

XTAL

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for the

radio amateur

Albert E. Yates, VE3BIJ
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OFFICIAL JOURNAL
THE CANADIAN AMATEUR RADIO OPERATORS' ASSOCIATION
TORONTO, ONTARIO



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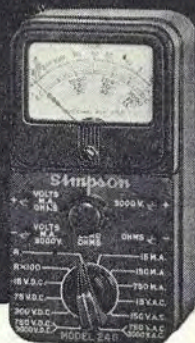
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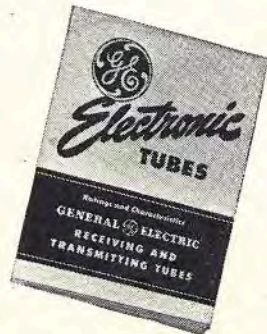
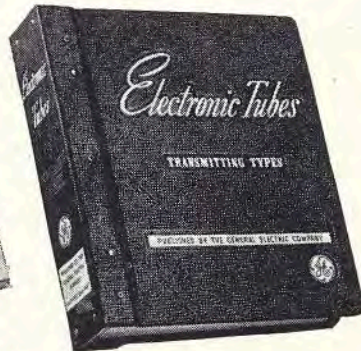
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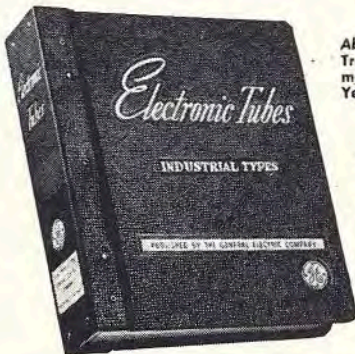
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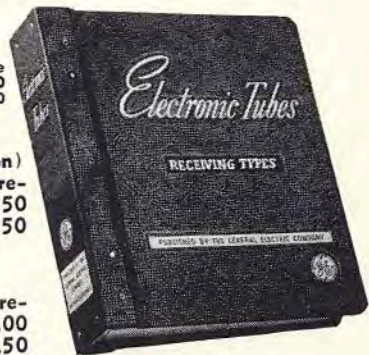
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CAROA

. . . we move forward . . .

In our editorial for October last we told you that we had a big program ahead. The present executive is keen and fully alive to the need for steady forward progress, which, interpreted from your point of view, means better service, and a bigger and better XTAL.

During the initial difficulties of reorganizing and the creating of a sound and solid foundation on which we can effectively build our bigger program, we have been more occupied with digging and housecleaning than with direct means of advance. In October we rolled up our sleeves—in April we advance.

It may have occurred to many Ve's that the modest charge of one dollar for membership, even though our membership is steadily increasing, could not be considered enough to finance a forward move, especially in these days of rising prices. We have endeavoured to send you XTAL regularly, carrying news and views specifically of interest to Canadians, and your dollar membership dues gave you

XTAL with no additional charge.

In order to give you a better XTAL and allow more room for regular feature articles, the executive have unanimously decided to charge one dollar per year for XTAL, which will be in addition to the one dollar membership dues for CAROA. Thus, for \$2.00 per annum we will endeavour to step up our service to you as Canada's National Amateur Radio Association, and to produce a magazine which will appeal to all ages and classes of Canadian hams.

We are quite sure you will welcome this forward move and realize that it is timely—in fact overdue. We have a great future—it is our future, the future of Canadian Amateur Radio.

All new memberships and one-year renewals will be at the new rate from and including May 1, 1948. New memberships and renewals covering one year will be accepted at the old rate, up to April 31, 1948.

. . . CAROA's Operating Committees . . .

A glance at the XTAL masthead will reveal a list of CAROA'S executive committee. These officers are no mere honorary appointees, but are men who frequently give as many as three full evenings weekly to see that your wishes as members are executed. Since the executive must work as a unit it has been necessary up to the present for its members to be within commuting distance of the central office. Their thoughts, however, are national in character and every effort is being made to please all amateurs across Canada.

Recently a number of changes and additions have been made both to the executive of CAROA and the staff of XTAL. We feel, therefore, that a revue of the operating committee would be of timely interest to the members.

Officers

Tom Powell Ve3ZE needs no introduction. As our president Tom has given the Association many years of unselfish service guiding CAROA over many a rough trail. Our vice-president and controller is Bob McDonald Ve3APS who has been responsible for putting

the operation of CAROA on a sound financial basis. Doug Patterson Ve3BBZ, a former Western ham and a newcomer to the executive, lends his experience to the job of secretary-treasurer.

XTAL Control

The most important function of our association is the publication of the monthly magazine XTAL. It must be newsy, informative and above all interesting to the amateurs from coast to coast both beginner and old-timer alike. The magazine is under the direction of Tom Powell as editor-in-chief. He is assisted in its production by Jack Staley Ve3GR and John Perdue Ve3QK. However, before the Production Committee can proceed all articles must be reviewed and revised by the Editorial board. This committee consists of: Ham Whyte Ve3BWY, ex G6WY, who brings to Canada valuable experience obtained as an executive member of The Radio Society of Great Britain; G. McLain Ve3GE with many years' experience in the publication field; and Jock McArthur Ve3DJ, a qualified professional Engineer.

No review of our magazine would be complete without mention of its special departments in which amateur activities across Canada are coordinated and elucidated.

Gord Coleman Ve3ANY handles the VHF department. Thanks to Gord and his associates, activity on the high frequency bands is at an all time high.

"Club Activities" column is also managed by Gordon, supported by reports received from active clubs across the Dominion. Many clubs, though, have not yet told us of their activities. If your group is one of these do realize that other Canadian hams are interested in your doings and send along a report to Doug.

Doug Hall compiles the national report. The material for this is gathered together from the accounts sent in by your district reporters. Here again their work depends on the items you contribute. Sit down some evening and list the activities of the amateurs of your acquaintance. Your district reporter will welcome these reports.

