To poke or jab  
(b) Prefix for igy or igal. Do you need one?
- 108 (a) Middle word of PLL.  
(b) --- horns with anyone lately?
- 109 (a) Outside diameter.  
(b) Over Dose.
- 111 (a) A highly volatile, inflammable colorless liquid used as an anesthetic, plus the symbol for Oxygen.  
(b) The local Ethiopian Ham is a hero?
- 112 (a) A glow tube or numerical readout tube.  
(b) This is my "E." That's Nick's "E."
- 113 (a) One of Cuba's call signs.  
(b) Company.
- 117 (a) The bottom of a body of water.  
(b) That upon which a person sleeps.
- 121 (a) A transistor symbol without a base lead but arrows indicating light shining onto the base is a ---. (Abbrev).  
(b) Physical Training.
- 123 (a) Greek X in "in."  
(b) See 112 Down (Backwards, no "E")
- 126 (a) Most of a sum and difference oscillator.  
(b) Lock-on-current. (Logical of course).
- 129 (a) Modern watches have --- displays.  
(b) Logical choice.
- 131 (a) Sudan's call sign, backwards.  
(b) Tape speed too slow?
- 133 (a) State abbrev. in W-K1 area.  
(b) We Welcome All New Hams.

continued from page 23



VE3LNX

Right: Home brew 2304 MHz Gear, small cavity at extreme right Amp for 2304 10w. Next 1296 Amp 25w + 1269 mm/T both with 144 MHz if.

## Hot Air Rises

Marsh Jeanneret VE3EMJ

The kindest treatment you can give a solid state rig is to arrange a fan to blow on its heat sink, especially if it is used for sending CW or RTTY. It's no trick of course to tie the fan into a 110v outlet controlled by a master station switch. However, Amateurs who mount their equipment on shelving, store-bought or home-made, often find little room among the cables behind their rigs to position even a shallow muffin fan (otherwise an ideal unit for the purpose). A simple solution is to bolt such a fan beneath the shelf precisely beneath the heat sink, and let it blow upward through a small hole cut for the purpose. This position is invisible and ensures a steady current of cooling air right where it's needed. The fan wiring can be stapled along the lower surface of the same shelf toward the power source.

## DOC considering Amateurs to give code tests

Proposals by CARF and by VE3KND, Ray Fleury that approved Amateurs be authorized by DOC to conduct code tests have met with favor from Communications Minister Francis Fox:

In replying to Ray's highly critical letter on the current code testing procedures, the Minister's office stated "the suggestion...that Amateur code testing be conducted by various clubs throughout Canada under Departmental supervision is being considered by officials of the Department." (See TCA for October, "How To Flunk the Code Test")

In the U.S., amendments to the Communications Act of 1934 have given the Federal Communications Commission the power to delegate almost all of the administration of the Amateur Service to the Amateur community. Due to the "self-policing" tradition of the Service and the lack of funds the FCC will soon propose that Amateur volunteers conduct examinations and that it recruit and train Amateurs to detect and report violations of the FCC rules and issue advisory notices to violaters.

-VE3CDC

## Reciprocal agreements

Canadian and Italian communications authorities have mutually accepted terms of an informal arrangement for reciprocal operating privileges. Although the Italian government asked for the second four years ago and DOC agreed in 1979, not until recently was any action taken by Italy. All that remains to make reciprocal operating legal is a letter from Rome confirming the acceptance. It is expected about the end of November...Negotiations for similar agreements are still being conducted with Bolivia, Japan and Cuba. If the Cuban agreement is finalized it will be only the second Communist country to do so. Poland has had such an agreement with us since 1975.

## Packet Radio in U.S.

Packet radio has finally come to the U.S. The U.S. newsletter 'WESTLINK REPORT', says that U.S. Amateurs now have what it calls "almost limitless" use of digital codes above 50 megahertz. The only forbidden slots under the FCC ruling are 50.0 to 50.1 megahertz and 144.0 to 144.1 meg, which are allotted to CW. The newsletter also notes that the U.S. Senate may ratify the 1979 agreements before Christmas. This would open the way for the FCC eventually to permit U.S. operators on 10, 18 and 24 megs.

## CATV Interference

With the interference caused by cable TV systems using Amateur frequencies becoming more troublesome, Barc Dowden, VE3TT, the CARF rep on the Electromagnetic Interference Committee of the Canadian Radio Technical Planning Board, and Bill Loucks, VE3AR, of the CRRL/ARL Canadian Division brought the matter to the Committee's attention at its November 9 meeting in Ottawa. The Board, made up of radio user organizations, acts as an advisory body to DOC. The Committee recommended that the Board ask the Department to maintain the present limits of radiation leakage now permitted to cable systems. It also suggested that the DOC exercise tighter control and enforcement of these limits. In another recommendation, the committee asked that when standards for the rejection of unwanted signals in TV and radio equipment are written that they meet the most stringent rejection requirement shown as Grade 3 level in the recent edition of the DOC publication on interference, EMCAB - 1.

## News

CARF is providing a new service for aliens wishing to operate in Canada. Citizens of countries with reciprocal operating agreements who require assistance in getting

permission to operate here may contact Bruno Molino, VE2LFB, Reciprocal Operating Liaison Officer, care of CARF, Box 356, Kingston, Ontario.

The Sydney ARC has been asked by DOC to re-enact the first trans-Atlantic radio messages sent 80 years ago by Marconi. The plan calls for an exchange of messages on December 15 between the heads of state of Canada, Britain and Italy. Operation will be side-band from the original site at Cable Head, Cape Breton. A commemorative call sign will be requested to mark the event.

VE3DRC, the DOC Communications Research Centre in Ottawa now has FM beacons on 144.935 megs, on 433.935 and 1296.000. There is also one on 861.5125 megs testing out the new 800 megahertz mobile radio band.

## CARF NEWS SERVICE

### Halifax Clubs Intervention continued from page 26

to have the company slapped with a \$6,000 fine. Interestingly enough, \$2,000 of that was for radiating more than the permitted RF outside of the cable and \$4,000 was for interfering with the Amateur Service!

Legally, in Canada as well, there are certain limits of RF 'leakage' allowed and here too, the Amateur Service is legally protected against such interference.

