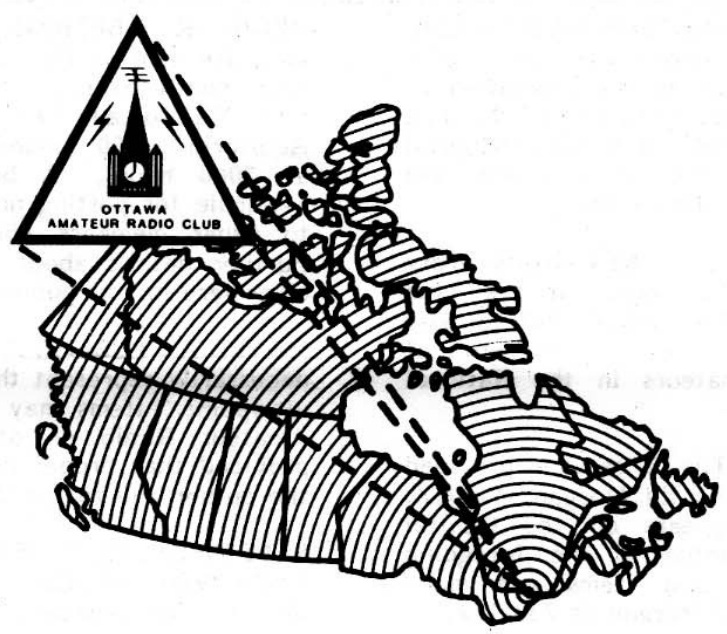


SEP 85

THE GROUNDWAVE



Club Call VE3RC

Repeater VE2CRA



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THE OTTAWA AMATEUR RADIO CLUB, INC. is an association of Radio Amateurs devoted to the promotion of interest in Amateur Radio communications in the National Capital Area; and to the advancement and achievement of club members.

THE CAPITAL CITY NET meets every Monday at 2000 hours on the club repeater VE2CRA (146.34/.94) to pass traffic and to make announcements of interest to Amateurs in the National Capital Region.

THE SWAP NET, is a service provided and conducted by Ed Morgan, VE3GX. This feature appears on the Capital City Net as noted in the foregoing paragraph. To list items and make inquiries, call Ed Morgan at 733-1721.

THE OARC EXECUTIVE normally meets on the second Wednesday of each month in the Board Room of CFRA, 150 Isabella St., Ottawa, at 1930 hours. Contact the President to confirm the date of the next meeting.

DEADLINE FOR COPY is 4 weeks before the next meeting. Make yourself better known to fellow members and other amateurs, too, by giving us an article, technical or otherwise, relative to our hobby. They may get reprinted in far away places; and the family will be proud of you.

REGULAR MEETINGS of the OARC, Inc., are held on the first Wednesday of each month (except July and August) at the National Research Council Auditorium, 100 Sussex Drive, Ottawa, at 2000 hours. A bulletin board is available for posting notices of interest to other members about 1915 hours. Further details about each meeting is elsewhere in this publication.

MATERIAL PUBLISHED herein does not necessarily represent the official OARC viewpoint. Items may be reprinted by Amateur Radio or other publications provided that proper credit is given to the author and to the OARC, Inc.

SAFETY BELTS, 2-METER RIG AND AN ENGRAVING PENCIL are available for loan to club members. The 2-meter rig may be borrowed by members who are hospitalized. The engraving pencil (to mark valuables for identification in case of loss or theft) and the safety belts with pole straps are available to any member.

A \$100 refundable deposit is required for the belts. Contact the President for the 2-meter rig or the engraving pencil; and Paul, VE3ICV, at 820-6643 (West End) or Brian, VE3JKZ, at 523-1535 (East End) for the belts.

RADIO AMATEUR CALL BOOKS are available at many local libraries. Ask at the information desk.

Minutes of the UARC meeting,
June 5, 1985

The meeting was opened by the President Dan Holmes. Upon intervention made by Kay Ferrin, the minutes of the May Meeting were amended as follows: "the Americans will have access to the 24MHz band as of June 22." The minutes were accepted as amended.

Ralph thanked all the generous amateurs who have contributed to the JRSD Fund. The fund is growing, so are Jack's legal fees. The membership is urged to keep the donations coming.

