

# the Groundwave

PUBLISHED BY THE OTTAWA AMATEUR RADIO CLUB, BOX 8873, OTTAWA, ONT. K1G3J2

JANUARY

1973

THE JANUARY MEETING OF THE OTTAWA AMATEUR RADIO CLUB WILL BE HELD ON WEDNESDAY JANUARY 3, AT 8PM, IN ROOM 3001 NATIONAL RESEARCH COUNCIL, SUSSEX DRIVE, OTTAWA. COFFEE, COOKIES AND RAG CHEW FOLLOWING THE MEETING.

PROGRAM: THIS MONTH, MIKE, VE3DVH HAS SECURED THE ABLE TALENT OF DOC HAYCOCK, VE3BDO, TO GIVE US ONE OF HIS VERY INTERESTING TALKS ON HIS NORTHERN TRIPS. DOC PRESENTED ONE LAST YEAR WHICH WAS VERY WELL RECEIVED BY THE MEMBERSHIP. I MYSELF AM LOOKING FORWARD TO ANOTHER INTERESTING TALK.

VERY LITTLE MUST HAVE HAPPENED THIS MONTH AS SEEMS TO BE INDICATED BY THE PHENOMINAL (OR MINIMAL IF YOU WISH) RESPONSE TO MY PLEA FOR ARTICLES, OR ANYTHING ELSE FOR THAT MATTER. APATHY IS ALIVE AND WELL AND LIVING IN THE OARC.

MIKE, VE3DNJ, GIVES US SOME INSIGHT AS TO THE DEVELOPMENTS CONCERNING THE GALLOPING GHOSTS THAT HAVE BEEN MAKING THINGS UNPLEASANT AROUND THE WEST END OF OUR FAIR CITY.

I'M GETTING A LITTLE HOT UNDER THE COLLAR ABOUT SOME PEOPLE WHO WANT TO DROP CW FROM THE REQUIREMENTS FOR A TICKET. IT MAKES FOR SOME INTERESTING READING.

MINUTES OF THE LAST MEETING, CARF AND ARRL NEWS PLUS SOME OTHER INTERESTING STUFF INSIDE, PLUS A BALLOT!!!!!!

FEAST YOUR EYES INSIDE MY FRIENDS. YOU HAVE NOTHING TO LOSE.

THE OFFICIAL BULLETIN OF THE OTTAWA AMATEUR RADIO CLUB, AN ASSOCIATION OF RADIO AMATEURS DEVOTED TO THE PROMOTION OF AMATEUR RADIO IN THE OTTAWA REGIONAL AREA.

EDITOR CARY HONEYWELL, VE3ARS. 233-2749  
234-8765  
PUBLISHER CY CHAPMAN, VE3CVK. 731-6172  
VIC CYR, VE3DEP. 824-1204

CLUB NET "THE CAPITAL CITY NET". AT 2000 HRS.  
LOCAL TIME ON CLUB REPEATER VE2CRA,  
INPUT 146.460 OUTPUT 146.940.  
VE2CRA IS MONITORED DURING BUSINESS  
HOURS BY VE3CGO, DOREEN MORGAN.



MINUTES OF THE DECEMBER MEETING

The regular monthly meeting of the OARC was held in the auditorium of the National Research Council on December 6, 1972. The meeting was opened by President George Roach at 2010 hours. He extended a warm welcome to visitors, who included VE7 BJH, VE3 DGO, VE3 AGM, and VE3 GCK.

The minutes of the previous meeting were drawn to the attention of the membership and a motion of adoption was requested. It was moved by VE3 BTS and seconded by VE3 BYO. CARRIED

The president congratulated the new staff of the Groundwave on their first issue.

The Treasurer VE3 DIH reported that the auction netted \$166.75 before rent.

The membership chairman VE3 EYJ reported 164 regular members and 34 associate members. He reminded all members that this is their last month to pay their dues.

The program convener VE3 DVH reported that we will have Doc Haycock for the January meeting. He will speak on New Events in the Eastern Arctic. A talk on mosfets (special effects transistors) is planned for February. The speaker will be Mike Waters.

