

JUNE '76

# The Official Bulletin of the OTTAWA AMATEUR RADIO CLUB

Box 8873, Ottawa, Ont. K1G 3J2

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: THE GROUNDWAVE - OFFICIAL BULLETIN OF THE OTTAWA AMATEUR RADIO CLUB - JUNE 1976 :  
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MATERIAL PUBLISHED HEREIN does not necessarily represent the official OARC viewpoint. Items may be reprinted by Amateur Radio publications with proper credit.

DEADLINE FOR COPY for the mid-summer issue will be the 15th day of July.  
Address correspondence to: Carl Everson, VE3BYX, Box #4, Osgoode, Ontario, KOA 2WO.

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THE OTTAWA AMATEUR RADIO CLUB is an association of Radio Amateurs devoted to the promotion of interest in Amateur radio communication in the Ottawa regional area, and to the advancement of the technical competence and achievement of Club members. The Club call is VE3RC, the Club repeater is VE2CRA (146.340 MHz in/146.940 MHz out and 443.30MHz in/448.30MHz out)

THE CAPITAL CITY NET meets every Monday evening at 2000 hours on the Club repeater, VE2CRA, to pass traffic and make announcements of interest to Amateurs in the Ottawa regional area. THE SWAP NET, a service of the Ottawa Valley Mobile Radio Club Inc. and conducted by Ed, VE3GX, is also repeated at this time. To list items or make enquiries, call Ed at 733-1721.

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THE NEXT REGULAR MEETING of the OARC will be held at the National Research Council, 100 Sussex Drive, Ottawa, on Wednesday June 2, 1976 at 2000 hours. The main item on the program will be a presentation by the EMI Committee of a talk and slides pertaining to electro-magnetic interference causes, location and elimination.

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THE OARC EXECUTIVE meets regularly on the second Monday after the regular Club meeting, in the Board Room of CFRA, 150 Isabella St., Ottawa, at 2000 hours.

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THE NEW-TIMERS RADIO CLUB meets on the second Sunday of every month at Boy Scout Headquarters at 7:00 PM. High-school and college-age types are welcome. For further information, call Dave, VE2DZE, at 684-6173, or Glen, VE3GWY, at 225-7185.

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RENEW YOUR ARRL MEMBERSHIP through the OARC - you save time, postage, and MO fees, and the Club also benefits. See Hank, VE3BR, at any of the meetings.

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MAUREEN NEILL, VE3FZY, has offered to visit any Amateur confined to the Civic Hospital. If you know of anyone who would appreciate a visit, call Maureen at 725-4581, or after 5:30 PM, at 233-9941.

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CALL-LETTER LICENCE PLATES are now available to Ontario Amateurs. Applications should be made to: Department of Transportation and Communications, Queen's Park, Toronto, Attn Miss G.E. Graham. All details from your present registration form, front and back, should be included, plus the call letters requested, plus \$25.00 payable to the Treasurer of Ontario, plus the address from your station licence. Expect a 4 to 6 week waiting period.

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FIELD DAY 1976, JUNE 26-27 Field Day this year will be held at Vincent Massey Park beside the bandshell and lower parking lot. As in past years, coffee, pop, a mid-night snack and breakfast will be provided. Please make your own arrangements for everything else. All going well, there will be four stations, plus OSCAR, plus a natural power source, so there should be plenty of operating time for all. Everyone (Amateur or not) is invited to visit us at the site, perhaps to set up or take down, log a little, have an eyeball with a friend and then, if you do not operate, go home and give us some more contacts. We are all working hard to put VE3RC well up in the standings so do support us. Everyone can be useful. Bring the family for a picnic and escape from the kids for a little while operating. (Continued on Page 1)

MINUTES OF THE PREVIOUS MEETING The regular meeting of the OARC was held in the auditorium of the NRC on Wednesday May 5th, 1976. The meeting was called to order at 2010 hours. The President welcomed several guests present.

The minutes of the previous meeting were brought to the attention of the membership. It was moved by Bill, VE3EKA, seconded by Ken, VE3CCV, that they be adopted as printed in THE GROUNDWAVE. Carried.

It was announced that a scroll made by a friend of VE3CAD had been presented to King Hussien, JYL, of Jordan.

Treasurer, Cy, VE3CVK, reported a balance of \$3969.15.

A new membership committee, Bert, VE3GCK and Hank, VE3BR, was announced.

Editor Carl, VE3BYX, needs articles for THE GROUNDWAVE, especially on HF.

George, VE3BNO, reported the Diplexer for the repeater has been ordered.

Croft, VE3OR, reported that the RSO Convention will be held at the Don Valley Inn, on October 22&23. Cost of a room to be \$32.00 and further information at a later date.

It was reported that nominations for RSO delegates will be open until 15th May 1976, five nominations are needed from the Ottawa area.

It was reported that 33KSR teletypes are now available, for further information, contact Croft, VE3OR.

Gerry, VE3GK, reported that the beginners class will be writing on May 26 & 27. 30 budding hams will be trying the exams.