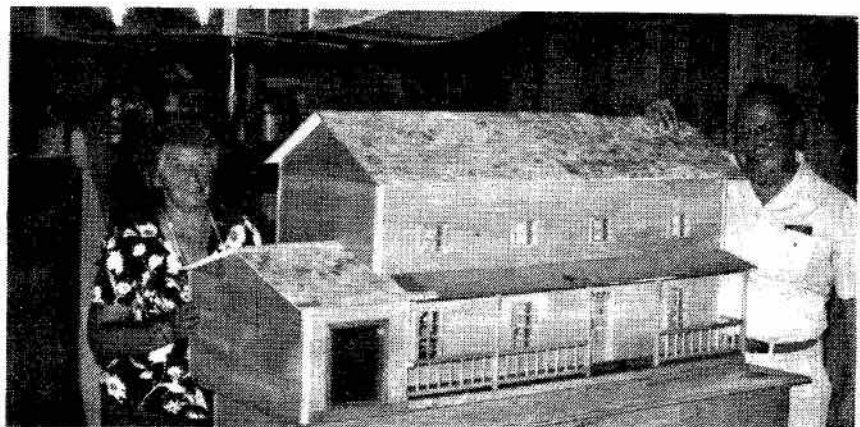
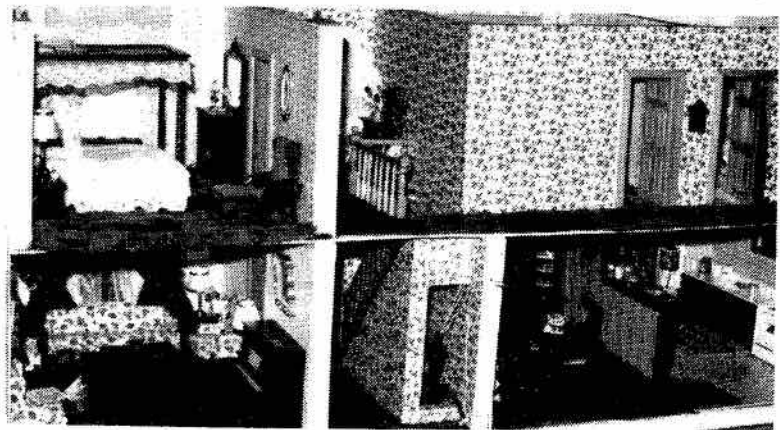
With this new problem of 'leaky' cable TV systems become widespread, CARF is amassing information from clubs and Amateurs and will be taking steps to assist in resolving what will be one of the major technical and legal problems facing Amateurs in the next few years. VE3TT, Barc Dowden, of Ottawa, who represents CARF on the Canadian Radio Technical Planning Board (a government-industry advisory board) raised the question at the November meeting of the Board's EMI committee. A report on the outcome and more on cable TVI will appear in the January issue.



# A CRAFTY WHITE-CANER

by Marsh Jeanneret VE3EMJ

Benedict Redmond ("Red") Kelly VE3ETR, who retired from a senior supervisory position in the Canadian National Institute for the Blind a few years ago, puts many sighted Amateurs to shame with the skill and industry he displays in the crafts of wood-working and model making he pursues at his home in Goderich, Ontario. His wife Marg rightly shares his pride in his latest accomplishment shown here, an almost finished two-storey doll's house already decorated in minute detail including upholstered furniture, broadloomed floors, and even a specially woven bath mat in the powder room. As an annual snowbird Red is well-known to those Canadian Amateurs who rise early enough to work their compatriots in Florida on the Oatmeal Net at 3780 KHz at 6 a.m. EST daily all winter long.



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# TECHNICAL SECTION



## Interfacing the Apple II Computer with the Kenwood TS-180S for RTTY

Bruce Rattray, VE5RC  
126 Highlands Cres.  
Saskatoon, Sask., S7H 4Y1

This article describes how to interface an Apple II Computer with a Kenwood TS-180S transceiver for radio teletype.

This project is simple, inexpensive, easy to build and it works. My son Scott purchased an Apple Computer a few months ago and it just naturally followed that eventually we would try it on SSTV and RTTY. After making inquiries at the local computer shops, the answer began to look expensive, complicated and therefore not within reach at that time. The first breakthrough came during a visit to VE5WZ, Al, a local computer and RTTY enthusiast. Al gave me

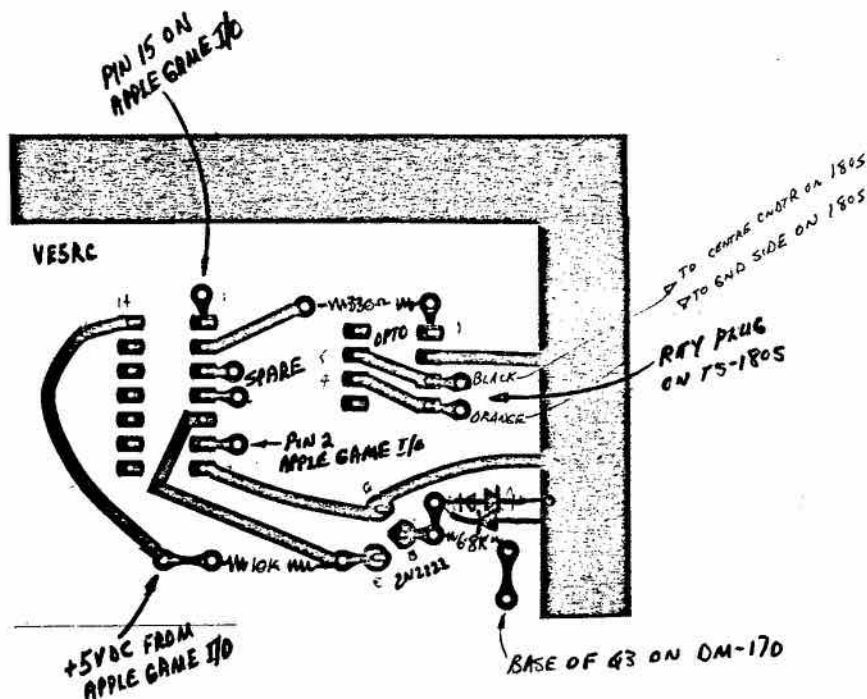
a copy of a print showing how he had interfaced his Apple to his Drake equipment. From this circuit I took part of it and using a 2N2222, a 6.8k resistor and a 1N4004 diode, began receiving RTTY on the Apple using the Galfo program...only it was "upside down."