VE3 DNJ spoke briefly on the effects of the new "anti-gallop" devices introduced by Ontario Hydro on their H.V. lines. These are apparently causing a problem on HF for those amateurs living in close proximity to H.V. hydro transmission lines. He asked any members experiencing similar problems to contact him with a view to deciding what, if any, action should be taken.

Groundwave Editor VE3 ARS reported that he would like a volunteer for the position of Assistant-Editor to relieve some of the pressure on himself and to understudy for the position for next term.

It was announced that we will move to Room 3001 for the January meeting, on an experimental basis to try and bring the group closer together and promote more friendliness. The meeting book will also be reinstated on a trial basis.

The President reported on Oscar 6, the amateur satellite. There has been POOR participation on the part of most Canadian amateurs. However, one of our members VE3 QB has been singled out for the honor of holding the control sequences for Oscar. Our congratulations to him, as he is one of the few chosen amateurs in the world to have the right to turn the satellite off and on.

Past President VE3 FXG presented a certificate of appreciation from the club to VE3 BK, Hank Harley, for all of his work for the club in the past few years. Hank has been transferred out of Ottawa by his company. He is our Past Secretary.

Members were reminded that a ballot may be sent out by DOC to all Canadian amateurs on the recent changes of frequency allocation by the FCC in the USA. This is due to the different views presented to DOC by the ARRL and CARE. All members should return the ballot without fail and answer all questions to the best of their ability.

The members were addressed by VE3 CJ, Noel Eaton the Canadian representative to ARRL. He reported that the ballot from DOC will also gather other statistics as well as those regarding frequency changes. He also outlined the ARRL position on the changes. A question period then took place. He also announced that Shep. VE3 DV will stay on with ARRL and RSO instead of resigning as he had previously indicated.

VE3 CDC reported from CARF. They are lobbying for lower fees for amateurs receiving supplemental benefits as old age pensioners. There may also be a request to abolish logs in mobile units. The CARF Newsletter can be ordered by sending \$4.00 to Box 356 Kingston, Ontario.

VE3 CUA introduced a program of commercial equipment display and discussion of same by their owners. Thanks for a most interesting and informative evening go to VE3s DTC, BR, AZY, ZS, LJ, GDV, BNO, CDC, BTS, GGA, ALK, AOE, DVH, and VE2 WM.

The meeting closed at 2230 with coffee.

M. 2.

#### A NEW SOURCE OF LINE NOISE?

Severe, wide-spread line noise arrived in Nepean Township and the southwestern part of Ottawa during mid-November. The probem area appears to extend for a considerable distance either side of Ontario Hydro's high voltage transmission line in the Copeland Park/City View/Crestview areas, just west of Merivale Road. As anyone who has observed the Forest of tri-banders in this territory knows, this is "ham country".

At VE3 DNJ, the noise is normally a very steady rough note at S 7, becoming slightly intermittent during wet weather. It shows no variation with time of day, and peaks at a bearing which appears to change from time to time. Adverse affects on TV reception have been observed as white dots in the picture, characteristic of impulse-type noise ("it must be that ham down the street"). Strangely enough, the interference is most severe at 14 MHz, and above into the VHF range, with AM radio reception being unaffected.

In the Crestview area, the beginning of the noise coincided TO THE DAY with the installation of experimental "anti-gallop torsional dampers" on what had been a very quiet Hydro transmission line. (These devices, appearing as transparent globes suspended on the line, are designed to prevent excessive motion of the wires during storms). Could it be that this product of years of research and development is at fault? If so, this is just the beginning, for we are only the second area in Ontario to be blessed with these THINGS. Now is the time to speak!

The Department of Communications and Ontario Hydro have been notified, and both are to be commended on the speed with which they began investigations; but the problem is still not solved (as of December 18). If you are not affected, here is your chance to compete for the rare ones with a somewhat-silenced VE3 LX (now VE3 GK). If you too are getting clobbered by noise with the above symptoms, VE3 DNJ (Mike, at 224-4979) would like to hear from you; or call if you have any other information to contribute (Hydro employees, take note!)

DNJ

#### THE ONTARIO AMATEUR GETS NEW EDITOR

Banner Edwards VE3 has been appointed Editor of the Ontario Amateur, the RSO monthly magazine. His first effort is the current issue. Banner has also been

appointed an Assistant APRL Director for Ontario, effective the first of January.