From the interest shown in "DX'ers of The Month" this column has expanded and is now under the direction of one of Canada's outstanding DX men, Roy Carter Ve3QD, pre-war and post war member DXCC. Again your assistance is vital to the success of this department—so keep us informed of items of interest to other DX'ers.

Office Management

This is a full time position. The myriad details necessary to the success of your association have been handled by John Perdue Ve3QK. John took very little credit for his work but his guiding hand kept XTAL running over these past months. John has now accepted a more attractive offer, although he will still serve on the executive. We wish John every success in his new venture.

The office management is now under the direction of H. A. M. Whyte Ve3BWY formerly G6WY. Ham comes to us well qualified having served on the council of the Radio Society of Great Britain for a number of years as well as being DX editor of "Short Wave Magazine" and RSGB Bulletin.

Contest Manager

Amateurs who have never entered a contest miss an important phase of Amateur Radio. Contests, though they appear as QRM to non-participants, do inspire quick thinking and good operating so necessary in crowded bands of today. This department is directed by Art Palmer Ve3WK. Some contests, such as the W-Ve one, are now an annual affair. Others will become so as their popularity increases.

Traffic Manager

This is a new department set up under the

leadership of Doug Hall Ve3TB. Already official broadcast stations have been appointed across Canada. But more will be heard on this subject in subsequent issues when the details have been put into effect.

That, fellows, is your general organization. You are the committee. Let us work together as a unit and ever strive to increase our high ideals for the betterment of Amateur Radio in Canada.

ANNUAL STATEMENT

To the Members

Your Executive submit herewith the Annual Report of your Association and Consolidated Statements of Account for the year ended December 31st, 1947.

Results of Operations

The operations for the year 1947 resulted in a profit of \$568.96 as compared to \$1.67 for the previous year's operation. This gain was the result of very careful planning on the part of your executive. Permanent office staff was reduced to one person and office space reduced from two to one room.

Prospects

Past experience has proven that the affairs of the Association can best be served by changing our office set-up. Instead of one man alone trying to cope with all the details of its man-

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**HEY GANG! You've got a sked on
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... hydrophobia ...

By E. A. ALLARD, Ve3CS

All summer long I had dreamed of putting up a beam, but never seemed to get time to do anything about it, so it was late in the fall before I got started and the beam began to take form.

The idea was to erect the beam with its lower bearing on the back porch so that it could be turned from the shack window, which was on the top floor of our little establishment.

Finally the array was finished, and the only problem, so I thought, was raising it. The more I thought of this the more complicated it became, because, being a rather independent cuss, I wanted it built so that I could raise or lower it all by myself, to make necessary changes without enlisting the aid of neighbours or fellow-hams.

Then I thought of the ideal arrangement. I would make the pole out of two lengths of pipe, one of smaller diameter so it would fit into the inside of the other, put the beam up with the pole collapsed, and then climb up onto the roof, pull the inner pipe out of the outer pipe and the whole business would go up like a car "whip" antena.

As soon as this brainstorm hit me I told it to the xyl, who looked at me sort of sideways and said "This I gotta see," and muttered something about my breaking my fool neck. Nevertheless it seemed like just the thing, and I built it.

The first length of pipe was made long enough so the end was just within reach from a sitting position on the peak of the roof. We got the beam up in collapsed form and all that remained was pulling up the inside section.

"Well, smarty-pants, let's see you do it," laughs xyl.

"Ha-h!" I says. "Just watch this." Grabbing the ladder, I haul myself up and with great difficulty manage to mount the peak. I might add at this point that some people are born steeplejacks, but I am not one of these fortunate souls. Anything higher than the kitchen tables scares me, and looking down from the peak of the roof while hanging on to that little piece of pipe gave me a feeling in my stomach that I will never forget.

I grabbed the pipe in my hands with one foot each side of the peak and began to pull. What had been a mere trifle to lift while on the ground now seemed like a ton. Immediately my feet began to slip and I started to do the splits. I tried again, no good. I split too

easy, I guess. "Well?" beams Wifie. "A-w-w," I groaned, "Rome wasn't built in a day."

I tried again, this time with both feet on the peak and the beam beside me. No good, not enough leverage. I tried sitting down. No good. The peak is much too sharp. I tried every position I could think of but without success, so I went down to think it over. "Why don't you give up?" says xyl. "Other hams get out without beams. Why can't you?" This, and my apparent failure, starts me on to getting mad, so I go around the rest of the day biting my nails, muttering to myself and generally making life miserable.

As night drew on I still had no solution to the problem and long after we had retired I was tossing and turning, trying in vain to figure it all out. Suddenly at about 1.30 an idea came to me that was going to cure all my troubles. "I've got it," I yelled.

"Fuf? Whasat? Got what? Mumps?" says xyl, who had just heard of the epidemic of same in the neighbourhood. "Let me feel your head."

"Oh, no, not mumps, I've got an - ." Just at this point I realized that mentioning anything about ham radio at this hour would result in my landing on the bedroom floor, so I passed it off by saying I had a nightmare.

"I wish you wouldn't eat those sandwiches before you go to bed," grumbled xyl. "I never know when you're going to yell out and wake the neighbours, and you're in wrong already, with all that BCI you've been causing.."

"OK, OK, OK," I says, deciding it would be better to spring this one at breakfast.

Early next morning I begin to unfold my plans for the "daddy of all beams." "We'll put a leather washer on the end of the inside pipe," I explain, "put a reducer on the bottom end of the outside pipe, screw the hose on to the end, and blow it up with water pressure."

"Mother told me there would be moments like this," moans xyl. "And to think of all the sane men I could have married. And I suppose you're going to ruin that new hose trying to blow up your pipe dreams," she continued.