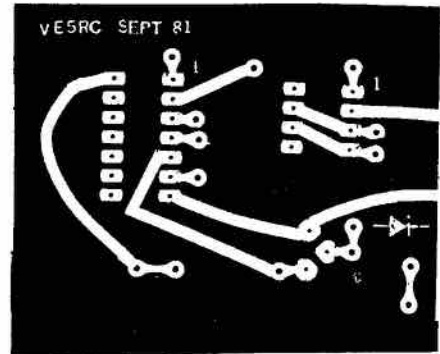
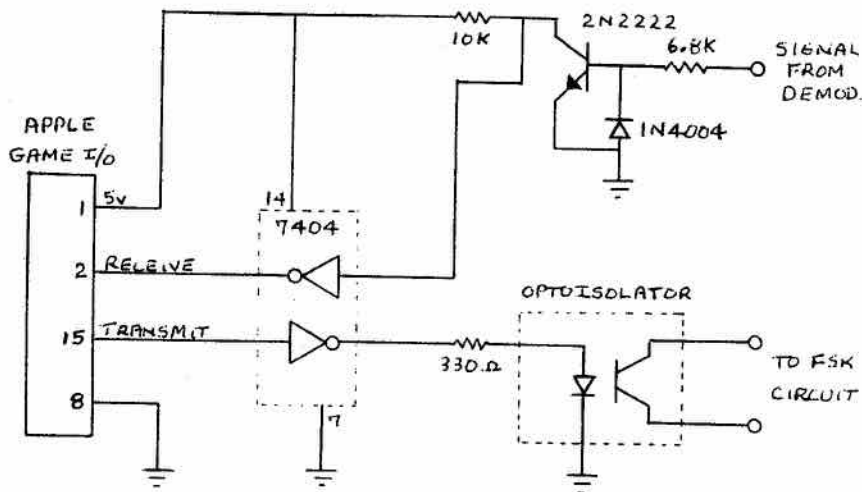
The TS-180S has its own built-in FSK circuit and I have been transmitting RTTY using a Model 28, using an opto-isolator in the local loop circuit. Many thanks to W4UOC for this suggestion. I figured that the same approach should work with the Apple. But after a few tries and a few failures, I

was very puzzled as in theory it should have worked. Further inquiries with other people using Apples showed the reason for the failure. There just isn't enough current available at the Apple Game I/O to drive the opto. During a further discussion of my problem with my co-worker Glen Waldner at the Kelsey Institute in Saskatoon, he suggested that I try a Hex Inverter in the circuit. I did and it worked. The 7404 provided the necessary current for the opto, plus I used a couple of the inverters to get the transmitted signal "right side up" and it also cured the receiving "upside down" problem.

You can use perf board or PC board for this project. I am able to make my own PC boards using the photographic negative method and I have included a "real size" layout. The finished board is then mounted inside a metal chassis and provided with the necessary connectors.

The received signal is picked up from the base of the keying transistor of my Flesher DM-170. The PC board version did not work at first because I installed the 1N4004 backwards. It's mandatory that I do this with each of my projects as it has become one of my traditions. Obviously this is not the only way to do this but it is easy, cheap and it works. Many thanks to all who helped in any way. I still have my Model 28 RTTY set-up fully functional, but I must admit that operating RTTY using a computer is turning out to be another completely fascinating branch of Amateur Radio in its own right. I'll be looking for you on 20 meters on the "split screen."



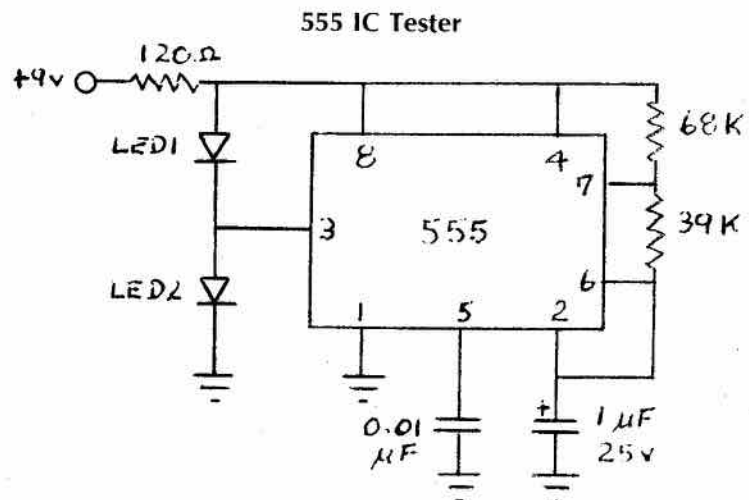


## A Handy Dandy 555 Tester

Mike Glowa, VE7VX  
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Prince George, B.C.  
V2K 1Z5

Having bought a bag full of bargain basement IC's which included quite a few of the 555 IC timers I was not sure which would work if any, so I devised this little simple handy dandy tester. The 555 timer is so widely used these days in modern circuits that a simple checker is almost a must if one is to remove any doubt whether the timer is at fault or some other part of the circuit. This little goodie will do just that in a jiffy. Knowing that the IC is good or bad, speeds up the trouble shooting time considerably. As long as both LED's blink in turn then the IC is good and will work in other circuitry. There is no switch to disconnect the battery as merely plugging the snap type of battery leads on the battery is simple enough and lessens the cost of the project. Hope it does the job for you as it has for me for a long time now. If I suspect a malfunction in a circuit I merely plug the IC into this tester and verify if the 8 lead dodad is OK or not. I don't know of any quick way of checking this IC except in an actual circuit like this one.

Schematic of 555 IC timer checker. Resistors can be 1/4 watt and 1uF electrolytic is miniature type with low voltage. The 2 LEDs are Radio Shack variety with one



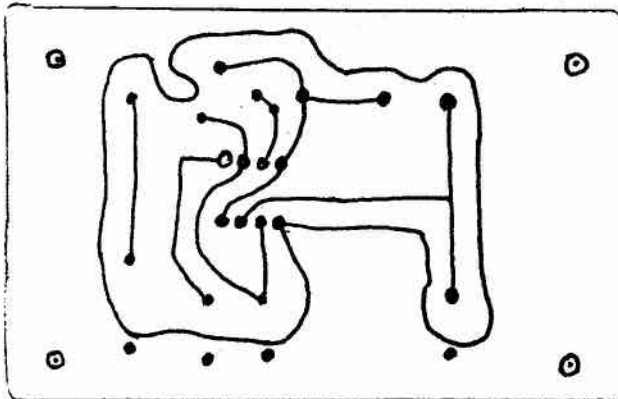
being green and other one being red. If LEDs blink on and off in turn, then the IC is OK. Depending on component tolerance the flash rate is close to 4-5 flashes per

second. This tester will work with voltages down to less than 6 volts.

P.S When IC is inserted into socket Pin # 1 will face LED's.