NEW CARF MONTHLY BULLETIN GET GIL STEVENS AS EDITOR

Gil Stevens, VE3 BQ, who did such a fine job as editor of the Ontario Amateur recently resigned that post in order to take on the editorship of the Canadian Amateur Radio Federation's new monthly publication "The Canadian Amateur".

STOLEN EQUIPMENT

RSO notifies us that recently two Toronto schools were burglarized and two complete amateur stations were stolen. If you come across any of this gear contact the police as shown:

Station No. 1

Heathkit SB 101 and AC power supply  
Heathkit HW 100 and AC power supply  
Heathkit SB-200 Amplifier  
Two Eico 50-watt monaural amplifiers  
Fisher FM Stereo tuner  
Phillips twin face oscilloscope  
Two Lenco S.75 turntables  
Phillips VTVM  
B&K Dot Bar color generator  
Heathkit EU 801c Digital System

Contact Dept. Sgt. Maher  
52 Division  
Toronto Metro Police  
(416) 362-1711

File # 118650/72

Station No. 2

Drake TR 4 without noise blanker, serial 31787  
Drake RV 4 V F O, serial 17502  
Electro Voice Microphone, model 729  
Heathkit Pawnee 2 meter transceiver  
Drake AC4 power supply, serial 38641  
Heathkit SWR Bridge

Contact Detective Peter Swain  
23 Division  
Toronto Metro Police  
(416) 362-1711

JUST WHO DOES "CARF" REPRESENT?

From various discussions heard on and off the air, it appears that the composition and objectives of the Canadian Amateur Radio Federation Inc. and just who it represents is still either unknown or misunderstood by some operators. To sort out just who the Federation represents and to answer the remark voiced by some, "CARF" doesn't represent ME", one should take a look at the related objective of the Federation as it appears in its federal charter; "To act as a liaison and advisory agency between its members and the Ministry of the Canadian Government concerned with issuing licenses for radio stations performing an Amateur Experimental Service". At risk of seeming repetitive it is pointed out that the Federation is just that; a federation of provincial radio societies each of which are the only full voting members of CARF; thus CARF acts indirectly as an "advisory agency" and "a liaison" between those amateurs who belong to a provincial society, or in some provinces, those amateurs whose clubs belong to provincial society where the society itself does not have individual memberships, such as does the Radio Society of Ontario. If you live in Ontario and belong to RSO, your individual viewpoint should be represented to the RSO by your district delegate, or your correspondence directly with the RSO executive. The RSO executive in turn makes its suggestions and

representations to the Federation. And this is a two-way street. The individual amateur should be receiving from his provincial society the timely and correct information which CARF distributes to its member societies. (If you, as an individual member of a provincial society, are not receiving it, don't fault the Federation. It is only as strong as the individual societies making it up.) All this can be achieved by becoming an associate member of the Canadian Amateur Radio Federation Inc. for an annual fee of \$4.00, which gives you "The Canadian Amateur" monthly publication. Money orders or cheques can be made out and addressed to the Federation, at Box 356, Kingston, Ontario, K7L 4W2.

CDC

LINEAR INTEGRATED CIRCUITS: PART I - THE OPERATIONAL AMPLIFIER  
by Colin Rowe, VE3 AZY

Last year I wrote a series of articles discussing digital logic. Just as many complicated logic functions that can be built with discrete components are becoming available in single integrated circuit packages, so are many of the linear functions being realized in single I.C. packages. Some examples of linear circuits presently available are operational amplifiers, double balanced mixers, voltage controlled (or current controlled) oscillators, phase-locked loops, four-quadrant multipliers, and comparators just to name a few. I propose to discuss some of these devices in order to give the amateur some understanding of the many complex functions that can be incorporated by using very few components.

THE OPERATIONAL AMPLIFIER

The operational amplifier generally has a differential input and a single-ended output. It is drawn schematically as a triangle as shown in figure 1:



Figure 1: Schematic diagram of an operational amplifier

Note that the two input terminals are marked and -. This refers to the phase relationship between the inputs and outputs. The " " terminal is generally called the "non-inverting" terminal meaning that the output signal has the same phase as the input applied to the " " terminal, i.e. a positive going voltage at the input yields a positive going voltage at the output. Similarly, the "-" terminal is called the "inverting" terminal meaning that the output signal is 180° out of phase with the input signal. Ideally the operational amplifier would have the following parameters:

- (1) infinite open loop voltage gain
  - (2) infinite input resistance
  - (3) zero output resistance
  - (4) infinite bandwidth
- and
- (5) zero offset.