I could see that the idea didn't go over very good, so I decided to consult Dad about it. Dad is usually sympathetic when I get these brainstorms. I guess he has known me longer and is not so easily shocked. "Frankly, I think you're nuts," he laughed, "but if you're de-

terminated to go ahead with it I'll come up and give you a hand."

I found an old boot in the cellar which yielded a nice soft piece of leather. I scrounged a couple of large washers from the junk box, and a visit to the plumber's supply house furnished the reducer for the pipe. A piece of cloth soaked in oil with a piece of old antenna wire for a pullthrough soon had the inside of the pipe oiled up and ready for operation.

We got the whole thing back together, hoisted her up in place and I was just screwing the hose on to the end of the pipe as Dad arrived. "Just about ready, Pop," I yell, and asked xyl if she would like the honour of turning on the hose from the tap in the cellar.

"Nothing doing," she says. "I wouldn't miss this for anything." So we flipped a coin and Pop lost, so he was elected for the job.

"O.K., Pop. Turn 'er on," I yell. Pop yells back something about the tap being stiff. There was a pause. I looked in the window to see if Pop was having trouble and was suddenly aware of a loud hissing sound and the feel of cold water falling on the back of my neck. Looking up, I saw a large spray of water coming out between the two pipes and falling down in a neat circle around the beam for a distance of about ten feet, looking very much like the top of the old fountain at the Exhibition.

I could hear chuckling in the background, and all of a sudden old Joe, who had been mowing his lawn in the next yard, stuck his head over the fence and exclaimed, "Say, son, you sure do get some fancy ideas! But ain't you goin to a lot of trouble just to water your back lawn?"

Xyl was simply splitting her sides, and Pop, who now had his head out the cellar window, was laughing too. That did it! I stomped into the house and sulked for a half hour.

After the heat around my collar had come down to a mere 150° I decided to investigate and see just what had happened, and discovered that the leather washer had been too thin and had gone inside out like an umbrella.

I cut a new one; in fact, I cut two, and put the washer back double.

After a little talking and explaining I convinced the folks we should try again, and we set the beam up as before and all was in readiness for our second attempt.

"OK, Pop," I yells, and Pop sputtered back something about I ought to have the tap fixed.

"Water's on," says Pop. I looked up. No hissing, no water, but the beam wasn't going up. I climbed up on the porch roof and gave the pipe a couple of socks with the pipe wrench. No dice. I climbed up the ladder to the peak and gave a slight pull on the inside pipe, there

was a slight scraping noise as though the pipes were a bit snug, and lo and behold, up goes the beam.

"Ha-ah," I yells down to xyl. "Take a look at that."

"Hmph!" says xyl. "C'mon down before you fall down."

I had forgotten about the height and was doing a little jig on the ladder in my triumphant excitement.

I came down to the porch roof, the beam looked about a third way up. "Shut her off, Pop," I shout. I wanted to make sure the feeder was clear and wouldn't snag on the shingles.

There was a pause, beam still going up. "Hey, Pop," I yells again, "shut her off." I hear a bit of cursing going on in the cellar, and Pop comes to the window all red in the face and yells, "Hey, I can't shut the dad-blamed tap off. It was so stiff the handle broke off."

Wha-a-a-t?" I exclaimed. "O-Oh, no-o. This just can't happen to me!"

I took another quick glance at the beam. It was about half way up, and gaining speed rapidly, for the friction between the two pipes got less as they came apart.

No time for sentiment now.

"Duck for cover," I bellow.

Wifie ran into the back porch and from there into the kitchen. Pop pulled his head back into the cellar. But me—I'm still on the porch roof with no place to go and no time to go there.

I knew I wouldn't make it down the ladder in time, and the only other place was to squeeze through that little space between the pipe and the shack window and get into the shack.

I made it in about ten seconds, leaving a goodly portion of my pants dangling on a nail and tearing a not too small piece of my hide as well. I had never gotten through that space before and haven't been able to since.

I realized that the beam must be about at the top by now so I yells "Timber-r-r!" at the same closing my eyes, stuffing my fingers in my ears and bracing myself for the crash that was inevitable.

I waited. Surely the beam must be full up by now. I opened my eyes; no debris in the yard. I took a quick glance skyward and there she was, full up, and the only thing that had prevented it from crashing to the ground was the feeder, which, fortunately, very fortunately, had been cut a bit too short and had pulled tight, preventing the beam from rising farther.

I said a little prayer and rushed madly down the cellar, shut off the main water supply and leaked off the pressure a little with the laundry

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DX NEWS OF THE MONTH

R. D. Carter Ve3QD

By the time this reaches you the smoke and fury of the A.R.R.L. dx contest will be history. As closing day fell just two days after the first week-end, we can only comment on conditions as we found them here. From 7 p.m. Friday until 3.20 Saturday afternoon 10, 20 and 40 meters were wide open, and all continents were heard on these bands. 80 was also reported good. Following this, there was almost a complete blackout on these bands for three hours, and then they gradually opened up again with fair conditions for the duration of the period. If the next session is nearly as good, a new Canadian record should be achieved. So, who will be the top VE after it's all over? How about dropping us a line outlining the highlights of your activities in the contest covering local conditions, rare ones heard or worked, as well as comments on 80 and 11 meters. This is the sort of news everyone is looking for and it will help make the column of interest to all.

Speaking of contests it's not too late to draw your attention to the notice of the annual R.S.G.B. contest. The rules and dates appeared last issue, and we urge all of you to participate. It affords an excellent opportunity to work those rare and elusive British and associated countries that are so hard to raise when we have to buck the W's to do so. Even though their power limit is 150 watts we feel there is no harm participating, if you exceed this, so long as you send in a report for checking purposes and state the power used. So let's get in and make it a good contest. Don't forget that Ve QSO's outside of your grouping count and even though you aren't interested, it may help some other VE who is really trying for a good score.