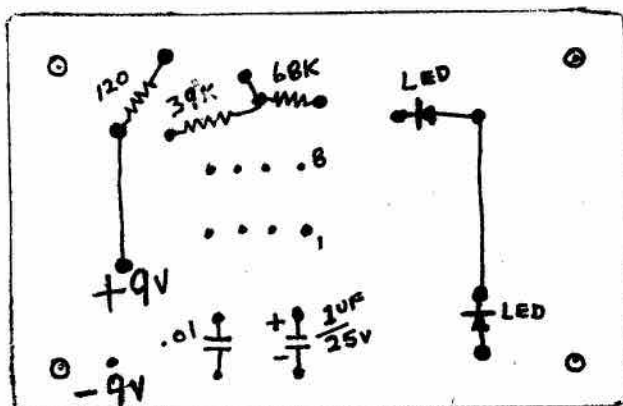
Bottom views of actual printed circuit boards for the 555 tester. Place this board over your copper clad PC board and lightly punch all dots with an awl or use a 2" nail sharpened to a fine point to

center punch holes for drilling. Use a bit just slightly larger than the leads of the resistors etc. Shaded area around outside is copper, so are the lines after etching the board.



Bottom side of board showing where components are mounted under the board or non-foil side. Battery hook up is via snap on type with black lead going to ground foil side and red to point marked + 9V. One led is mounted forward and other backward so both flash on and off in sequence. This board mounts in a small Radio Shack plastic box # 270-230. After center punching all dots, sand the board to remove all dirt

etc, then drill out holes, sand again to remove drilling burrs, then connect holes as per top drawing of PC board and you are ready to etch it. Radio Shack sells a beginners kit for making your own boards which includes the etchant, PC boards, resist ink remover etc. Radio Shack resist pen works quite well for this purpose. One evening project, have FUN...



### Parts List

- Plastic Box...Radio Shack # 276-230
- 555 Socket...Radio Shack # 276-1995
- LEDs (2)...Radio Shack # 276-041 (red & green)
- 1 uF .25 volt electrolytic capacitor
- .01 disc capacitor - 15-25 volt.
- 68 K resistor 1/4-1/2 watt.
- 39 K resistor 1/4-1/2 watt.
- 120 ohm resistor 1/2 watt.
- Batter snap type connector 270-325 Radio Shack.
- PC board Kit-Radio Shack # 276-1576

### Federal Government Establishes Amateur Radio Station in Ottawa

The usefulness of Amateur radio in emergencies has been given concrete recognition by the federal government by its establishment of an all-band, fully-equipped Amateur station in Canada's capital. With the call 'VE3GOC' for "Government of Canada," the station will give federal emergency authorities direct communication with any domestic or international site right from their operations room. Such disasters as the Italian and Guatemalan earthquakes and the last Manitoba flood showed the value of Amateur communications and the necessity of an official station to relieve the difficulties associated with operating from stations in private homes. In an emergency, VE3GOC will be manned by Amateurs from various government departments, which eliminates these problems. The idea for such a station was recommended three of four years ago by a committee convened by the *Canadian Amateur Radio Federation* and was brought into reality by the efforts of Emergency Planning Canada officials A.F. Wigglesworth, VE3YE and Nick Evanoff, VE3BED. In anticipation of expanding the official EPC station network, the call suffix 'GOC' has been reserved in all districts except VE2 where VE2PUC, which stands for "Planification d'Urgence Canada," the French name for EPC, has been reserved.

# The Drain-Peak Oscillator

by F.P. Hughes, VE3DQB

There is a small box on my workbench that has just passed through its fourth or fifth reincarnation. It's a 1-1/2 by 2 by 4 minibox, and at one end is mounted a 2 x 50 pF variable capacitor. There is a 1 inch square of perspex mounted between the frame of the capacitor and the box in which two spring contacts, liberated from a tube holder, are inserted. These connect to a series of plug-in coils.

These are the only elements unchanged during the past 25 years or so. When it started out, the rest of the box contained a 6J6, a 1 mA meter, and two or three other components needed to make a two-terminal grid dipper, that is a GDO that could be connected to any coil/capacitor of reasonable Q and maintain oscillation.

Fifteen years ago, or thereabouts, for reasons which are obscure to me now, the 6J6 was changed for a 6C4, with little if any effect on the action of the unit. About three years ago, to keep my station up-to-date, and also to make the device more portable, the 6C4 was ripped out, and a FET put in its place. The 1 mA meter was replaced with a cheap 200 microamp movement, and a transistor meter amplifier built in to get a reasonable deflection.

The device worked as well as ever, provided that the two amplifier controls - balance and sensitivity - were set carefully. Unfortunately they interacted, and when the sensitivity of the meter changed as the frequency desired varied from 2 MHz to VHF, resetting the thing was a chore that interfered with recondite cerebration on the task in hand.

A review of the latest publications in the field showed that grid-dip oscillators - now gate-dip ones - either demanded a meter amplifier or a 50 Greek mn uA meter. Now go check the prices of 50 Greek mn uA meters and find out why I thought more critically about the matter.

A grid-dip oscillator is a tube device. In a tube, the grid current is of the order of a milliamp, and so is in the range of a cheap meter. Moreover, the grid circuit does not carry any of the high anode voltage required by the tube, so the innards of a meter in the grid circuit are at ground potential. Grid current is the rational parameter to measure.

Translating this oscillator blindly from tube to solid state replaces the grid current by gate current, a fall in available power to a hundred times or so: this drives us from the milliammeter to a microammeter, or to the undesirable complication of a meter amplifier. Gate current is not the right solution to this problem.

The controlled circuit of the transistor - the drain-sink circuit - usually carries a milliamp or two. If the meter is put in this circuit rather than in the gate circuit neither the expensive meter nor its alternative, the transistor amplifier, are needed. The indication on the meter is now a rise in current as energy is withdrawn from the tank coil by an external circuit, so this is a drain-peak meter.

The meter can go in either the positive or the negative lead. Since I sometimes use a 6 volt



transistor power supply for the instrument, the power input plug is grounded, and I put my meter in the positive line.

The circuit is shown in Figure 1. A suitable capacitor, 2 x 68 pF, is available at a dollar, the meter at a dollar four U.S. plus the taxes extorted by governments, the FET and capacitors cost another dollar or so. Indeed, if you buy the minibox, it might take half the budget. (Buy the pieces before you buy the minibox and make sure things fit in.)