A new Editor for the Groundwave was introduced by the President. He is Mike James, VE3PDE.*

Visitors were welcomed and were invited to share a cup of coffee and exchange views with the members at coffee break.

The President reminded the members that, according to our by-laws, elections must be held at the end of this term. Although the incumbent executive members have offered to serve without reserve during the next term, candidates may file application if they wish to stand for one of the executive positions. The President is now looking for volunteers to serve on a nominating committee.

Our first speaker for the evening was Wayne Getchell, VE3CZD, operator, promoter of fast scan TV. Wayne's well presented talk was in line with his very informative articles on the same subject in earlier issues of the Groundwave.

Not to be outdone was the second speaker, Ken Asmus, VE3MVV, who gave an overview of Repeater linking in the Toronto, Barrie and vicinity area. Interest was perked when the speaker outlined the ambitious project of linking Ottawa, London, Kitchener, etc., via Repeater Linking providing communication over large areas.

The motion published on page 5 of the Groundwave, June 1985, was submitted to the membership for discussion and vote. It was carried.**

Dave Goodwin-Hill gave a final note on the modus operandi of the Field Day events to take place June 22, 23. George, VE3BND, has offered a generator to supply power to all stations.

Here is a list of the stations and the persons responsible for each.

80/20 SSB	Neil	VE3EIA	
80/20	John	VE3CXL	
40/15 SSB	Craig	VE3KKU	
40/15 CW	Dave	VE2ZP	
	Oscar	John	VE2VQ
	Packet	Brett	VE3JLG

Ed. notes:

*this will be shared by Maria, VE3KIP
**re packet radio

Resignation:

George Roach, VE3BND, resigned as repeater chairman. The executive passed a vote of thanks for his services.

Ottawa Amateur Radio Club Inc.
Box 8873, Ottawa, K1G 3J2
membership application
1985/86

Surname First name Callsign(s)

FULL address Postal code

Telephone: Res. Certificate: Amateur Digital
Bus. Advanced

Operating activities

Bands: 160m 80m 40m 30m 20m 15m 10m
 6m 2m 1.25m 70cm other:

Modes: CW SSB FM FSTV SSTV RTTY Packet
 other:

Interests

HF VHF satellites
 contesting antennas
 homebrewing other:

- I own a handheld or fully portable 2 metre FM transceiver
- I am a registered member of the EMD Amateur Radio Group

I am a member of: AMSAT CARF CRRL RAQI RSO

Yes, I would like to be part of the team.
Please contact me about:

- serving on the club executive
- assisting in the production of the Groundwave
- operating during or organizing Field Day
- speaking at a club meeting
- operating as a net controller for the Capital City FM Net
- assisting with the fall fleamarket/auction
- entering my homebrew project in the Homebrew Contest
- providing communications for the Canadian Ski Marathon

Activities that I would like the club to do this year:

Next QARC Meeting: Wednesday, September 4, 8:00 p.m., in NRC Auditorium, 100 Sussex Drive.

- Program:
- (1) Election of officers
 - (2) Joe Norton Award
 - (3) Motion to increase dues

Notice of Motion: Notice is hereby served that at the September meeting the following motion will be raised:

That the fees be set at \$10.00 for individual membership and that family membership shall be an additional 50% for the fiscal year.

Please come prepared to pay. This Groundwave is the last issue under the current membership.

Nominations for the Executive:

As previously agreed, almost the entire current (transition) executive will stand for re-election. Replacements for the exceptions have been found by a nominating committee consisting of Joan Powell, VE3FVQ.

- President
 - Dan Holmes VE3EBI
- Vice President -
- Secretary
 - Samson Pierre VE3JSP
- Treasurer
 - Bruce Lauer VE3MJV
- Directors
 - Keith Bedal VE3GFI
 - Ken Asmus VE3MVV
 - Mark Farey VE3QWL

This is a proposed slate of officers who have agreed to stand for election at the September meeting. The floor will be open at that time for further nominations.

Because of the change in our fiscal year, the 1985 executive's term of office ran from January to August 31, 1985. The officers elected at our September meeting will be in office from September 1, 1985 to August 31, 1986.

Next year's election should take place in May or June with the then-elected executive being in office from September 1, 1986, to August 31, 1987.