Conditions generally are still far from good, although some improvement has been noted since the first of February. We are eagerly awaiting a return to normal, and hope it won't be too long delayed. The Gatti-Hallicrafters expedition is now in Tanganyiki and putting in a swell signal here under the call VQ4EHG. We have heard them between 14,030 and 14,060, and they are using VFO with a T9 note. Anywhere from 3 p.m. on. They don't work anyone on their own frequency, so don't waste time there. The plan apparently is to hop all over the band for replies, so you will need to be lucky to be in the right spot to work them. Ve3APO, the lucky guy, was and did. After they leave VQ4 they go to VQ3 for two months and then to VQ1 for a further month. That's nice dx. lads, so go after them. They will also QSL. Speaking of VQ1HJP, this was VQ3HJP portable for a short time in Zanzibar. Talking to him on his return home, we were told that we were the only VE QSO while in VQ1. We since have received his card con-

firmed this. Lucky me! Another choice one heard lately is YA2AB—14,000 Kc. T9. He has been heard around 6.30 p.m. and as loud as S6. (That's one we didn't get.) Think every W was after him, as well as a couple of other VE's. QSL via A.R.R.L. if you get him. Speaking of dx reminds us of beams, and if any of you are really cramped for space, read the excellent article in February CQ on the "Cobweb." It's the slickest approach to a compact beam we've yet seen. Don't ever think a two-element won't help you on 20 meters. The author always stuck by an 8JK beam for the convenience for working 10 and 20 with it using tuned feeders, and we had good luck with it. However, during the last dx test results were not what they should have been for the power used, and shortly afterwards we changed it over to a two-element beam. Results following were all we had hoped for, and in two months we added 47 new countries to our total. Our percentage of stations called and worked was better than before, so we are really sold on the unidirectional beams. Not the least of their advantage lies in their ability to discriminate against signals in the unwanted directions.

At this point may we make a suggestion: When using VFO and calling on the dx station's frequency—make it short, so that if you don't get him you won't spoil it for the lad who does. We know it would be better not to call on frequency, but as long as the dx stations answer such calls it is unavoidable. But please make it short. Three calls and two signs are enough if you're going to get him. Always listen first to see where he's answering, and if it's his own frequency, go ahead.

Another gripe we have is the continuous use of the bands for testing. That's what dummy antennas are for, and our licenses call for their use. It is a simple thing to get an electric bulb or combination of bulbs to take your output and do your testing this way. Then go ahead and work your dx. This might well be used by some of the boys we've heard this past month to clean up their signals. Lots of T4 and 5 signals starting with Ve prefix are not complying with our regulations.

An idea we have, and we would like your comments on this, is that it would stimulate interest in dx for the lower-powered boys if we ran a separate listing of total countries worked for those whose power does not exceed 150 watts. In this way they would be competing among themselves and not against the high-power gang. Do you agree? If so, note on your reports your power input.

One further comment before we delve into the mailbag (so small this month, and we

hope only due to insufficient time to report following last month's announcement) for our report on your activities. If you feel that too much space is given Ve3's remember we can contact a number of them personally or by phone for information, but for all others we rely entirely on your reports. So send them in, and we will see that all who do are given full credit. We want this column to represent Canada as a whole and not one province. But we can't do it without your help.

Ve3BHX works VO3Z (7009), HR1AT (7003), KS4AI (7009), as well as ZS1, I, CE, G, CM, KP4, VP9, W2WMV/C9 (14,040), XE, YV, TL, KL7, LU, VP4, HB9, SM, HK—a fine list, considering how poor conditions have been, and all with 100 watts and a half-wave 40-meter antenna. This you won't believe—Ve4RO has been on fone (tut, tut). He didn't do bad, either, with 66 countries on 10 with a vertical and grid modulation. WAC also. Nice going, but you're supposed to be a CW man, George. New countries for him on CW are EA7AV and ZB2B. In addition to the three 3/2 wave Zepps on 90' sticks, there are available two lazy H's, one colinear and one V beam, all on a rotary switch with relays. Is it any wonder he knocks them off? Strangely enough, the zepps perform almost as well as the beams do generally. We would like to see the switch-throwing that goes on when a good one is heard. G5LI is anxious to arrange skeds with any of the Ve's interested in 80-meter QSO's. Another good one to look for is ZB3B, who has been coming through around 6.30 p.m., 14,110 Kc. He QSL's pronto. ZD4AO, EA7AV and 16USA also have all been heard around the same time. A verbal report informs us that 23 Mc has been opening up about 12.30 a.m. and for an hour or so thereafter the Pacific and Asiatic stations come through well. We would appreciate reports on this as it's something new for this band and of interest to all. Ve3BBZ continues to knock them off on 10-meter fone with 40 countries in January. Some of the best ones were GC2RS, ZE1JM, ZS1BV, LU2DM, J9AA1, ZD2KC, ZD4AH, LX1JW, CX1DB, VK2MH, OQ5AR, CN8BA, also WAC. Heard were W2WMV/C9, who apparently doesn't tune below 28.5; ZS4P—Basutoland is trying to get his prefix changed to ZS7 to help the boys in spotting a new country—YS1AC, VQ4HRP were also heard—ZE2JN is on every day around noon looking for Ve's. FF8FP was worked Feb. 8 for another nice one—Not bad Doug—Not bad—Ve4RP continues on 20 meter fone and worked 20 countries (Ve4RP) in January, the best of which were OX3BD, ZS1CN, FR8AB, D4AVF/EL, KH6GF, YS1GZ. Ve2WW finds 42 countries to work but no list, so we can't give you the highlights. Ve4RO bounces back on CW with a list of 60 worked including CR7, UH, ZB2, CT1, CT2, KS6, HR, VP8, EP, C7 (you almost got Zone 23 on that one, George), VP6, UG, KAI—Ve7HC adds 11 new countries to his total of 42 contacted in January, the pick of these C, YR, KA, VQ2, SV1, KS6, KB6, MD7, CR7, J, ZD3, VQ4, of special note were 80 meter QSO's with ZL1HM, 1PO, LDI, 4GM, 4PO, 2FM and XE1DX, also

heard reports from FA8BG and G2PL—really fine, Gord, and a real feat from the west coast.