It was reported that the cheque to the Children's Hospital had been presented to Dr. Haeil and that several photographs had been taken.

The EMI Committee reported that four problems had been investigated. There will be a clinic held the first week-end in June to test low-pass filters and the June meeting of the OARC will feature a technical talk and slides on EMI.

The Emergency Communications Committee are providing communications for a car rally on May 22nd 1976, 1300 - 1730 hrs.

The Club has been approached to help supply communications for the Olympic torch bearers starting from Parliament Hill on Thursday, July 15 and Friday, July 16.

The synthesizer project now has 43 members participating. The second installment will be due in May.

Letters of thanks have been received from the Children's Hospital, the RSO re the Convention last fall, AMSAT for the recent contribution, and the Ski Marathon for our assistance with the Marathon last February.

A trip to the Canadian Corps of Signals in Kingston is planned for May 30, 1976. There will be a bus provided and a charge of \$2.00 for the supper in the mess.

The time-out award of the month was presented to Frank, VE3EVK, for May.

Penny, VE3ERO, is in charge of Field Day. The location will probably be in town, rigs and other equipment will be needed.

Bud, VE3UD, gave a very interesting talk and demonstration on antennas, and was given a round of applause from the floor.

The meeting adjourned for coffee and eye-balls at 2240 hours.

Maureen Neill, VE3FZY, Secretary.

FIELD DAY 1976 (Continued from Inside Front Cover)

Sunday, conditions allowing, we will be holding the OARC official kite-flying contest at 10:30 AM local time. Hand-made kites only will be allowed. There will be two prizes, one for the kite that goes up the highest in the shortest time and the other at the discretion of the judges whose decision is final. So do start designing now. Gord, VE3DY, will have info sheets available at the June meeting on kite building.

A meeting for all those coming to Field Day will be held on June 10th. Contact Penny, VE3ERO, for time and place, or if you cannot attend, contact her before that date. This will be a brief check of procedures, site plan and filling out of sked sheets.

We will set up Saturday starting at 10:00 AM with operations running from 2:00 PM Saturday until 2:00 PM Sunday when clean-up takes over. If you have a preference, bring your own key and headphones. See you there! Penny, VE3ERO, Field Day Chairma'm

IF THE GOING IS GETTING EASIER-----

-----you aren't climbing!

THE INCREDIBLE SIGNAL "S" by George Scuthe, VE3DMC

This story has always fascinated me, perhaps because of the coincidences that the date of the first transatlantic transmission (Dec. 12) is my birthday, and that the signal "S" is the initial of my surname.

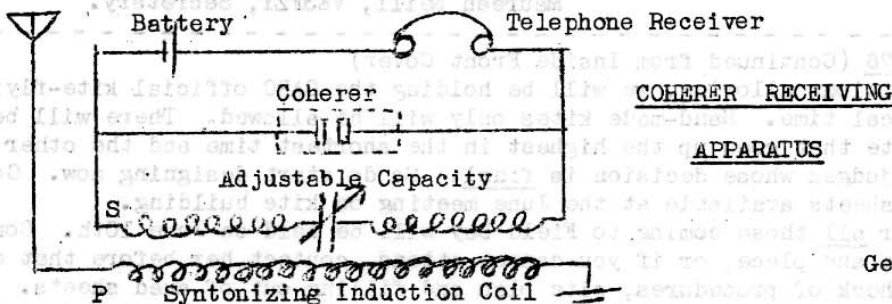
Seventy-five years ago, G. Marconi "unmistakable" heard three clicks in the telephone receiver of his rudimentary wireless detecting apparatus set up at Signal Hill, a promontory overlooking St. John's harbour in Newfoundland, and felt the elation of the DX-er. By improving the performance of his transmitters and receivers, particularly through the use of antennae and metal plates buried in the earth, he had progressively extended the reach of his apparatus, spanning the English Channel in 1899 and St. George's Channel early in 1901. The culminating achievement was the 2,000 mile transatlantic leap.

Incredible as was Marconi's feat in December, 1901, it seems even more remarkable in retrospect. The spark-gap transmitter at Poldhu, in Cornwall, was powered by an AC generator of about 30 kilowatts output. The oscillator circuit fed into a vertical fan antenna supported between two 210-foot masts. While the wave-length was not clearly established, it has been estimated at about 960 meters (about 312.5 kHz in frequency).

The receiving detector utilized a coherer, consisting of a small glass vacuum tube in which a loose mixture of nickel and silver filings with a trace of mercury was confined in a narrow interspace between plugs of silver metal. The signal collector was an antenna suspended by a kite at a height of 400 feet. An incoming impulse influenced the filings in the coherer causing a drop in resistance and producing a click in the ear-piece, or, if signals were strong enough, activating a telegraph printer. After each impulse, the tube had to be tapped by a "decoherer" to restore its sensitivity to the succeeding impulse.