Thank you
Joan Powell

Miscellaneous Club Notes:

- (1) At the last spring tuneup clinic, only 12 hams showed up. Everyone is obviously confident in his equipment.
- (2) The executive decided to buy a first aid kit to have on hand at events. Chris Rochefort, VE3PAE, will be the custodian.
- (3) Summer activities included a picnic, 3 shopping center displays and the field day.

THE JOE NORTON TRUST AWARD FOR AMATEUR RADIO

At the September meeting of the Ottawa Amateur Radio Club, the first presentation of the Joe Norton Award will be made.

When Joe Norton, VE3PN, founder of Computing Devices of Canada and a dedicated amateur passed away, his family donated his ham gear to the Ottawa Amateur Radio Club. In respect for his love for amateur radio, they asked that it be used to assist beginning amateurs.

How best to use this sophisticated equipment in accord with the family's wishes was a cause to debate for a considerable period of time. By executive motion on December 12, 1982, it was decided to sell this equipment and establish a fund for the advancement of amateur radio. The proceeds were then placed into investment certificates, the interest from which was to be awarded annually to a beginning amateur.

After considerable debate the rules for the award were published and widely circulated in the spring of this year. In summary, the award is given annually to an amateur licenced within the past year, who has submitted in writing his aspirations as an amateur radio operator.

Judges for this year are Mailes Diere, George Schuthe and David Goodwin-Hill.

The Ottawa Amateur Radio Club is grateful to Joe Norton's family and wishes to assure them that though he is a Silent Key, he is not forgotten.

OTTAWA AMATEUR RADIO CLUB

EXECUTIVE MEETING

WEDNESDAY, JULY 24, 1985

PRESIDENT'S REPORT

As per the decision of the previous executive, this report covers the period from January 1, 1985, to August 31, 1985. The next fiscal year will run from September 1, 1985, to August 31, 1986.

As required by the bylaws, an election will be held at the September General Meeting for the new year.

The period covered by this report has been a busy one and some of the activities and accomplishments are listed below.

The Joe Norton Award was finalized with the formation and publication of the rules of the award. A panel of judges was selected who in turn have made their selection of the winning candidate. This candidate will be presented with the award at the September General Meeting.

Changes and additions were made to committees and functions. The Net Manager and Emergency Measures Committee was split into separate functions. The Capital City Net format was revised to include occasional discussion sessions at the end of the regular net under the direction of David Goldsmith, VE3FM.

A Public Relations Officer, with sub duties as Program Director, was appointed. In addition, a Technical Coordinator, responsible for technical information and programming, was appointed and is to report to the P.R.O.

Liaison was established with amateur classes at Algonquin College with the result that a number of these students attended club meetings and some became Associate Members and even took on club responsibilities.

The Ski Marathon was provided with amateur assistance in February through the organizing abilities of George, VE3BNO.

The Annual Spring Tune-Up Clinic was held at CJQH under the auspices of Ralph, VE3BBM.

Considerable interest and involvement of the O.A.R.C. in the decision to disband the Ottawa Carleton Emergency Measures Organization failed to change the mind of Regional Council.

The annual Homebrew Night held in April was a success with three worthy homebrewers being recognized for their expertise.

It was with regret that we accepted the resignation of VE3UD, Bill Deacon, as editor of the Groundwave. After much searching, a volunteer appeared in the person of a brand spanking new amateur Mike James, VE3PDE. He will commence his duties with the September issue.

Dave Goodwin-Hill, VE2ZP, organized a very successful Field Day this year. Two tower

sections were purchased by the club.

The vital issue of the legal action against Jack Ravenscroft led to the formation by members of the club of the Jack Ravenscroft Susceptibility Defence Fund. The club donated its support and \$100.00 to this cause.

By motion of the O.A.R.C. General Meeting it was agreed to purchase a TAPR TNC2 terminal node controller to be used in a digipeater in the Ottawa-Barrie Packet Radio link.

At the time of writing, plans are well under way for amateur radio demos in three Ottawa shopping malls in the month of August.

Another summer activity in the planning stage is a summer picnic to be held in Vincent Massey Park.

Another topic under serious discussion is the subject of Advanced Amateur classes under the auspices of the O.A.R.C.

It is to be hoped that some time within the upcoming year that we will be able to mount Amateur Radio Demonstrations in Ottawa area high schools.