Countries Worked PW

Ve7ZM	155	Ve7EHS	72
Ve3QD	151	Ve1AQ	69
Ve4RO	150	Ve3BBZ	66
Ve7HC	136	Ve6AO	64
Ve8IJ	112	Ve4RP	55
Ve1EA	107	VO6EP	52
Ve3AAZ	102	Ve6FK	51
Ve2WW	72	Ve3AJS	45

QTH's

- VQ4EHG —c/o Gatti-Hallicrafter's Expedition, Private Bag, Nairobi, Kenya.
 OQ5HR —Box 271, Leopoldville, Belgium Congo.
 MI6AB —Fontanelli vie Mulise VI, Asmara, Eritrea.
 MD6KW —Via R.S.G.B.

The following list by courtesy of Ve1AQ:

- PA1WK —Box 547, Paramaribo, Surinam.
 YR5VY —Box 326, Bucharesti, Roumania.
 VP3TR —AACS Det., APO 855, c/o Postmaster, Miami, Fla.
 VP2AA —APO 857, c/o Postmaster, Miami, Fla.
 TI2EXO —Box 1860, San Jose, Costa Rica.
 TI2WR —Box 1345, San Joe, Costa Rica.
 XAMC —QSL via Box 5484, Dallas, Texas.
 EA7AV —QSL via ARRL.
 YU7KX —QSL via ARRL.
 MD5DA —QSL via RSGB.
 VU2RS —QSL c/o Mrs. Jackson, 54 Newark Rd., Swallowbeck, Lincoln, England.
 HK3GL —Box 153, Bogota, Colombia.
 HZ2BN —Box 13, Mecca, Saudi Arabia.
 CN8BK —Box 558 Casablanca, French Morocco.

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C A R O A CLUB ACTIVITIES

There are about 55 amateur radio clubs in Canada that we have knowledge of, and possibly an equal number of which we have no record. Twenty-six have been reported in this column. This month the activities of only 13 are listed. It is possible that some clubs are reticent about sending news to CAROA, since they do not know their status regarding affiliation. CAROA will send certificates of affiliation to clubs who can produce evidence of 60% membership in C.A.R.O.A. among their members. There is strength in numbers, and CAROA, at present, represents nearly 50% of Canadian hamdom. We would be in a better position to fully represent the Ve amateur if we could claim 100% club affiliation. We urge all clubs to survey their membership, and if qualified, request affiliation in CAROA. Once again, let us remind you that news should reach us by the tenth of the month preceeding issue date of XTAL.

The regular meeting of the **Winnipeg Amateur Radio Club** was held in the club rooms on January 13. Don Taylor, Ve4QV; Harry Eddy, Ve4KX, and Geo. Behrends, Ve4RO, were nominated for S.C.M. of A.R.R.L. Al Jebb, Ve4TJ, agreed to make a survey of all Ve4's eligible for further nomination. Under the direction of Ve4QV, the joint R.C.M.P.-W.A.R.C. program for the reduction of juvenile delinquency is progressing. Probationary youths are being given code practice and instruction in radio theory and practise. A committee headed by Major J. Argue, Ve4JA, is engaged in a re-draft of the club constitution.

A new idea in clubs, the "Above 100 Club" of Winnipeg, whose membership and activities are confined to frequencies above 100 Mc., have recently applied for affiliation in A.R.R.L. Its eight members, who are 100% A.R.R.L., are as follows: Ve4GQ, 4FU, 4NT, 4BE, 4KX, 4EK, 4EA and 4DG. They are at present working on a counterpart of the VHF 152 receiver for their membership. Ve4FU has an automatic tape transmitter sending "Test de Ve4FU" in the hopes that the transmissions will be heard at a distance beyond the normal range for the frequency.

The **Alberni District Amateur Radio Club**, Port Alberni, B.C., have arranged to hold their meetings in the local reserve army wireless room on the first Wednesday of each month at 8 p.m. The benefits to the club will be in the use of army equipment, and the army will benefit from the instruction and code practice which the club members will be able to give. Recent notable QRR work handled by Ve7CX and Ve7ACW rendered a valuable service to the community when telephone and telegraph lines were down due to a train wreck.

The **Calgary Amateur Radio Club** will hold future meetings on the fourth Thursday of each month, at 8 p.m. in the auditorium of the Palace Bakery, at the corner of Eighth Ave. and Tenth St. West in Calgary, Alberta.

We have recently received a copy of a mimeographed paper edited by the **Southern Alberta Amateur Radio Club**, of Lethbridge, Alberta. This newsy paper, entitled "R.F.", is sent free of charge to members. A social meeting was held January 19 to inaugurate their new club rooms in the Engineers' Armoury at Lethbridge Airport. The president, Ken. Owen, Ve6KO, was master of ceremonies. Geo. Peat, Ve6IP, arranged music for dancing, and Bill Savage, Ve6EO, arranged contests and prize draws. Refreshments were served and everyone present felt that a fine start had been made for 1948. A membership drive is being conducted and their slogan, "In union there is strength," should encourage greater participation in the activities of this club. Prospective members in southern Alberta should contact Murray MacLeod, c/o Radio Station CJOC in Lethbridge.

The **Queen City Amateur Radio Club**, one of Toronto's oldest radio clubs, has resumed activities. The first post-war meeting will be held on Friday, April 2, at 8 p.m. at 80 Kalmar Avenue, Toronto, Ontario. All members of the "Mystic Knights of the Ether" are requested to be on hand for the purpose of electing officers and debating on clubhouse locations. All Brother Knight Hawks and others are invited to attend. For information contact Harold Kenmare, HOWard 3340, Ve3JO, or Karl Emes, Ve3RG, or Art Palmer, Ve3WK.