Arranging a schedule of transmissions of the Morse letter "S" from Poldhu, Marconi set up his coherer in a barracks hospital on Signal Hill to prove the feasibility of transatlantic wireless communication. Having no reason to suppose that night-time might be more favourable than day-time for propagation, he instructed Poldhu to transmit daily between 3 PM and 4 PM Greenwich Mean Time. Doubtless the prediction of some reputable scientists that wireless signals would not follow the curvature of the earth over long distances but would be lost in space troubled him. Nevertheless, at about a half hour past noon on December 12, 1901, Marconi heard "three scant little clicks" in the telephone receiver, repeated several times. One of Marconi's two assistants, G.S. Kemp, confirmed reception although the other, P.W. Paget, could detect nothing. It was subsequently reported that Mr. Paget was slightly deaf.

Whatever grounds there might have been for scepticism over Marconi's claims, the cable company holding a monopoly on telegraph communications in Newfoundland gave credence to them by threatening an injunction to restrain further trials of his wireless telegraph. It thereby provided the Canadian Government with the opportunity to invite him to continue his work in Canada under more hospitable conditions. He set up a transmitting and receiving station at Glace Bay, Nova Scotia, where, within a year of the original transatlantic experiment, two-way communication was established with Poldhu.



GUESS WHAT LOCAL AMATEUR was frantically trying to rotate their beam recently in order to better copy the exotic oriental contacts in which they were busily engaged and could not understand why there was no change in the signal reports received. It turns out they were transmitting on their dipole and were so busy talking they didn't realize it. Jim, VE3CIJ says he knows who it was. Sounds like something a talkative YL would do! (Ed.)

REPEATERS I HAVE KNOWN AND LOVED by Penny Robinson, VE3ERO (Cont'd from May)  
 VE2CSO, one of the newest repeaters to be installed giving coverage to the Hull-Ottawa area, operates on 146.100 MHz input and 146.700 output. It is mainly a French repeater where francophone amateurs can comfortably use their mother tongue, but everyone is invited to use the repeater and practise their French. Regular users are encouraged to support the repeater by joining Le Club radio amateur outaouais whose president is Lionel Bonhomme, VE2SY, and club call is VE2CRO. To set up another repeater in the area was considered a challenge to the amateurs involved, but no one had realized the extent of the challenge, including the raising of antennas in -30 deg. weather to the necessity of home-brewing cavities to prevent interference with VE2CRA.

The transmitter is a Motorola with 10 watts output. The receiver, also a Motorola, is narrow-band with deviation at about 5-7 kHz, VE2RA home-brewed the cavities, two of which are at the transmitter and one at the receiver. The antennas were made by VE3ERH and have a 9 dB gain towards Montreal. Due to the newness of the repeater, coverage is not exactly defined but it has been tripped from Papineauville, and from below water level by VE0MEN. The transmitter antenna is at 80' and the receiver antenna is at 25' and located at Camp Fortune about 500 feet from VE2CRA. The timer, home-brewed by VE2BDP, has instant on, COR reset, and allows 4½ minutes of talk-time.

The future looks promising for this repeater with VE2BPP presently building a solid-state identifier, and everyone involved in learning more about repeaters by necessity.

Special thanks from the club go to George, VE3BNO, for all his practical advice and assistance. My thanks to VE2BPP and VE3ERH for the information herein. Just be thankful that I opted to write this article in English although French would have been more a propos (ma grammaire française est épouvantable). Penny Robinson, VE3ERO

A GUIDE TO QSL'ING by Chris Turner, VE3EQF (Continued from last month)

WHAT STATIONS DO I QSL? This is strictly a matter of personal choice and finances. If you work mainly DX and go in for "wallpaper" as I do, then you will QSL almost everyone you work. Many amateurs only QSL when they receive one from the other station. The odd amateur, such as the one you need for DXCC, doesn't QSL at all. Still others only QSL in order to obtain confirmation for a particular country, area, or prefix, and then refuse to QSL for following contacts. Personally I have no beef with any of these types because I can see their point of view and I also realize that the use of QSL cards is up to the individual. It is just another part of the hobby and what turns me on may not be the same thing which turns you on. If, however, you do not normally QSL but do get a card from some station pleading with you for a card because he needs it for some exotic award, or for some other reason, I feel that in the interest of the amateur fraternity and the fact that he or she is a fellow ham, it is not going to hurt me to make him or her happy by sending out a QSL.

HOW DO I FILL OUT A QSL? Legibly! Print the information and use a pen that will not fade. There is nothing worse than having a real rare QSL only to have the ink fade away to nothing after a year or so. If you include a message, then use simple language - not everyone speaks English fluently. Also, because alphabets are different around the world, make a 7 with a bar through it thus 7̄, also a Z like Z̄ and a zero like 0̄. The short forms which we use on CW are easily recognized as well. Also, if you make an error when making out a QSL, NEVER correct it, Tear it up and issue a new one. Corrected QSL's are virtually useless for Award hunters. Good hunting and pse, pse, pse QSL. Chris.