The meaning of these statements will become better understood when I indicate how the operational amplifier is used. In practice, open loop voltage gains in the order of several hundred thousand are feasible; input impedances near 100 Megohms and output impedances in the order of 0.1 ohm have been realized; bandwidths in the order of 100 MHz and offset voltages in the order of 1 microvolt are quite feasible. Consider the operational amplifier connected in the following manner:

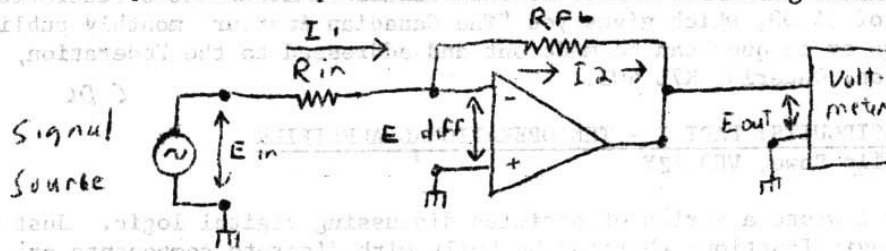


Figure 2. Inverting Amplifier

The input current  $I_1$  is 
$$I_1 = \frac{(e_{in} - e_{dif})}{R_{in}} \quad (1)$$

The current flowing through the feedback resistor  $R_{fb}$  is:

$$I_2 = \frac{(e_{dif} - e_{out})}{R_{fb}} \quad (2)$$

Now the current  $I_1$  must equal that flowing through the input terminals of the operational amplifier plus that flowing through the feedback resistor (or mathematically):

$$I_1 = I_2 + I_{in} \quad (3)$$

Because the input impedance of the operational amplifier is very high, the current flowing through the input terminals of the operational amplifier is almost zero (so it can be neglected). Thus we obtain:

$$\frac{e_{in} - e_{dif}}{R_{in}} = \frac{e_{dif} - e_{out}}{R_{fb}} \quad (4)$$

Because of the very high open loop gain and the feedback (negative feedback) the voltage across the two input terminals  $e_{dif}$  becomes zero. This means that the inverting terminal is essentially at ground potential (and is called a virtual ground point). Applying this fact to our expression for the input and output voltages gives the result:

$$\frac{e_{out}}{e_{in}} = -\frac{R_{fb}}{R_{in}} \quad (5)$$

This important fact shows that the amplifier gain (when connected in the inverting mode) is independent of the internal components of the amplifier. It is only dependent upon the ratio of the two resistors Rfb and R in.

In the next article, I'll discuss the operational amplifier connected in some other configurations and attempt to show some of the results that can be obtained.

73, Colin

#### LAST MEETING

The highlight of the last meeting was the display of equipment. The following is a rundown of the goodies: HW-101, SB-200, SE-610, SE-101, FT-101, IC-21, R4B, FT-200, NCX5, Accent 450, Regency 2 metre FM, Johnson Bard scanner (2 6 metre), The Heath QRP rig and The Ten Tec QRP rig. There were one or two others around but they were too exotic for your editor to identify. Allied Radio Shack was good enough to supply a receiver for the show, which was ably described by Tony, VE3 FXG, with the aid of a few idiot cards. The FT-200 was courtesy of VE2 WM's XYL, (who won it at a recent convention), who permitted our Hugh to take her new rig to the meeting.

By the way, we bid a fond farewell to "VEE-EE-TWO-DUB-BULL-EWE-EMM MOBILE" who is returning to la belle province this week. Old Hugh has been up here instructing a course for the past six to eight months. We'll miss his "CBC National news"-type voice. (He isn't CBC tho).

#### NET CONTROLLERS ARE HUMAN

One of the greatest qualities that a net control should have is the ability to make decisions quickly and correctly. Many confusing situations have been avoided by a quick-thinking net controller who was able to see a problem developing. He must also be able to express himself precisely without a long-winded statement about his intentions. If you give a reason why you are doing something, then you are inviting a reason for not doing it. Even so, it is not necessary for a net controller to explain his orders. If you, as a net member, are told to do something, do it regardless of your own opinion. If the controller is making a bad error, he will pay for it, but even if his action seems to be rather absent-minded, he may be smarter than you, and may have a good reason for it, or has information you are not aware of.