The **Loyalist City Amateur Radio Club**, Saint John, N.B., elected a new executive, Jan. 12, 1948. They are as follows: President, Murray W. Doull, Ve1EE; vice-president, R. W. Staples, Ve1IW; secretary, Iris White, Ve1AYL; treasurer, Walter H. Morgan, Ve1IL, and officers, Doug. Burrill, Ve1FW, Geo. Gates, Ve1JO and Wm. H. Smith, Ve1FC.

The January meeting of the **London Amateur Radio Club**, London, Ont., took the form of a supper meeting, during which a draw was held for several donated prizes. The speaker of the evening, Mr. P. A. Fields, chief engineer of radio station CFPL in London, gave an address on wave propagation on low and high frequencies. Mr. Fields brought to light some facts concerning the geomagnetic pole and its effect on propagation. A lively discussion period followed.

A meeting of the **Progressive Radio Club**, held in Guelph, Ont., Jan. 29, in the Biology Building of the Ontario Agricultural College was addressed by Gord Coleman, Ve3ANY, VHF Editor of XTAL. CAROA's president, Tom Powell, Ve3ZE, and vice-president, Bob

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VHF IN CANADA

Conducted by GORDON COLEMAN, VE3ANY

At the risk of becoming boring, we would like once more to evaluate VHF activity as it exists today in Canada.

The 50 Mc band has had a good going over during 1947 and there have been evidences of great accomplishment. Coast-to-coast local groups have enjoyed good rag chews and have participated in numerous DX openings. Many friends have been made among U.S. and European hams, and the 50 Mc group is looking forward to springtime and the renewal of those friendships.

Activity on the 144 Mc band has sharply increased, although the distances worked have not been to encouraging. Only one station, Ve1QZ, has even approached the U.S. dx record.

The perennial antenna polarization problem is still with us on both of the above bands, and while the two modes of transmission have been thoroughly exploited, we are no nearer to an ideal condition of standardization.

Activity above 148 Mc has been disappointing. With the exception of some 235 Mc work in Quebec City, and some 235 and 420 Mc work in Hamilton, Ont., these bands have remained, for the most part, unused. Recent fine articles in QST and CQ on equipment for these frequencies should stimulate some interest in Canada. A good point to remember is that the multipliers for this work in CAROA's VHF Marathon, which commenced March 1, can place one at a decided advantage in scoring!

The microwave situation seems hopeless. There is little equipment available in Canada for these frequencies and the vast amount of surplus radar gear available in the U.S. seems to have had little sales appeal here. Recent tariff regulations have made it still less appealing. The condition is decidedly bad. The "know-how" is present, but the urge to experiment and the equipment with which to develop is lacking. What can be done about it? Frankly, we do not know, and invite discussion.

Recent correspondence from low frequency addicts points to the lamentable situation on the already heavily QRMed 80, 75, 40 and 20-meter bands where apparently needless testing and other unsavory operating practises have ruined local QSO's and made dxing difficult, and in some instances, impossible. Happily, these so called "insidious" practises have not crept into VHF work. Operating practises on VHF are still honourable, and due to the local nature of the contacts, they stand a good chance of remaining thus. It would be decidedly embarrassing to know that the chap whose QSO you broke up was the same chap who sat next to you at next week's club meeting. One's conscience does not control one's actions to the same extent if the victim is 200 or 2,000 miles away. It is usual to hear, on a little-used portion of a VHF band, the tone modulated carrier of a station engaged in extensive

antenna checking, or modulator and RF trouble-shooting. Sometimes this type of experimental work consumes the better part of an entire afternoon or evening. Try that on 75 meter fone or 40 CW and see what happens to your reputation! The regulations provide that a dummy load be used during testing periods, but imagine what the field pattern of a 16-element beam would look like if a 100-watt lamp was placed across the antenna pickup loop during tests.

The recent swing to NFM as the cure for BCI and the poor man's answer to the modulator problem, proves more practical on VHF, since the best NFM is derived from the use of a high order of frequency multiplication; a situation which may lead to trouble on 75, where the oscillator stage should be on a frequency in or below the standard broadcast band.

Having covered a few points which have been in the back of our mind (?) for the past little while, we now get down to the business of the month.

The winner of the 1947 CAROA 6 meter DX Derby is declared to be Ve7AEZ, Harold Wise, of Ioco, B.C., with a total of 235 dx QSO's with 159 different stations and 40 different states in the U.S. Harold tried hard to hear the Pacific dx when it was evident that conditions were favorable, but as yet he has been unsuccessful. A close second was Ve1QZ, Oscar Sandoz, Halifax, N.S., with 258 dx QSO's with 142 different stations and 25 states in the U.S., plus five European countries and three Canadian districts.

As set out in previous issues of XTAL and especially in July, 1947, the rules stated the total number of different dx stations worked in the period allotted was to be the governing factor in deciding first place. However, since the scores were so close, CAROA has decided to award two certificates of merit; one to Ve7AEZ as the winner of the DX Derby for 1947, and another to Ve1QZ for his outstanding achievement internationally.

CAROA moves a hearty round of applause for these two hard working VHF'ers.