(Thanks to Chris, VE3EQF, and TOTOPICS, bulletin of The Ontario Trilliums for the foregoing article on QSL'ing - Ed.)

THE CARF QSL SERVICE The Canadian Amateur Radio Federation sponsors the CARF National QSL Bureau, Box 66, Islington, Ont., managed by Jean Evans, VE3DGG, who supervises a group of handicapped people who run it. Here is how it operates:

Incoming QSL cards received in bulk from other national bureaux are sorted by province and sent to provincial bureaux. If you are expecting QSL cards, you may send a stamped, self-addressed envelope to your provincial bureau OR you may speed up the process by sending the envelope to Box 66, and your foreign (and Canadian) incoming cards will be sent direct to you.

(Continued on Page 5)

MAKING YOUR OWN PRINTED-CIRCUIT BOARDS by Larry Smith, VE3CGS

As a photographer-amateur, I have been intrigued with the idea of combining photography, the graphic arts, photofabrication, and amateur radio, to produce useful creations in our chosed hobby. Perhaps the following comments which follow will encourage you to try what you, too, have wondered about but never became involved with. If I can be of help, photographically or otherwise, give me a shout on the landline, or drop in on 3763 kHz on Thursday evenings between 1830 and 1930 when I sked with VE3GZY in Aurora.

You will need drawing materials, good quality white paper or card stock, and a means of making clean black lines and terminal points. The lines should be of uniform thickness and density and the terminal points should be consistently concentric about the point or points receiving the components. A good ruler with a nice straight edge, perhaps a pair of dividers and a compass to help lay out the circuit neatly. There are fine black tapes available in various widths from 1/16 to 1/2 inch at electronic shops and you can buy circles and dots in pressure-sensitive material. For a complete listing, refer to the Electro-Sonic or other catalogue under such trade names as Centron for printed circuit art work symbols, Brady for self-sticking, precision forms, Quickline for narrow-slit tape, and General Cement for other items. Wakid's in Ottawa handle some of the trade names mentioned. For making double-size layouts, use 0.062" tape for average conductors. 18 yards of tape sells for about \$1.54 and six IC circuit pads (14 or 16 lead) sell for about \$1.40. There are T's, and other configurations available in packages of 6.

Remember, first, that every mark that you leave on the white paper will be reproduced on the final board unless you or someone else removes it. Remember that the lines and dots which you draw will be the current path in copper, so don't build in weak spots and inconsistencies. It is very important that the density of the lines and dots be solid, uniform in width, and properly insulated from its parallel neighbour by adequate space. It is an excellent idea to make your drawing two or three times the desired size. It is much easier to do a neat, clean job at the larger dimensions, and it is no trick for the photographer to reduce the enlarged drawing to the required size. For his convenience, I would suggest that you do not go bigger than three times the required size.

If you have a clean image in a magazine which can be removed, a photographer can produce either a direct positive print (PMT), or a lith negative, and you're all set if the dimensions check with your requirements. Usually, however, such magazine images will need some touch-up, so don't be too disappointed if you have to work up a print, or a negative, to an acceptable level of quality with India ink, tape, or other opaque substance.

When you have finished the preparatory art work, check it over again carefully looking for faults in conducting lines and for clean drill holes at each point where a component ties in or terminates. Make sure there is a proper uniform width of simulated copper around each of these points and that each conductor will have sufficient air space between it and the next one to stay clean and operational in its final reduced working (normal) size. The negative used to print your board is easiest prepared by a photographer or lithographer on high-contrast lith film (on estar base if tolerances are critical, ie within .002" or .003"). Any good high-contrast lith negative is fine otherwise.

If the board is not pre-sensitized by the manufacturer, it should be scrubbed clean using a steel wool scouring pad or rag, and Bon Ami cleanser until it is free of dirt, grease, and foreign materials. The sensitizer or resist can now be applied to the dry clean board. I use KPR resist and a camel hair brush well loaded with resist liquid. Lay the board flat on the work-bench, with a paper under it for cleanliness, and a low wattage incandescent lamp (40-60 watt) to provide a working light. I brush the board completely in one direction (east to west) and then in the other direction (north to south) so that the coating is smooth over the entire board. This must be done quickly and with deft brush strokes before the resist begins to set. Leave the prepared board covered with a box or something to protect it from dust and excessive light. When the resist is completely dry- (an hour or two)- you are then ready to print.

Ideally, a contact printing frame is used, but an ordinary picture frame with a piece of stiff card or masonite for the back would be OK, or even a couple of sheets of glass a little larger than your negative and board. The sensitized board, lying sensitive side up on the bench as you prepared it, is covered with the negative. Hold the negative before your eyes, and make sure as you look at it, that it reads correctly and is not

MAKING YOUR OWN CIRCUIT-BOARDS

reversed, and place it flat on the board and properly oriented. (The dull side of the negative should face the sensitive side of the board). Place the combined negative and board on the glass so that the light will pass through the glass and the negative to the sensitized board. Seal the unit in place by locking the printing frame back or placing the back on the picture frame or taping the glass sheets firmly together.