Having recruited a P.R.O. in the person of Chris Rochfort, VE3PAE, and Technical Advisor, David Anderson, VE3JTZ, it is the club's intention to try to attract more people to our hobby and to provide new recruits with technical help and information. By this we hope to inject new blood into our club.

LETTER TO THE EDITOR

2231 Hillary Ave.
Ottawa, Ontario
K1H 7H7

3 May 1985

The Editor
OARC Groundwave

Dear Sir:

The article on Vertical Antennas in the May Groundwave was exceedingly interesting, and Bruce VE3MJV is to be congratulated on addressing the subject in such detail. In particular, his emphasis on the importance of a good ground radial system - the importance of which cannot be overstressed.

Not discussed by Bruce in his article, but perhaps worthy of some consideration, is the VSWR of the antenna system. VSWR, being indicative of the match between the antenna and its feedline, can be defined as the ratio of the feedline impedance to that of the antenna plus its losses.

If we assume a resonant quarter wave antenna, it will be non reactive and have a radiation resistance of 36.5 ohms. Assuming a very good ground system of loss resistance 2 ohms, and a 50 ohm transmission line, then the VSWR can be calculated as:

$$\text{VSWR} = \frac{50}{36.5 + 2} = 1.3:1$$

As Bruce showed in his article such an antenna system would be 25% efficient.

Now let's assume the same antenna and feedline, but a much poorer ground of resistance 13.5 ohms.

In this instance it can be shown that:

$$\text{VSWR} = \frac{50}{36.5 + 13.5} = 1:1$$

and Efficiency =

$$\frac{36.5}{36.5 + 13.5} \times 100 = 73\%$$

The foregoing example thus shows that having a perfect 1:1 match does not necessarily indicate the most efficient system. Indeed, a resonant quarter wave vertical which shows unity VSWR indicates that something is wrong. (But keep in mind that the average low cost VSWR meter is notoriously inaccurate).

It can be argued that a vertical radiator which is 73% efficient indicates a power loss of less than 1.5 dB, perhaps one quarter of an 'S' unit, and that this is not at all serious. This is absolutely correct, but the point to be borne in mind is that most amateurs do not use true quarter wave verticals.

The Hy Gain 18AVT and 18VS verticals referenced in Bruce's article are only 25 feet and 18 feet high respectively. Neither antenna is close to the true physical quarter wavelengths of 66 feet and 33 feet required on 80 and 40 metres.

Such antennas certainly "resonate" in the sense that they are non-reactive at a particular frequency, but because of their small physical lengths they are nowhere near 36.5 ohms in terms of radiation resistance. The 18VS non trap vertical is estimated to have a radiation resistance of 3.5 ohms on 80 metres and 7 ohms on 40 metres.

That 13.5 ohm ground resistance described previously with a true quarter wave vertical gave an efficiency of 73%. Using the same ground system with an 18 foot vertical such as the 18VS would give an expected efficiency of:

(a) For 80 metres:

$$\frac{3.5}{3.5 + 13.5} \times 100 = 21\%$$

(b) For 40 metres:

$$\frac{7}{7 + 13.5} \times 100 = 34\%$$

Loading coil losses will degrade these figures.

It should thus be appreciated that the ground resistance is even more crucial to successful operation of a ground mounted short vertical than it is for a ground mounted full quarter wavelength vertical. The four radials usually suggested by antenna manufacturers are next to useless for ground mounted operation. A minimum of thirty radials, each approx. 0.4λ in length, is recommended. Radial length is not overly critical - they do not have to be cut to "resonant" lengths.

In conclusion, I have been using ground mounted verticals of the non trap variety for some years now on the low bands (160/80/40), and can confirm that with a good ground system they do indeed work very well.

"73"

Brian Summers, VE3JKZ

220 MHz ACTIVITY - MONTREAL

There is a group of amateurs in Montreal actively promoting the use of the 220 MHz band to supplement 2 meters.

The major advantage to this band is the relative immunity to intermod in down-town cores compared with 2 meters, whilst still maintaining the advantage of wide-area coverage compared with 450 MHz.