## HOW IT WORKS

The coil-capacitor combination, the LC circuit on the left of the figure, determines the frequency of operation. If you take the coil and connect it directly across a battery, it will deflect a compass needle. (Go on - DO the experiment. You'll learn no radio-physics merely by reading this or any other book. Even if you have to make a compass from a sewing needle suspended by a thread from discarded panty-hose, DO THE EXPERIMENT.)

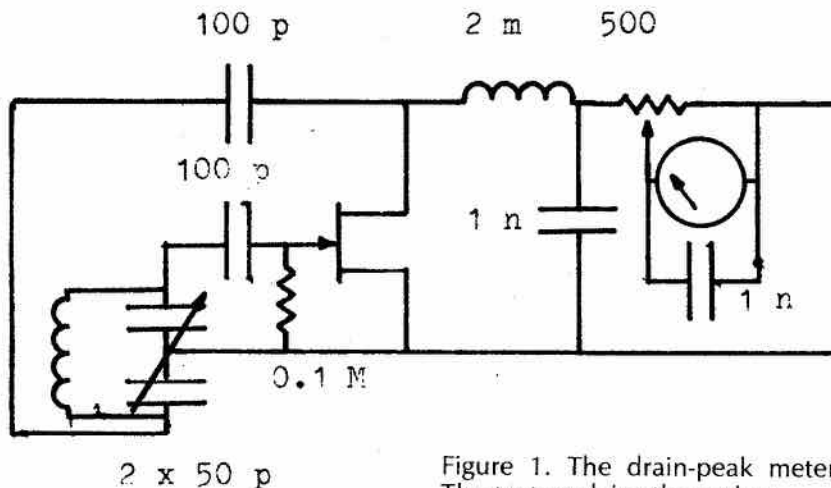


Figure 1. The drain-peak meter. The text explains the action.



Suppose, instead of a battery, the coil is connected across a charged capacitor. The action is different: the electrons with which the capacitor is charged start to flow through the coil, and as they do so, they create a magnetic field, just as the battery did. However, the battery is a constant voltage source, whereas the electrons leave the capacitor plates on their journey, the voltage across the capacitor naturally falls. By the time all the excess electrons have left the capacitor plate, their flow to the opposite plates has produced a magnetic field about the coil, but there is no current of electrons to maintain it.

Being thus without visible means of support, the magnetic field starts to collapse, and as it does so, it drives electrons through the coil in the same direction as they travelled when they produced the magnetic field (that's Lenz' Law). Electrons, then, start to pile up on the plates of the capacitor opposite to those charged with electrons at the start of the game.

When eventually (eventually means a ten-millionth of a second or so later, with the coil-capacitor combinations we have in mind) the magnetic field is reduced to zero, the capacitor is charged in the opposite sense to that at the start. Electrons start to flow backwards through the coil.

They produce a magnetic field in the opposite direction to the first, which grows and diminishes, recharging the capacitor to its starting condition...and so on. The capacitor and coil play ball with a packet of energy: this appears now as a magnetic field, now as a strain in the capacitor dielectric. They toss the energy back and forth time and again until the resistance in the circuit changes the energy into heat, and the action ceases.

The rate at which the coil and capacitor toss the energy back and forth is perfectly regular, and the number of times they do so per second is defined as the frequency of the oscillation. In any coil-capacitor combination such a transfer of energy is always going on, for the tiny jolt of radiation

needed to start it is always available. If nothing else, the Woodpecker would start it.

Now move over in Figure 1 to the FET. The gate of the FET is connected to the oscillatory circuit by a capacitor. This is a blocking capacitor, to allow the gate to attain a potential other than ground. If the end of the coil connected to the blocking capacitor is momentarily negative, the negative charge is transferred through the blocking capacitor to the gate.

Electrons are always running from the source (connected to DC negative) to the drain (connected to DC positive). When the gate goes negative, this flow is restricted. Since the DC supply (say a battery) now has fewer electrons approaching its positive terminal, it seeks them elsewhere. The only place it can find them is from the far end of the coil, through another blocking capacitor.

Drawing electrons from the far end of the coil helps pull electrons through the coil, strengthening the magnetic field beyond the ability of the initial charge on the tuning capacitor to do.

However, all good things come to an end, and the potential across the coil and capacitor reaches zero and turns, the gate terminal now taking a deficit of electrons - that is, it goes positive. When the gate goes positive, the tap that the FET represents turns on, allowing electrons to flow in abundance from source to drain. Some of these electrons are transferred to the far end of the coil, again helping to enhance the magnetic field.

The FET, then, MAINTAINS the oscillations at a steady rate, their strength being limited by the



voltage available from the battery. Energy is FED BACK to the tank circuit.

The choke presents a high impedance to the oscillations, ensuring that they remain in the tank circuit. The decoupling capacitor ties the battery end of the choke to ground at RF. The gate is connected to ground through a high resistance. If this were not done, the gate could take a charge, either positive or negative, which could not leak away, stopping the action of the FET. This 'gate leak' ensures that the average gate voltage is always fairly near ground.

## CONSTRUCTION

The DPO is most simple to construct: the mechanical solidity of the tank circuit being the most important item. The electronics is too simple to demand a printed-circuit board: point-to-point wiring is sufficient.

The coils are fitted to two-pin plugs - I use a set of male TV cheater plugs, but phono jacks would do - and the wiring between the mating sockets and the capacitor terminals should be minimal or non-existent. This part of the circuit determines how far into the VEF region the thing will work.

## Insulating layer

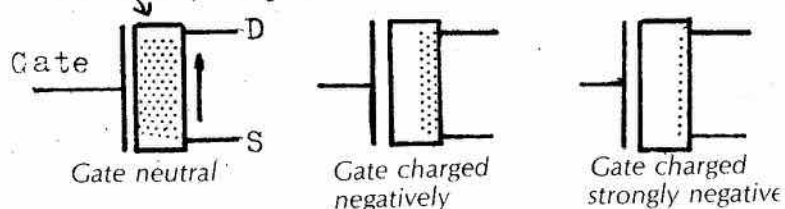


FIGURE 2

Figure 2. The action of a Field-Effect Transistor. If the gate terminal potential is close to that of the source, electrons pass freely from source to drain. If a moderate negative charge is applied to the gate, it repels the electrons travelling from source to drain, restricting their flow. A strong negative charge on the gate will cut off almost all of the current through the transistor.

The FET can be soldered into place, using the long-nose pliers as a heat sink as usual, or three of the tiny Molex sockets made for PCB's can be soldered to a three-tag insulating strip to allow the FET to be plugged in.