Carry the sandwich out into the noon-day sunlight and place it on a flat surface facing the sky (negative up) and leave it totally undisturbed for four minutes. Now bring it into your work area and place the exposed board (after separating it from the negative) sensitive side up in a glass or enamel tray and pour over the board or into the tray sufficient Trichlorethelene to cover the board by about 1/8 inch and rock the tray gently once or twice every minute or so for about ten minutes. (NOTE: Use with good ventilation as the fumes are quite toxic). Get the water running in the sink so that it is just pleasant, neither cold nor warm (about 100-115 deg. F.) and, using the sprayer, go over the surface of the board quickly (take it out of the Trichlorethelene) so that the discolored unhardened resist is washed away. As you do this you will notice the circuit showing on the board in a somewhat relief-type pattern indicating to you that you're in business.

Prepare a plastic tray with etching solution made by dissolving cupric chloride in water at the rate of 2 3/4 lbs per gallon (start with 3 pints of water) then, when dissolved by stirring, add 69 fl. oz. of 37% hydrochloric acid, then add sufficient water to bring the total volume to one gallon (128 fl. oz.) (NOTE: use with rubber gloves and good ventilation, hydrochloric acid is extremely hazardous in contact with skin or clothing or as fumes - watch your eyes! - always pour acid into water). Keep a supply of 37% hydrochloric acid on hand so that when the action of the solution slows down because of neutralization of the acid, you can simply add a small quantity of fresh acid to the tired solution to perk it up. Use extreme caution as severe burns can result and permanent damage to clothing, furniture, etc. can result in the event of a spill. Now, place the board in this etching solution and keep it there until all the copper not forming the conductors has been eaten away to the bare board base. I would recommend a gentle rocking agitation from time to time to somewhat accelerate the action and to keep fresh solution flowing over the board. When the action is complete (perhaps 30 minutes to 2 hours) rinse the acid solution away from the board. (Don't throw out the used solution - remember, it can be rejuvenated by addition of new acid and used for your next project). Now, polish away or dissolve away with a rag and trichlorethelene, or some 'Bon Ami', the resist that protected the conductors, until they are clean enough to receive solder. Drill the necessary holes in the board, and away you go! - your board is ready to use. (Larry Smith, VE3CGS)

THE CARF QSL SERVICE (continued from page 3)

For CARF individual members, the CARF QSL Bureau also operates a service for exchanging cards within Canada through the provincial bureaux. Send cards addressed to your Canadian contacts to Box 66, sorted alphabetically by call district. They will be sorted and sent to the provincial bureaux. The Ontario Bureau is run by the Trilliums, a YL amateur organization. Also, for CARF members, Box 66 operates an outgoing QSL service. Send your cards in bulk to Box 66 and they will be shipped to other national bureaux for distribution. NOTE: None of the above applies to US cards for Canada, or Canadian cards for US addresses.

Despite the fact that the US Call Book does not list Box 66, (CARF is not recognized by the IARU) this service is working well. There is no one person or any bureau known to be looking after the Downsvievw box listed in the Call Book Magazine.

If you are a QSL collector, and noting that Canadian postage will shortly jump from 8¢ to 10¢, your \$5.00 membership in CARF will quickly pay for itself. Send your cards to CARF National QSL Bureau, Box 66, Islington, Ontario, M9A 4X1. (D. Burrill, VE3CDC)  
(And send your memberships to CARF, Box 356, Kingston, Ontario, K7L 4W2 - Ed.)

I GUESS SEAN, VE3HXP, forgot to send in the answer to his puzzler from last week and I haven't been able to contact him about it. I would suspect that you would use the DC control line to carry receiver audio with suitable choke and condenser isolation.

HE WHO HESITATES-----is honked at!

HF DX'ING IS ALIVE AND WELL by Penny Robinson, VE3ERO

May has been one of the best DX months for some time. Twenty meters has frequently opened early and closed late with Amateurs from around the world being worked from Ottawa. Here is a partial list of SSB DX worked by two locals this month. Gerry, VE3GK, worked 4Z4XD (Israel), 9J2AB (Zambia, Sunil normally 4S7AB in Ceylon), SV0WZ (Greece), YO4WU (Rumania), 9MLMM (Nepal) and OE50-3EFW. Walt, VE3CLJ, worked TR8BJ (Gabon Republic) TJ1BG (Cameroon), CR9AJ (Macao), KA6HG (Okinawa) and OJ7MA. Both Gerry and Walt worked 9VLSQ (Singapore), VS6BL and VS6DO (Hong Kong), YB8 and YBØ (Indonesia), HL and HM (Korea) as well as a good number of ZL's (New Zealand), VK's (Australia), JA's (Japan) and UA's (USSR). Fabulous antenna setups and high power stations were not the only ones who worked DX this month. OY5NS and VK6RU were both worked off a dipole even if one was unintentional. I worked 9VLSQ (trx GK), several Japanese, 5Z4RT, UL7QH, NV6ITU but the list of DX I just missed is even more impressive. There are numerous DX'ers in Ottawa, CW and phone, including VE3UD, VE3ET, VE3CPA, VE3EKS, VE3CUA and VE2BMH, not to mention VE3GA, one of the top DX'ers. There is even a DX'ers two-meter frequency, 147.920 MHz.