They presently have a repeater operating on 223.3/224.9 MHz with autopatch, and - funds permitting - will be adding two other machines in the near future. The present repeater is on the north side of Mount Royal in the centre of Montreal; the new repeaters will be on Mount Rigaud (VE2RM site) on 223.1/224.7 MHz with beams pointing at Montreal and Ottawa, and on the C.B.C. tower at the top of Mount Royal on 223.38/224.98 MHz with a 10-meter FM remote base.

Membership (\$10.00) and/or donations may be sent to: Souly Loizos, VE2FFS, Montreal 220 MHz Amateur Radio Club, P.O. Box 32, Ahuntsic Station, Montreal, Que., H3L 3N5.

de VE3IMT, Keith

ST. LAWRENCE VALLEY REPEATER
COUNCIL (SLVRC)

The SLVRC was founded by John Clark, VE3KE, on March 16, 1974. Its prime purpose was to provide frequency co-ordination for repeaters operating in Northern New York, Western Quebec and Eastern Ontario.

The Council met initially three times annually until 1981 when it was decided to not meet during summer months and to bring the winter meeting date forward to avoid poor winter driving conditions. The last meeting of the Council was in the spring of 1983. John, the inspiration for the Council, was its Chairman until he became a Silent Key on October 13, 1983.

Early activities of the Council were concerned with co-ordination with other councils and with CRAG (Canadian Repeater Advisory Group) and with repeater groups to resolve problems of interference between repeaters operating in the region. Two committees were set up: a Technical Advisory Committee and a Frequency Co-ordination Committee.

The original members of the technical committee were Burt Lang, VE2BMQ, Carry Honeywell, VE3ARS, and Cliff Brown, VE3AGN. The mandate for the committee was to advise member groups on standards to be established for co-ordination and operation of amateur repeaters. But this committee never really did that. In 1979 Mailes Dier, VE3BCO (now VE3AP), noting the inactivity of this committee, became a self-elected Chairman of an

Education Committee. Mailes' ideas were ambitious but never realized. He proposed to write information bulletins to be sent to individuals and organizations served by the Council, and this Committee would co-operate with other repeater councils in Canada and the United States to exchange information on operation and co-ordination of repeaters.

The Frequency Co-ordination Committee has had more success but this committee depended heavily on its Chairman who, together with the Council Chairman, carried out its work. Original members of this committee were: Howard Fralick, VE3RD (now a Silent Key), Richard Chalk, VE2DGU, and Graham Patterson, VE3AMN. Graham and John, VE3KE, did most of the work, and they developed computer programmes that could be run on BNR and Kemptville Agriculture College computers for keeping data banks and for calculating intermod. Graham Ide, VE3BYT, joined forces with the first Graham in July, 1980, and became Chairman when Graham, VE3AMN, resigned in October, 1981. The minutes of the 19th meeting March 29, 1980, record that the committee would comprise three members including Denton Craig, VE3HJV, as Secretary, and George Roach, VE3BNO. But the Committee never met, nor worked like a committee.

In the years before John's death, attendance at Council meetings had declined, with no representatives from the adjoining area to the east (e.g. Montreal). The numbers of repeaters had perhaps crested. Long standing

repeater reports were in general status quo. Recently, however, the numbers of groups and individuals requesting frequencies has increased. Interference and intermod problems are increasing. The proliferation of "private autopatch" systems may soon be a problem of major concern. Band plans (20 kHz channel spacing vs. 15 kHz) are not consistent across the country. There is no Canadian band plan for the 70 cm band since we lost the 420-430 Mhz part of this band, etc.

It was clear therefore that there was an urgent need to rejuvenate interest in the Council and to promote active participation by its members. This "need" is further strengthened by the fact that the FCC in their proposed rule (PR Docket 8185-22 d. January 30, 1985) would define a "co-ordinated repeater". In the case of interference between repeaters (presumably) it would be the responsibility of the non-coordinated repeater to resolve interference problems with an existing coordinated repeater (see QST, pp. 56 and 74, April, 1985).