Two Toronto stations have joined the ranks of the NFM clan. They are Ve3AXT and Ve3ABE. The Quinte VHF group, with nine stations in Trenton, Belleville, Stirling and Picton, have elected Ve3ASD Trenton to handle the VHF news in their club paper. Ve3ASD worked W4CDC and W9BHT on the Jan. 4 opening. It is with interest that we heard that Ve7AEZ also works 10, 11, and 75 meters. After some months of corresponding with Harold we find that his xyl, Mildred, has been the originator of the very fine newsy letters from 7AEZ in Ioco. Mildred is certainly qualified academically, if not technically, to become

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C A R O A NATIONAL REPORT

Ve1

Ronald J. Hesler, Ve1KS, DR, Box 160, Sackville, N.B.—JK is now active on 10 CW and 6 fone. DQ, DS, HD, MS and TA are all now working 10 NBFM. LZ takes a whirl at 20 NBFM every once in a while. KY recently completed a speech clipper and reports that it works fb. FB is working 20 CW from a new QTH. NE recently worked WAC. HJ reports trouble with his v.f.o. on 80. GS is heard on 80. GY now operates on 10 CW. BC and OW, from all indications, will be hitting the ether again in the near future. By the way, I hope all you guys noticed that swell pic of OW on the cover of the January issue of XTAL. MZ has added an HRO to his growing list of receivers. TA is completing a new exciter. VH has a scope under way. The Halifax Amateur Radio Club recently installed the following new officers: Pres., QZ; Sec., RP; Vice-Pres., KY, and SF, Treas. QP is moving to Ve3 land. HP received a recent promotion in the air force—flight lieutenant. AX and MZ have ordered propeller pitch motors for new beams under construction. GR continues to knock off the G's on 75 fone. PF expects to be shifted soon from Sydney to Halifax. JK is completing a 6-meter transmitter. DQ holds regular schedules with Ve8OE, NB and NI. EP is now VO6EP. RE, the crystal grinding expert of the Lakeburn Club, is being transferred to Toronto and has his rig all crated and ready to move. TN is active on 75 fone and informs us that 2XX is expected in Lakeburn. QT is rebuilding his rig in a lovely big rack which Santa Claus deposited down his chimney last Xmas. PA is active on 20, 40 and 75 CW and reports that during December handled over 70 messages to Ve8NB (situated on Resolution Island, N.W.T.). BF is active on 10 fone although the BCL's in Lakeburn say that he may be heard locally all over the 20-meter band. AQ is strictly a dx man whose ultimate aim and ambition is to work all civilized and uncivilized countries in the world, so we are informed. IU is rebuilding his rig. GD, active on 10 and 75 fone, has acquired an Oxford accent from working so many G's. BB is heard regularly on 20 and 75 fone. MV expects to be on the air shortly on 10 CW and fone. FT is rebuilding. JF is going VHF. DG is a new "Dogpatcher" and expects to be on the 40-meter band soon. EG is on 40 and 75 CW. NH is a newcomer to the 10-meter phone gang. IX is building a receiver. JY is operating with a new mike. QY has gear ready for 144 Mc and now operates on 6 meters. DA operates 75 fone. NT is building a converter for use in his car. JA appears to be using a new 10 meter beam. DM is piling up a lot of

operating hours and contacts. IO has a new speech amplifier and modulator coming up. KF, the lone wolf at Louisburg, has the band all to himself there as he is the only ham—wonderful, isn't it, gang? HI is trying a new final with 810's running at reduced power. KT and NK have a new 10 meter beam in operation and from all reports is really laying a signal over on the continent for the boys. NX has a SCR 522 and will be on 2 meters soon with an 11-element beam perched atop his 10-meter one. CM operates CW but hopes to get on 10 fone. New calls heard in the Saint John area are JD and HH. FL has a new set-up at the school. HQ is on 10 fone. GQ hasn't been active due to the fact that he is rebuilding and is having trouble with his modulator. RQ isn't very active at nights due to a new shift. JL is still mulling over plans to run a shack on DC using a BC348 and a AT7. IE left a big hole in the local 75-meter fone band when he took his half a rock crusher to Grand Manan. EE with 25 watts was in a 8-way QSO on 75 with G8VB, MB9AA, MB9AU, VO1I, VE1GR, VE1JY and VE1PI—some hook-up! EW still packing in the dx cards and is planning a modulator, but still swears by CW. IW got a SWL from Sevastopol. UR is having small troubles with neutralization. GP is working 20 fone with a fixed beam. IF has a AT7. IL is contemplating the purchase of an AR2 and is rebuilding his rig at the same time. IM reports that he doesn't get much time to operate any more. MM is not active at the present time. JO is going great guns on 75 fone but reports trouble on 20. HU has an HT7 which he plays about with when not operating his big rig. MR has rigged up some command sets and swears by them. HM reports terrific success with his AT7. Bundles of bouquets to W9EJX, who turns out a swell monthly bulletin entitled Ve1 News for all the gang that he hears and works in this district on 10 fone. If this isn't a shining example of "hands across the border," I don't know what else could come closer. Ve5NB (ex-Ve1SY) may now be heard on 20 and 10 fone; Vic is the chief engineer at the C.B.C. 50 KW station at Watrous. QF recently dropped along a letter from his new QTH at Lacombe, Alberta, advising that he should soon be back on the air with a new Ve6 call. KS' XYL is busy studying for her ticket. ES is not spending as much time on the air as he used to, he reports, due to increased studying at college. That winds up the Ve1 news for another month. That is, all the news that has come to my desk in the past month or so. There are still numerous Ve1's whose activities have never been reported—how about it, fellows? A post card will do nicely. Before "throwing the big switch" I would just like to express my

apology for the absence of Ve1 News in last month's issue. I was out of town for the entire month and therefore could not compile one. With your help I feel quite sure that in the coming months we can more than make up for the conspicuous absence in the Feb. issue.

73—Ron.