Fifteen meters has also had openings during this high cycle with ZL's on frequency and ten meters has also been fairly open. In forthcoming HF articles we want to hear about 160 meters, CW DX'ing, contesting, propagation, etc. Rumour has it that VE3BTY was last seen chasing a 5U4GB up the band.

LETTER TO THE EDITOR: Dear Editor; I have a slight correction for the time I asked you to print in THE GROUNDWAVE concerning the New Timers ARC. It meets on the second Sunday of each month, not every second Sunday.

Now there is something else to put in THE GROUNDWAVE. There is a local rag-chew net meeting on ten meters on 28.6 MHz every Tuesday and as many as 11 stations have been on at one time (and as few as one - Hi!). Also, this is the season of sporadic-E ionization and ten opens up fairly often now. In fact on one occasion when the band sounded closed on an evening of the net while Paul, G3TZJ/VE3 and I were talking and I was straining to hear someone in the very south-east corner of Ottawa, a very strong (S7) signal broke in to join us. It was mike, WA4GAB near Jacksonville, Florida.

We have 1700 kHz of perfectly good spectrum space on ten and at the bottom of the sun-spot cycle it is just as good as 2-meter FM for a direct frequency and perhaps better. Most of us already have a rig which covers ten so why not use it?

An elaborate antenna or a lot of power is of no great worry. On ten meters I can only get 75 watts to my dipole up 20 feet but I have worked VE1's, VE3's (up north), VE4's, WØ's, W9's, W5's and W4's. By the way you can kill two birds with one stone if you have your dipole favouring the north if the Aurora opens up.

Everyone is welcome on the net. Not only are there SSB stations, but also CW and even AM. Every Tuesday at 8:30 PM it starts up on 28.6 MHz or so, which is where most of the activity takes place on ten now anyhow. For CW nuts (like me), try the ten meter Novice band, 28.1 to 28.2 MHz. To work ten seriously, however, a kilowatt rig and beam could be of assistance as I have heard LU's and PV's and many other South American stations as good easy copy.

Thank you and we hope to have more check-ins on the ten meter net. Very 73.  
Dave Goodwin, VE2DZE, 4 Victoria Place, Aylmer, Quebec, J9H 2J3

AS AMSAT-OSCAR VII continues through its second year of continuous operation, it is becoming more apparent that there are an increasing number of stations using Mode B who are using much more than the recommended 100 watts ERP. The result of this overpowering is that the AGC circuit of the transponder is being swamped and when this occurs an excessive amount of current is being drawn from the on-board power source. In maximum sunlight, the solar panel can supply about one amp of current. If more than this amount is required, the battery must supply the rest. The red line lower limit of battery discharge current is about 1.2 emps, and this is exceeded on overpowering. (Worldradio News)

Current OSCAR orbit information is:

OSCAR VI: June 1, 1976; Orbit #16584; Equator crossing (S-N) 66 deg.; Time 0059 GMT.  
OSCAR VII June 1, 1976, Orbit # 7058; Equator crossing (S-N) 75 deg.; Time 0141 GMT.  
and may be updated as per the September issue of THE GROUNDWAVE.

ARCTIC EXPERIENCES by Walter Dolphin, VE2TD (in part)

In response to the request in THE GROUNDWAVE by Bob Bond, VE3HWC, for hints on operating in the Arctic, I have a few things which may be of interest to him and others.

I was at Frobisher Bay during 1959/60 on high ground overlooking the base and Bay itself. When I arrived, I found a Johnson "Pecemaker", a "Thunderbolt" linear amplifier and a three-band beam just waiting for a licensed amateur to take over.

Being a radar station, there was some interference and the recurrence frequency could be heard up and down the bands. Operation was possible, however, on 20 and 15 meters the latter being used most often as we were then passing through a sun-spot maximum.

A big bugaboo, however, was the effect of the Aurora Borealis which acted up quite frequently in the winter. This great display of nature, however, did nothing except to render any signals coming through into a watery transparency of next to nothingness accompanied by a regular rapid variation of signal strength known as "Arctic flutter".

There was little or no activity on 75 meters and it was much the same on 40. Twenty was a more useable band but subject to great sensitivity to the constantly changing propagation conditions. Phone-patching was possible but was quite often spoilt by adjacent channel interference from stations in the States. The band usually opened up around 10:00 AM for Europe but we had no patches for there, just a line-up for patches to the States.

While waiting for better conditions to the States, I would swing the beam east, call "CQ" a few times and back would come literally dozens of "G" stations. Which one to go back to? I generally chose one of the weakest, or to be more correct, one of the less strong, stations. I figured they would have fewer contacts than the ones pinning the meter.