The coil forms will be what you can rustle up. Mine were made all those years ago by sawing sections from a recorder chart core, one inch diameter. In any case, 70 turns in a single layer will get you somewhere near 3 MHz with the capacitor fully meshed, and 35, 18, 9, 5, and 3 turns will cover the bands down to 50 MHz, or near. Higher frequencies than this can be tuned with 'coils' of 12 gauge wire with 1 turn at the end, or just a hairpin with no complete turns at all.

### CALIBRATION

First of all, calibrate roughly with the absorption frequency meter. Then go to a general coverage receiver with a 100 KHz standard. Identify a harmonic of the standard against WWV or CHU, listen for the oscillator note, and mark the dial (the Helpful Handful article gives details or this.)

### USES

The DPO is a remarkably useful instrument:

- It is the shack signal generator;
- It can identify the resonant frequency of any coil/capacitor combination, allowing the tuned circuits of a transmitter or receiver to be put near tune before use;
- With a standard capacitor, it can measure the inductance of a coil;
- With a standard inductance, it can measure a capacitance;
- A crystal plugged in - in place of the coil will oscillate if good;
- A FET plugged in place of the instrument FET will maintain oscillation if good;
- It is an emergency transmitter.

### BOX

The grid-dip oscillator became the gate-dip oscillator, by a process similar to the transfer of information from the notebook of the

lecturer to that of the student, without passing through the minds of either. The gate-dip oscillator suffers either from the expense of a microammeter or the complexity of a meter amplifier.

By detecting the action of the oscillator in the source-drain circuit rather than in the gate circuit, a remarkably simple DRAIN-PEAK OSCILLATOR can be constructed.

## Repeater Linking

I was asked to write an article for the SORT Bulletin about inter-repeater linking. There seems to be a great deal of misconception about what can and what cannot be done, and about the ways that the local 2 metre repeaters are affected by the links when the links are active.

The linking scheme centres around a centralized UHF repeater, in this case VE3TTT, which acts as a central relay point for a group of surrounding VHF repeaters. In Toronto, a UHF repeater at the VE3RPT site in Uxbridge performs a similar function for repeaters ranging from Collingwood in the north, to Grimsby and Hamilton in the south, and to Bancroft and Whitney in the east.

Each interested 2 metre repeater (or any type of repeater for that matter) need only equip itself with

a UHF transceiver, transmitting into the UHF repeater on 447.300 Mhz and receiving on 442.300 Mhz. No duplexers are required, and indeed, only one repeater. In fact, this is entirely analogous to a user on our 2 metre machine - only one person can be heard at a time. Thus, when talking through the link, it is exactly the same as if you were on 2 metres.

One misconception that is fairly common is the worry that a local repeater might be tied up by the link. Nothing could be further from the truth; you will only hear the link if your local 2 metre repeater is fully connected over to its UHF transceiver. Otherwise, only the receiver in the UHF transceiver is listening to the link, so that it might hear any touch-tones that are intended for IT (i.e. to connect its 2 metre repeater to its UHF receiver to bring that repeater onto the link by command).

It would therefore be possible to have all of the available repeaters on the link at the same time, permitting the users on one machine to speak with the users of the other machines as if they were all on the same repeater. Of course, you might only have two repeaters on the link at any one point in time, or you might have no participants at any time, but again, the UHF transceivers would all be listening for touch-tone commands.

It would then be our hope to interconnect our local "HUB" to the Toronto system via an intermediary link in Kitchener at Baden Hill. We could then have hand-held coverage from Grand Bend (VE3RGB) to Whitney at Algonquin Park (VE3WPR).

We have already had an organizational meeting to discuss protocols and touch-tone codes, with some interest shown by VE3RPT, VE3TTT, VE3MGI, VE3LAC, VE3RGB, etc.

I'll endeavour to keep you all posted regarding the progress that we're making in this area.

73, Dave VE3GYQ

In SORT bulletin

**Attention!**  
**All users of the**  
**TCA Newsline**  
**Telephone**  
**The telephone number**  
**changed as of October**  
**15th, 1982.**  
**THE NEW NUMBER IS**  
**824-3467**

# TECHNICAL SECTION



## Making those dB make sense

by Philip Gebhardt, VE3ACK  
copyright Philip Gebhardt, 1982

Finding your way through the maze of ham radio terminology can be like wandering the streets of Toronto without a map. Is it any wonder then that so many hams subscribe to the 'tell me what to do, and I'll do it' option. The result, however, is that they never do make any inroads towards an understanding or appreciation of the 'magic' of radio and therefore, the gap between the non-technical ham and the technical ham continually widens.

Part of the problem is the terminology itself. Designed to convey information concisely, it often leaves the reader confused. The solution is to convert back into terms we all know and love. Take, for example, that old standby of communications - the decibel. The attenuation of RG-58/U is 1.3 dB/30.5 m (about 100 feet) at 7 MHz while the attenuation of RG-8/U is 0.42 dB. A quick glance indicates that RG-58/U attenuates a signal more than RG-8/U does. But does that mean we should all scrap our supply of RG-58/U and rush out to buy RG-8/U?

Normally in the past, I have resolved such problems by resorting to the formula  $\text{dB} \div 10 \log (P2/P1)$  which I then transformed to  $P2/P1 = \text{antilog} (d/3/10)$ . Since P2 and P1 are measured in watts, I then was dealing with a unit I could understand. Using a calculator makes finding the answer fast and easy. That is, provided you have had lots of practice. However, for those not involved in electronics on a day-to-

day basis just remembering the formula is a feat in itself. And for those not mathematically inclined manipulating the formula and figuring out how to calculate the antilog can present real problems. But such is the lot of those who wish to understand specifications given in dB. Or is it?

While sitting at my desk one afternoon, I passed the time by jotting down power ratios and their dB equivalents. Based solely on the understanding that every time you double the power, the value in dB increases by three, I ended up with Table I. In an effort to reduce the physical size of the numbers, I came up with Table II. It is derived simply from the relationship  $2 \div 2_1$ ,  $4 \div 2_2$ ,  $8 \div 2_3$ , and so on. Other than that, the two tables are identical.

Having noticed that the exponents in the 'P2/P1' column increased by 1 each time (e.g.  $2^1$ ,  $2^2$ ,  $2^3$ ), I realized that I could establish the same type of organization for the 'dB' column. The result is Table III. The noteworthy characteristic of the table, as some of you may have already observed, is the fact that the exponent in the 'P2/P1' column always equals the multiplier in the 'dB' column. For example, in the first entry ( $2^1$ ) the exponent is 1 and the multiplier in the corresponding 'dB' column entry ( $3 \times 1$ ) is also 1. An examination of each of the other pairs shows that the relationship holds true for all the entries listed.