#### FACTS IS FACTS, BOY!

It was interesting to see how fast Noel Eaton, VE3 CJ reacted to my editorial in last month's "Groundwave". He even came to our meeting to lay some good information and advice on us. I echo his hope that the DOC will be asking us for opinions on more subjects than just phone band expansion. When you get your ballot, express an opinion, but think very hard about it before you do. The future of some of our well-established institutions may be in jeopardy. This sort of thing can be compared with a submarine sinking itself with its own torpedoes and a bad opinion is just

about as useful to our security as a screen door in a submarine. (That's a fact).

Speaking of facts, Noel said that he would forgive me anything as long as I get my facts straight. (That's a fact.) I do not accept forgiveness from anyone unless I think I have done something for which I need to be forgiven. (That's a fact.) In my editorial, I do admit that I did err in one fact in that Robert Stanbury is no longer Minister of Communications. Our new Minister of Communications is Gerard Pelletier. (That's a fact too!). I'm sure, however, that I can be forgiven by one and all when you realize that Pierre Trudeau's cabinet shuffle (that's not a dance, son) occurred after the "Groundwave" went to press. Having now rectified the only non-fact in the entire editorial, I gladly accept Noel's forgiveness!

VE3 ARS

"SHEP", VE3DV, BACK AS SCM

Of interest to the traffic-handling club members is the news that Holland Shepherd, VE3DV, has been persuaded to return to his office as SCM (collective sigh of relief). Let's be thankful and leave it at that!

A SPEEDY RECOVERY TO:

- John McWaters, VE3ML, recovering at home from a heart attack and he welcomes cards and visitors etc. He resides at 11 Wurttemberg, Apt. 901.

- "Doc", VE3 BIR, is in hospital with a heart attack. We all wish him a speedy recovery.

BREAK! BREAK! BREAK! BREAK!

A lot of repeater users seem to know the rules but don't use them. Knowledge of the rules does not give a person the right to abuse them. However you can still hear people saying, "I think I'm about to time out so I'd better hand it over to ---. Oh, by the way, ---". Click! The rule abused? "Keep it short!" Saying that you realize you are about to time out, doesn't give you permission to do so. In fact you should not have been in the position to be aware of the possibility of timing out.

Oh badly misused or abused rules are the acknowledgement of breakers and also the use of long breaks between transmissions to allow for breakers. People just don't do it! Acknowledge every breaker. They may have important traffic or information. You won't make many friends by ignoring a breaker! The breaker, at least, deserves the courtesy of knowing that he is at least getting out.

Long breaks should be used between transmissions. Count one, two, three, before you push the button. Give other users a break. It's not your own personal private line. Don't apologize for breaking the rules while you intentionally are breaking them! That's not at all nice.

EMERGENCY TEST ON JANUARY 28/29

The ARRL Simulated Emergency Test (SET) takes place January 28/29, 1973, and the club's executive agrees that we should participate in it, as a club. If you have any ideas, suggestions, or you would like to volunteer to co-ordinate or participate in this club endeavor please contact one of the executive or your editor before, or at, the next club meeting.

NEW 2-METRE SIMPLEX FREQUENCY FOR RAQI

For some unknown reason, RAQI has chosen 147 360 as their simplex frequency (like 76 here). If you're down that way, you are warned.

PETE MAHONEY

Peter A. Mahoney, an honorary member of the OARC, passed away Saturday, December 16. The club extends its sympathy to his family. Flowers were sent, but unfortunately, arrived late.

PET REAR BURNERS

People who are bothered by other people's idiosyncracies in their use of operating terms bother me. A guy who gets all hot and frustrated because some other guy said "we" when he should have said "I" or "me" deserves to boil in his own juices. If you are going to get picky over a guy using a cliché or a peculiar phrase on the air, then you had better get out the old Tums and Alka Seltzer. I speak the English language too, and therefore I am licensed to use whatever terms I deem fit, just so long as a majority of people know what I mean. Actually, I have found that the only person who ever complains about the general use of the term "we" is the guy who thinks he and only he has the right to use it. (like editors and Heads of State, etc).