To this end John S. (Jack) Belrose, VE2CV, St. Lawrence Valley Repeater Council Secretary, called a meeting for March 30, 1985, in the Engineering Building, Kemptville Agriculture College, Kemptville, which was the "home" for most of the earlier meetings. Some 18 amateurs attended representing 17 clubs or repeater groups. Clearly the interest was there to reactivate the Council. Merv Lemke, VE3CV, was unanimously elected Chairman and Jack,

VE2CV, was encouraged to retain his job as Secretary (George Roach, VE3BND, offered to assist with routine tasks such as duplicating, mailing, etc.). Norm Rashleigh, VE3DVF, was elected Chairman of the Frequency Co-ordination Committee. Good luck Norm, and thanks to Graham Ide, VE3BYT, for carrying on essentially alone for the past couple of years. Perhaps Graham will agree to continue working on the committee.

It was decided that all clubs and repeater groups that publish a newsletter or hold nets should be encouraged to inform their members that the Council is now alive and well. And that all clubs, groups, and individuals that operate repeaters should be asked to contribute \$5.00 per year toward running the Council (mailing of minutes, sending out meeting reminder notices, correspondence, etc.)

The next meeting of the Council is planned for October 26, 1985.

John S. (Jack) Belrose,
VE2CV
Secretary, SLVRC

ARE YOU WORRIED ABOUT THE FUTURE OF HAM RADIO?

In 1933, the ARRL Call Book had 250 pages of listings of both domestic and foreign amateur stations. After digesting that bit of trivia, have a look at the current call book(s).

OTTAWA AMATEUR RADIO CLUB INVENTORY - April 30, 1985

<u>Ref.</u>	<u>Item</u>	<u>Held by</u>	<u>Year Acquired</u>	<u>Original Value</u>	<u>Notes</u>
<u>Primary 2m Repeater</u>					
*1.	DT45 Transmitter Strip	G. Roach	-	\$ 625.00	(1)
*2.	Motran Receiver	"	1977-78	\$ 428.00	(1)
*3.	Receiver Pre-amplifier	"	1977	\$ 33.00	(1)
*4.	RF Technology Duplexer	"	1976	\$ 349.00	(1)
*5.	GaAsFET Pre-amplifier	"	1984	\$ 100.00	(1)
<u>Stand-by 2m Repeater</u>					
*6.	DT45 Receiver	"	-	See note	(1) (2)
*7.	DT45 Transmitter	"	-	See note	(1) (2)
*8.	Sinclair Duplexer	"	-	See note	(1) (2)
<u>450 MHz Repeater</u>					
*9.	Motorola Receiver	"	1970	\$ 25.00	
*10.	G.E. Progress Line Xmtr	"	-	See note	(2)
*11.	450 MHz Duplexer	"	1972	\$ 100.00	
*12.	2-Kenwood TR-8300 UHF FM Xcvr	"	1981	\$ 681.24	
<u>Miscellaneous VHF/UHF Equipment</u>					
13.	Solid-State RX/TX Strip	?	1974	\$ 107.33	(3)
<u>Field Day Equipment</u>					
14.	Portable Toilet	?	1975	\$ 7.34	
15.	Tent	G. Martin	1976	\$ 20.00	(est)
16.	12-V Generator	"	1976	\$ 10.00	(est)
17.	Tent Pegs	"	1975	\$ 3.10	
18.	5-ft. TV Masts	"	1974	\$ 24.00	
19.	Mosley RVSC Vertical	"	1975	\$ 60.00	(est) (4)
*20.	2 Lineman's Belts	B. Summers	1980	\$ 370.26	
*21.	2 Pole Straps 1 set	P. Coverdale	?	-	
*22.	2 Tool Buckets each	-	-	-	
23.	VE3RC Nameplate	G. Martin	?	-	
<u>Meetings/Auction</u>					
24.	33-990 Microphone	G. Martin	1974	\$ 15.95	
25.	3 Cash Boxes	"	1975	\$ 18.84	
*26.	Masonite Notice Board	?	1975	\$ 3.70	
27.	30-cup Coffee Urn	?	-	\$ 25.00	(est)
*28.	100-cup Coffee Urn	B. Dormer, J. Hay	1973	\$ 50.00	(est)

Publishing

*29. Olympic Typewriter	B. Baillargeon	1969	\$ 113.50 (5)
*30. Model 460 Gestetner/Desk	A. McKenzie	1977	\$ 750.00
*31. Electric Stapler	R. Charbonneau	1977	\$ 53.50
32. Addressograph Machine	G. Martin	1974	\$ 175.00
*33. Collator	A. McKenzie	?	- (6)