What does all of this mean? Well, it means that I can calculate the power ratio directly from the dB value — without using antilog values. For example, if the value is

12 dB, I convert this to  $(3 \times 4)$  which tells me that the exponent in the power ratio is 4. Therefore, the power ratio is  $2^4$  or 16.

But there are only a limited number of values in Table I. What if the value is 36 dB, or 19 dB or even 11.7 dB? Is the relationship still true? Since you probably are also aware that a power gain of 10 is equivalent to an increase of 10 dB, we can test the method by using those values. Converting 10 dB yields  $(3 \times 3.333)$ . Therefore, the exponent in the power ratio is 3.333 and the actual power ratio is  $2^{3.333}$  or 10. It would appear then that the technique works for other values.

Having established that the relationship exists, all that remained to be done was to generalize the rule by means of a formula:  $P2/P1 = 2^{(\text{dB}/3)}$ , where P2/P1 represents the power ratio, and P2 and P1 are in watts.

So, how does all of this help with the transmission line problem? By applying the above formula, we can determine the loss on each transmission line without resorting to antilogs. For example, I mentioned earlier that the attenuation of RG-58/U at 7 MHz is 1.3 dB/30.5 m. Therefore, the corresponding power ratio is given by:  $P2/P1 = 2^{(\text{dB}/3)}$

$$\begin{aligned} &= 2^{(1.3/3)} \\ &= 2^{0.433} \\ &= 1.35 \end{aligned}$$

That is, there is 1.35 times as much power going into the transmission line at the transmitter end as there is coming out at the antenna end. If the transmitter output is 100 W, then 100/1.35 or 74 W is delivered to the antenna.



Applying the same method to the RG-8/U line gives:  $P_2/P_1 = 2$  (dB/3)

$$= 2^{(0.42/3)}$$

$$= 2^{0.14}$$

$$= 1.1$$

Using the same 100 W transmitter, the power delivered to the antenna through RG-8U would be 100/1.1 or 90.9 W. In this case, an increase in power delivered to the antenna from 74 W to 91 W would not justify the additional cost or installation difficulties encountered with RG-8/U.

On the other hand, the attenuation of 30.5 m of transmission line at 144 MHz is 6 dB and 2.5 dB for RG-58/U and RG-8/U respectively<sup>2</sup>. Applying the same method shows that the power ratio for the RG-58/U line is  $2^{(6/3)}$  or 4. That is, there is four times the power going into the line as there is coming out. For a 100 W transmitter, this means 25 W delivered to the antenna. With RG-8/U, the power ratio is  $2^{(2.5/3)}$  or 1.78. Therefore, 56 W would appear at the antenna. A jump from 25 W to 56 W would definitely make the investment worthwhile at 144 MHz.

But the formula is not limited to transmission line calculations. It applies to any relationship involving dB. For example, a 3-element Yagi provides a gain of 7.5 dB. How much difference will such an antenna make to your radiated signal? Applying the formula again gives  $2^{(7.5/3)}$  or a power ratio of 5.66. If the power radiated by a dipole in its favoured direction is 2 W, then the effective radiated power of the Yagi would be  $(2 \times 5.66)$  or 11.32 W in its favoured direction.

Or how about the low-pass filter in your line and its 0.3 dB insertion loss? Should you tear the unit apart and rebuilt it? According to the formula,  $2^{(0.3/3)}$  is 1.07 and so there is 1.07 times as much power at the input of the filter as there is at the output. For a transmitter output of 90 W, the filter output would be 90/1.07 or 84 W. Better leave well enough alone!

Everywhere you look in ham radio there are relationships involving the decibel — carrier suppression in ssb, path loss in pro-

pogation, and amplifier gain just to point out a few.

By applying this simple formula to specifications you encounter, you will gain some understanding of your equipment performance.

**Author's Note:**

The commonly assumed relationship that doubling the power represents a 3 dB gain is in actual fact not quite mathematically correct. But since the relationship is so well known, since it is easy to remember, and since the deviation from the actual value is so small for values commonly used by hams, it seemed to be the logical choice to work with. Hence the equation  $P_2/P_1 = 2$  (dB/3). In fact, based on the equation  $\text{dB} = 10 \log (P_2/P_1)$ , the actual mathematical relationship is  $P_2/P_1 = 10^{(\text{dB}/10)}$ . Those mathematically inclined can determine why.

<sup>1</sup>f7f5. The Radio Amateur's Handbook, The American Radio Relay League Inc., Newington, Connecticut, 1971, page 348.

<sup>2</sup>The Radio Amateur's VHF Manual, The American Radio

Relay League Inc., Newington, Connecticut, 1968, page 173.

**Table II**

$P_2/P_1$	dB
2 <sup>1</sup>	3
2 <sup>2</sup>	6
2 <sup>3</sup>	9
2 <sup>4</sup>	12
2 <sup>5</sup>	15
2 <sup>6</sup>	18
2 <sup>7</sup>	21
2 <sup>8</sup>	24
2 <sup>9</sup>	27
2 <sup>10</sup>	30
2 <sup>11</sup>	33

**Table I**

$P_2/P_1$	dB
2	3
4	6
8	9
16	12
32	15
64	18
128	21
256	24
512	27
1024	30
2048	33

**Table III**

$P_2/P_1$	dB
2 <sup>1</sup>	3 x 1
2 <sup>2</sup>	3 x 2
2 <sup>3</sup>	3 x 3
2 <sup>4</sup>	3 x 4
2 <sup>5</sup>	3 x 5
2 <sup>6</sup>	3 x 6
2 <sup>7</sup>	3 x 7
2 <sup>8</sup>	3 x 8
2 <sup>9</sup>	3 x 9
2 <sup>10</sup>	3 x 10
2 <sup>11</sup>	3 x 11

# Infosection

## CHANGE OF ADDRESS

Considerable time is wasted by having to search membership records because of incomplete information sent to the CARF Office. For example, the Office has received requests like this: Have moved to B.C. so please change address, etc., to J. Blow VE7XXX (new call), 123 Jones Ave., Smithville, B.C. V9Z 1B6.

Membership records are held in the computer system and a search can be made by call, membership number or postal code only. But, as none of the above is given for the former address, we cannot update label data until this information is received. The coding (first) line of your label contains this data, so please copy this out and send with your request for change, renewal, etc. so that an update can be made.