Another guy who burns my butt is the guy who claims CW is dead! Let me tell you, my friend from Manitoba, it sure ain't. If it is, then I'll turn in my mike. Yes, I'll agree that mastering CW is a task, but it gives some of us a challenge and helps build some semblance of character in us. It is also a very good training ground for discipline in our hobby, and helps keep us from drifting into the realm of the button-pusher and the "10-4" gang. Phone net managers will tell you that the most efficient operator on a phone net is the guy who frequents the CW traffic nets. The DXCC roster is a good indication. The CW list outnumbers the phone section by a factor of two or three to one. Contests are CW to phone to 1, and in Canada alone, the contest activity is almost entirely CW.

One good point in the infamous FCC report and decision on the docket 19162, is that it gives a very good reason for keeping CW, as does our own DOC which maintains that the CW requirement acts as a good "filter". There are plenty of other good reasons for keeping CW on the list but lack of space does not permit me to expand on them, here and now.

In the same vein, the guy who really upset my digestion was the editor of a New Brunswick bulletin who, when describing the actions of a new advanced amateur in his area, used the term "hanging up his key". As far as I am concerned, when you do that as an amateur, you join the 10-4 gang!

Its a cum in down! If this snow keep up, I'll be able to walk outside and fix my 65 foot high beam, without the aid of a ladder.

SANTA CLAUS APPEARS ON 75 PHONE!

Although it could not be determined whether or not he possessed an advanced lincese, old Santa Claus himself appeared on 3775 at 1630 EST on December 20 to take Christmas gift requests from call fry all over the Eastern provinces. And added feature this year was the fact that Santa talked to kiddies in the U. S. of A (which appears to be the only 'plus' resulting from the US phone band expansion). The true "accente Canadienne" surely convinced those kids in the Southern U.S. that Santa was the genuine article from 'way up in Canada and the North Pole!

A large bouquet of mistletoe to VE2ADZ and the boys for this delightful annual feature. This sort of operation makes this normally kooky hobby worth while!

1973 MEMBERSHIP

With approximately 200 members signed up for 1973, the club is still short of last year's membership .

Some of the non-member regular uses of VE2CRA might care to swell our ranks and help to maintain the repeater thy use --- just send \$5.00 NOW to Box 8873, Ottawa, K1G 3J2.

Present recipients of the Groundwave who hear complaints from local amateurs about not receiving this issue of the Groundwave can point out that it is highly likely that they have neglected to renew their membership for 1973.

**PLAN NOW! for the**  
**RSO CONVENTION . . .**  
**AUGUST 17-18-19 1973 in**  
**KINGSTON! THE LIMESTONE CITY**  
and for the first time at any RSO Convention there will  
be a real honest-to-gawd BANQUET...no cheepee chicken croquettes  
and green peas! but WINE AND MUSIC. Bring your own dancing girls.

DOC TO POLL AMATEURS IN 1973 ON EXPANSION

At a recent meeting the DOC, when faced with the well documented technical brief for phone expansion to 3650 Mhz and to 711 Mhz presented by CARF and the vigorous protests against any such action now by the American Radio Relay League Canadian Director, decided to get off the hook by polling individual Canadian amateurs as to their opinions in this matter. Inasmuch as it may be some time before this poll is taken and the results made known, to find out now just what this club, as a representative group of amateurs, thinks about it, let's hear from you on this miniature "Gallup Poll".

Make your opinions known by checking the following ballot and bring it to the next meeting or mail it to OARC, Box 8873, Ottawa. (Put a check mark or 'X' opposite your choice.

TEAR OFF BALLOT HERE

(1) NO EXPANSION

(2) EXPAND 75 PHONE TO 3650 MHZ

(3) EXPAND 40 PHONE TO 7100 MHZ

(4) ANY OTHER SUGGESTIONS FOR EXPANSION?

---

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(5) DO YOU HAVE AN ADVANCED OR COMMERCIAL CERTIFICATE?

  
YES  
NO



FIRST CLASS MAIL

Ottawa Amateur Radio Club,  
P.O. Box 8873,  
Ottawa, Ont.