Around the middle of the day, twenty would be good for "locals", that is, for Montreal and Ottawa. Phone patches were in short supply in those days and I built mine from spare parts scrounged from the store. As the day progressed, conditions changed and the path opened up farther to the south. Sometimes I could operate from my room with a Viking II on CW. In the evening, conditions would deteriorate rapidly and nothing at all could be heard. As summertime approached, the band would stay open for much longer periods.

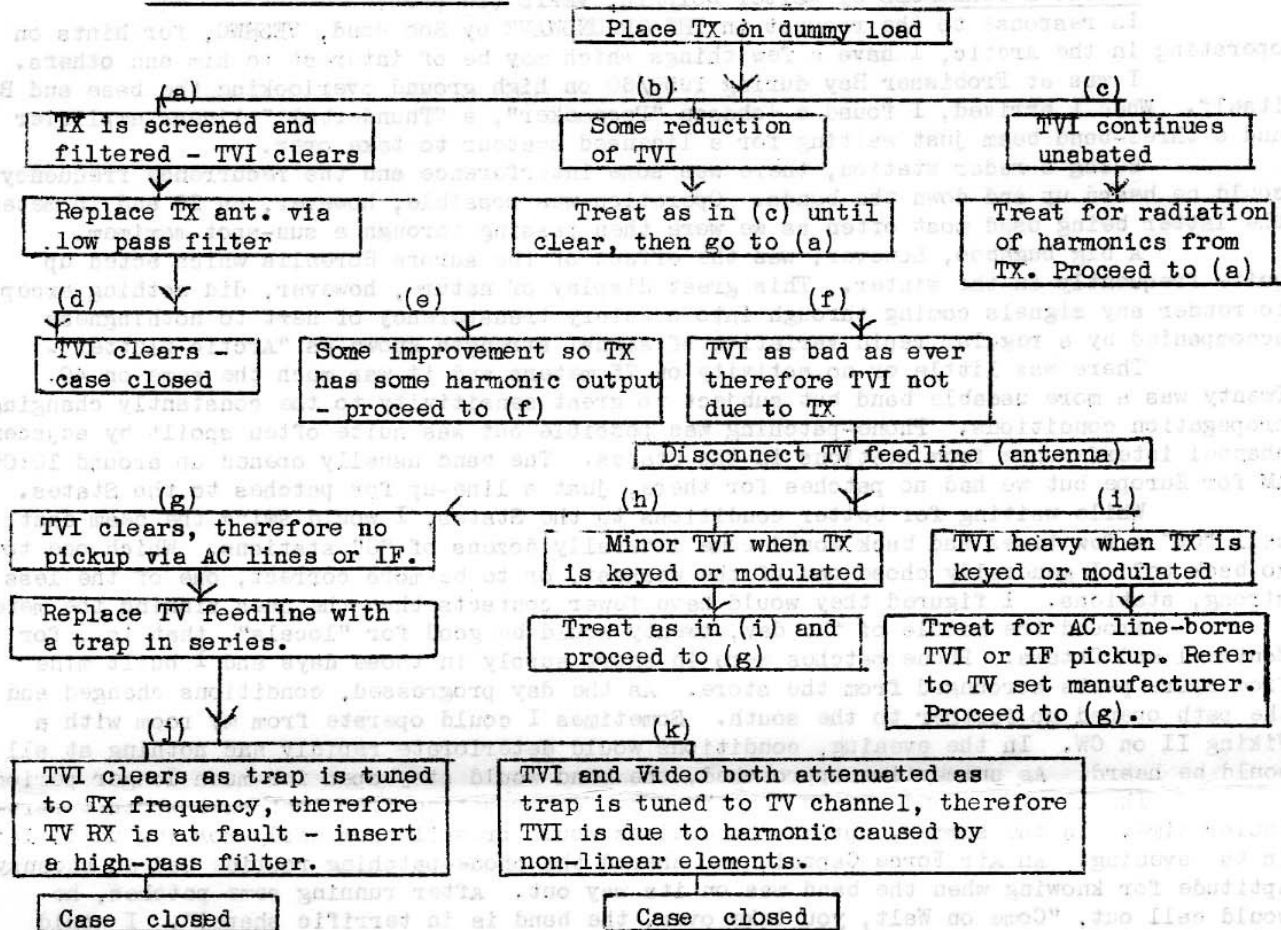
The 15 meter band was by far the best for operating from that site at that particular time. In the summer, optimum conditions would prevail from early morning until late in the evening. An Air Force Captain who shared the phone-patching routine had an uncanny aptitude for knowing when the band was on its way out. After running some patches, he would call out, "Come on Walt, you take over, the band is in terrific shape!". I would take over, and sure enough, it was very good, but invariably in about ten minutes a violent fading would set in and within half-an-hour it would be quite dead.