## Swap Shop

Single insertion is \$1.00 (minimum charge) - 10 words and \$1.00 for each additional 10 words. To renew, send copy and payment again. Deadline is first of month preceding publication (e.g. Jan 1 for Feb. issue). Put your membership number and call (not counted) at the end of your ad. Print or type your ad and include your address with postal code. If using a phone number, include the area code. TCA accepts no responsibility for content or matters arising from ads. This feature is for use of members wishing to trade, buy or sell personal radio gear. It is not open to commercial advertising. Send to: TCA Swap Shop, Box 356, Kingston, Ont. K7L 2W2.

**ESTATE SALE:** Heathkit SB102 W/PS \$450, KDK - 144 OSX 10 watt 2 metre synthesized \$250, Midland 13-510 25 watt 2 metre synthesized W/TT mic \$275, National MCX 1000. HF transceiver \$600, Motorola Motrac 100 watt 4 channel VHF - offers.  
Eric MEth, VE3NUU, 171 Heward Ave., Toronto, Ont. M4M 2T 6, 416-469-1084 (evenings).

### FOR SALE:

TH3 MK3 Beam \$245, Ham IV Rotor \$250, drake R4B, T4XB, MS4 speaker power supply asking \$735  
J. Burkus 258 Gatestone Avenue, Oakville, Ont. L6J5R9  
416-844-1066.

: Collins 312B-4 Station control and 3OLI Amplifier. VE3 GCO Garry Hammond, 5 McLaren Ave., Listowel, Ontario N4W 3K1.

**FOR SALE:** Kenwood TS 820S transceiver. Like new, with matching speaker and At-200 antenna tuner. J. Burleigh 798 Camberley Cresc., Kingston, Ont. K7M 4 C 4. Phone 613-389-3943. VE3LXT.

**FOR SALE:** Receivers, National HRO-60 complete with 4 coils, cabinet, manual and speaker, like new \$400.00. Collins R-388 (51J3) complete with cabinet \$350.00. Barlow Wadley XCR-30MK II portable receiver, new \$225.00 Eddystone S830 complete with cabinet and speaker, like new \$450.00. Marconi XH14 solid state with Collins filter \$100.00. Max Howell VO1HH, Box 500, Carbonear, Nfld. AOA 1 TO. 709-596-5687.

**FOR SALE:** YAESU FT 101E YAESU FR 101 and YAESU Landliner, all for \$800.00 VE3KQT Brian Busch,

18 Raintree Path Etobicoke, M9C 5 A 9 (416) 622-6396.

**FOR SALE:** Kenwood TS-520SE, with C.W. Filter, \$750.00. Also Kenwood Antenna Tuner AT-230, \$225.00. Both in as new condition. John Campbell, P.O. Box 222, Bath, Ontario. KOH IGO. (613) 352-9926.

**FOR SALE:** FT101 MK2 \$500.00. FT101E with all goodies \$650.00. FRG-7 \$350.00. All in good to excellent condition. Also a few ICOM SERVICE MANUALS for IC-2A/AT/E includes BC-30 and IC-ML1 9 by 12 inches with even larger diagrams \$12.50 postpaid. FT 107M grey front, with memory unit (DMS) and FP107 internal power supply five months old \$1250.00. Roger Grandbois VE7LB, 20352 40A Ave., Langley B.C. V3A 2Y8 (604) 530 4551.

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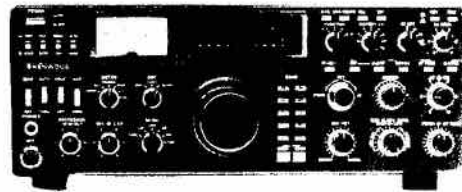
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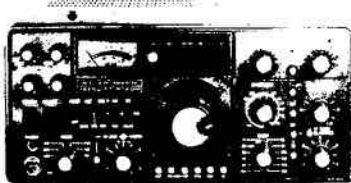
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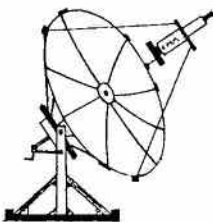
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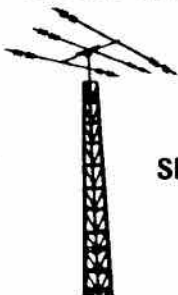
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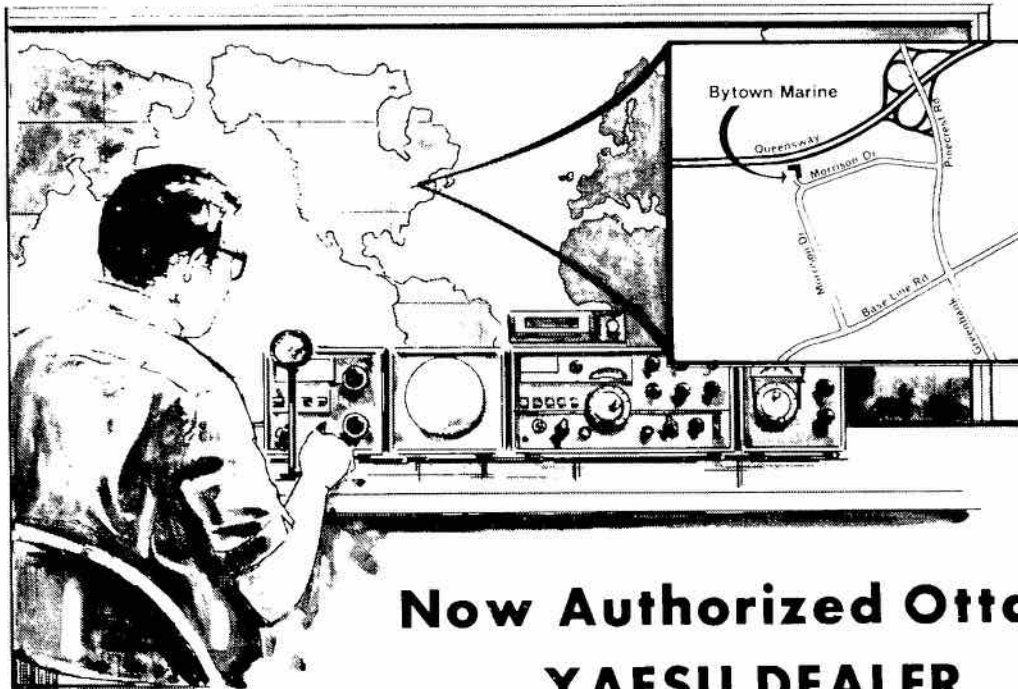
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