Miscellaneous

*34. Engraving Pen	D. Holmes	?	\$ 20.00 (est)
*35. IC-215 2m Xcvr	"	1978	\$ 267.13
*36. Micronta Power Supply	D. Holmes	1982	\$ 70.00
37. Icom BC-20 Battery Cgr	?	1980	\$ 70.00
*38. Ribbon J-Antenna	"	1982	-
*39. Drake Lo-Pass Filter	F. Green	1982	-
40. Miscellaneous Files, Papers	"	-	-
*41. Homebrew Night Plaque (Technical Achievement Award)	B. Delmage	1978	-
*42. 8-Switches for Club Project - 1983	B. Baillargeon	1983	\$ 48.00
*43. 2-12 ft. Delhi Tower Sections	K. Bedal	1984	\$ 100.00 (est)
*44. Rubber "PAID" Stamp	P. Hafichuk	1984	\$ 10.00

NOTES

- (1) At Camp Fortune
- (2) Items valued together at \$625.00
- (3) Tx Strip could not be found or identified in 1980
- (4) Not in good shape; bent
- (5) Works, but not in use
- (6) Very old; probably negligible value, but in use

*Confirmed April 30, 1985, by Bruce Lauer, VE3MJV, Treasurer.

HOW'S DX?

Did you know ... when Pioneer 10 crossed the orbit of Neptune, it was 2.8 billion miles from the sun and it took 4 hours and 20 minutes for data to reach the earth from that distance? By the time the 8-watt signal reaches the earth it has spread over an area of more than 11 million miles across and has weakened to 20 billionths of a watt. How is that for DX?

de West Island Amateur Radio Club Bulletin
and ECHO, San Rafael, CA

The Ottawa Amateur Radio Club, Inc.
 P.O. Box 8873
 Ottawa, Ontario
 K1G 3J2



<u>The Ottawa Amateur Radio Club, Inc. Box 8873, Ottawa, Ont. K1G 3J2</u>			
President	Dan Holmes VE3EBI	33 Crownhill Street Ottawa, Ont., K1J 7K5	746-0968
Vice-President	Brett Delmage VE3JLG	5-136 Woodridge Cres. Nepean, Ont. K2B 7S9	820-3940 592-4164
Secretary	Samson Pierre VE3JSP	Box 909, RR #1 Cumberland, Ont. K0A 1S0	833-2801 745-9411
Treasurer	Bruce Lauer VE3MJV	10 Winlock Crescent Nepean, Ont., K2G 3X4	829-9471 990-8987
Past-President	Joan Powell VE3FVD	Box 390, RR #2 Nepean, Ont., K2C 3H1	825-4104
Directors	Russ Lowe VE3LOW	44 Herridge Street Ottawa, Ont., K1S 0G9	237-5093 236-0311
	Keith Bedal VE3GFI	125 Ridgefield Crescent Nepean, Ont., K2H 6T4	828-1870 998-2234
	Tom Bristow VE3OFM	117 Crerar Avenue Ottawa, Ont., K1Z 7P1	728-5998 521-8463
Public Relations	Chris Rochefort VE3PAE	2203 Hamelin Crescent Gloucester, Ont. K1J 6K9	749-3625 226-5950
Repeater	George Roach VE3BND	104 Strathcona Avenue Ottawa, Ont., K2G 3H1	234-0885 233-6242
Chairman	David Goldsmith VE3FM	6250 Fortune Drive Orleans, Ont., K1C 2B1	824-0515 675-4671
Net Manager	Ken Kendall VE3IHX	777B Springland Drive Ottawa, Ont., K1V 6L9	731-0892
Emergency Coordinator	Ralph Cameron VE3BBM	30 St. Remy Drive Nepean, Ont., K2J 1A3	825-1634 225-2850
EMI Committee Chairmen	Peter Hafichuk VE3LBW	118 Ivy Crescent Ottawa, Ont., K1M 1X6	745-0608 993-1740
Membership Chairmen	David Anderson VE3JTZ	299A Craig Henry Drive Nepean, Ont., K2G 4E9	225-0886 592-2122
Technical Coordinator	Brian Summers VE3JKZ	2231 Hillary Avenue Ottawa, Ont., K1H 7H7	523-1535 996-7885
Capital City Award Manager			