Running patches was at times quite inspiring but at other (most) times a terrible bore. A more notable occasion was around February one year when it so happened that I arranged and carried out a wedding ceremony by Amateur Radio. An Air Force rating, a coloured boy named Willie had gotten himself in trouble with his fiancée who lived in Washington. She demanded a ceremony immediately but Willie had no leave coming so the site Commander decided to try Amateur Radio. I made arrangements with an Amateur near Washington who did phone patches. He set up a patch with the girl and a judge in his chambers and then with me via the 15 meter link. It was all legal and proper and Willie came over to the Ham Shack that morning resplendent in his best uniform and I flipped the switches for the "I will"s and the "I do"s and the judge's solemn pronouncements. It all went well, the band was excellent, the cameras clicked and the ceremony was over. All kinds of stations then called in from various parts of the world with their congratulations for the newly-married couple. Willie just sat there with his mouth open, amazed.

Another good band at that time was ten meters. One Sunday afternoon I was tuning around 28.6 MHz when suddenly a whopping signal came up S9 plus. It was a K4USA station in the Antarctic running phone patches to the States. When a suitable pause occurred, I broke in with "This is the Arctic calling the Antarctic by Ham Radio, do you copy?". The operator came back with "What d'ya want, a phone patch from one end of the world to the other?". I exchanged a few greetings with him and then slid off frequency leaving them to carry on the patching.

It is a most mysterious-looking terrain, thousands of small lakes and ponds in mountainous depressions which are all over the place. I wish Bob good luck in his new venture. 73 VE2TD

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**TVI LOCALIZING FLOW CHART**


(The above has been taken with permission from the RSO TVI Booklet (1969).)

AN EMI QUESTIONNAIRE AND FLOW SHEET is presented above and on the facing page. This is intended as a do-it-yourself trouble-shooting aid to identify and cure EMI cases. Filling out the questionnaire and using the flow chart will encourage a logical approach to solving TVI and other interference problems. Before calling the Interference Committee for advice, fill out the questionnaire. It will speed up the process, and you may solve it yourself, which is inherently more satisfying. Cut out and save the questionnaire and flow chart for future use if required.

Successful handling of interference cases requires winning the listener's cooperation. The average person will tolerate a limited amount of interference, but the sooner you take steps to eliminate it, the more agreeable the listener will be; the longer he has to wait for you, the less willing he will be to cooperate. **Act Promptly!** Present your story tactfully! Good Luck! (Bill Westbrook, VE3EKA, Chairman, EMI Committee)

INTERFERENCE Richard Smith of the FCC states that during the first two quarters of 1976 the Commission received 31,631 complaints, of which 24,418 involved home-entertainment devices. Cyclical trends would indicate that the total for 1976 would reach 76,600 which would be a 39% increase over last year. Of the cases involving home-entertainment devices, the FCC now finds that 80% involve transmitters on GRS frequencies. Two circulars of interest to Amateurs are TRC-19, Suppression of Inductive Interference, Cross-Mod and Swamping, and TRC-21, Identifying and Suppressing Radio and TV Interference available from Telecommunication Regulatory Service, DOC, Ottawa. Write for information on how they may be obtained. (Credit W4UMF and VE3CJ via Worldradio News, April 1976)

THE GROUNDWAVE JUNE 1976

OTTAWA AMATEUR RADIO CLUB ELECTRO-MAGNETIC INTERFERENCE COMMITTEE

FILE #.....

NAME.....CALL.....HOME PHONE.....
ADDRESS.....BUS. PHONE.....
CITY.....POSTAL CODE.....DATE.....

TYPE OF INTERFERENCE

1. TV

Video (Picture Appearance).....
Sound.....
Duration (Steady, Intermittent, Etc.).....
Time of Interference.....Dates.....
TV Channels Affected.....Other Details.....

2. RADIO

Sound in Complainants Receiver.....
Duration.....
Time.....Dates.....
Frequency Affected.....Other Details.....

3. OTHER

Please Specify.....

RECEIVING DEVICE BEING INTERFERED WITH

Make.....Model or Year.....
From Whom Purchased?.....Warranty?.....
Type of Antenna in Use: Outdoor.....Indoor.....Built-in.....Portable.....Other.....
Remarks.....

DEVICE CAUSING INTERFERENCE (If Known) (Amateur Transmitter or Otherwise)

Make.....Model or Year.....
From Whom Purchased?.....Warranty?.....
Type of Antenna in Use.....Other Details.....

DISPOSITION OF COMPLAINT

Case Resolved by.....Date.....
Details.....
If Not Resolved, Referred Back To.....Date.....
Remarks.....

EMI COMMITTEE: Bill Westbrook, VE3EKA, Cheirman, 749-3373
Sandy Cameron, VE3AAC, 836-2266; Ralph Cameron, VE3BBM, 825-1634
Mike Burchell, VE3TP, 731-6015; Ray James, VE3CUA, 224-7243
Fred Green, VE3IO, 232-5950; Dave Robinson, VE3BTY, 225-1276

THE OTTAWA AMATEUR RADIO CLUB  
 BOX 8873, OTTAWA, ONTARIO,  
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