Ve2

Floyd G. Gribben, Ve2XR, DR, Quebec, 5120 Westbury Ave., Montreal, telephone ELwood 5387—Howdy, men! Now that the dx contest is over I guess you guys are sitting back awaiting the results. While you're still trying to get the xyl to let you out of the doghouse, I'll do my best to console you with this month's doings. YP slaps the brass on 80 from Sorel. UM does the dit and dah act on 40. ABL is a new lad heard on 3.5 CW. HY sure rattles it off on the low end of 80. So does FC. SC of Perron pokes a 700-watt hole in 80. ABB has apartment house antenna troubles and hopes to make another try when weather warms up a bit. LZ gabs from Quebec on 75 each a.m. and QRT's to catch his bus. PA of Pointe Claire has nice-sounding fone on 75. XX likes early a.m. chews on 75. Jimmy never seems to sleep. GM of Longueuil wants sked with Quebec near 3740 Kc. Bert is proud of his PA zero on 80 with 20 watts. WY likes new NC-173 and has new 813 final for ten. TA favors the band edges of 80 and 40. KD now on the ten fone scene. HL, of Quebec, has been appointed Amateur Broadcasting Station for CAROA in his area. Keep an ear open for Henry on 75 fone for Ve bulletins. While on the subject of amateur broadcasters, CAROA is much in need of a similar station for the Montreal Area. If you are a member of CAROA and have a 75 meter fone, would you like to give one night per week to this work? If so please write or fone me right away. LO puts Drummondville and Yamachiche on the Ve2 ham map by sending in nice letter. Says he ops on 3773 and would like a few contacts in and around Montreal. JI of the same key-click area bangs away on 80 and 40 and is instructing Rover Scouts in radio when off the air. TD rattles it off on 40 from the same burg. WR of Yamachiche has low-power rig on 80 and is jacking up his light bill with a 150 watt rig soon. KT of the same town likes spending his time on 40 and 80 and says his 10 watts grabbed him a G. XO is contemplating blotting out 40 with higher power from Yamachiche. WK gets all-band fone endorsement and works his first BCL's right off the bat. Beef Dept.—Did you ever try to figure out who was where when listening to some of our fones on 75? Some of the boys do not sign correctly when they say, "Ve2XXX for Ve2YYY". How can one lad sign for the other? Let's do it right. Your call should be mentioned last. Louie the Lid thinks a "mixer" is a kick diluter for QLC beverages. The Montreal Amateur Radio Club has divided the membership into two groups who will meet in separate rooms. The senior group will be

entertained by technical talks on advanced subjects. The junior group will receive practical instruction on subjects of interest to the newcomer. This move should be a very good one and sure will relieve the congestion and seating problem we have at present. JJ has classed up converter for his GR-10 receiver. SD of Wrightville is heard the odd time on 75. WW is still top man on dx for Ve2. DL of Montreal and TM of Quebec gab regularly at 7 p.m. on 75. AAR is a new ham banging the hardware on 80. AN, JA, KQ and XZ do their vocalizing on 28 Mc. FX having custom built rig with 813's made for himself. LF of Vercheres is another CAROA newcomer and is building Panadaptor. When he's on it's usually 80. KS chases the 20 CW dx in the early a.m. and the late p.m. CX does much the same thing. BE, our A.R.R.L. C.G.M. enjoyed league business trip amongst the boys of Western Ontario. Says he's planning a Western Canada jaunt this fall. While on the subject of A.R.R.L., our S.C.M. Gordie Lynn, GL, has moved to Beaconsfield, so when you're reporting to him for next month's news column of QST, send your dope to him c/o Radio Range Station, Montreal Airport. If you want to fone him, call WA. 7701, local 14 or 35. Remember that CAROA and A.R.R.L. are working together. If you belong to CAROA only, why not complete your membership in amateur associations by joining the A.R.R.L. right now? Don't forget the great big "do" in Montreal this Oct. 8 and 9 at the Mount Royal Hotel. The Montreal Amateur Radio Club is sponsoring an A.R.R.L. Convention which promises to be the largest hamfest ever held in Canada. Talk it up on the air and invite an out-of-town ham friend to stop over with you while attending the big event. . . . If you haven't been mentioned in the column this month, why not drop me a note or a phone call and let me know what's doing over your way so's I can include you in next month's issue. The complete QRA and phone number appears at the top of this column. Let's hear more from the smaller towns. Don't let the Big City boys hog the column all the time (hi). Be sure and get your news in before the end of each month. Thanks for lookin', fellas. See you here next month.—73, Floyd.

Ve6

W. R. Savage, Ve6EO, DR, 329 15th Street N., Lethbridge, Alta.—6GR is putting out a husky signal on 75 mtr fone and is handling traffic also. 6DN is wondering if he can get a dining and sleeping car on the Glenwood Flyer. 6AB is still pecking away at dx on 20 mtr CW. 6JR must be working on 10 mtr fone all the time; we never hear him any other place. 6KO travels to Calgary to take his radio exam, and now we hear him busy on 10 mtr fone. 6MN spends his Sunday mornings calling ZS stations. 6NR is heard on 20 mtr fone working fellows right and left. 6BC is trying out a war assets transmitter, but he says the modulator is not very peppy. 6WZ

says he is going to put up a new antenna, but he is putting out a nice signal on 40 mtr CW with his present one. 6KS sure puts out a wallop with his pair of 813's on 40. 6HC has a 20 mtr xtal and is planning to get his rig on 10 mtrs where there is no QRM. Where is that, Tom? 6AM is going to try out 32-volt tubes in his rig, seeing he is using a farm lighting plant. 6YN has his rig in the porch, which he claims is very cold when the outside temperature is down to 15 below zero. Why don't you cut a hole in the kitchen wall and stick your feet through to warm up, Pudg? 6NW has finally passed his test and has his ticket and is on 20 mtr CW. 6XX was in Milwaukee for a course on Nash cars. While there he made contact with four of the Calgary hams from W9AYX, W6WTA, ex-Ve4AIK of Taber, is on 20 mtr fone and CW in Hawthorne, Calif., and yours truly had a fb QSO with him on 20 mtr fone. Nice going Woody. 6HQ has another ham in the family. Bill Jr. is Ve8AJ, and now Ron has passed his exam for his license. 6FC is on 80 CW with a 6V6-807 running 20 watts and has a home-made superhet. 6JC is running 12 watts and has worked 20 states. He has a S-40A receiver. 6SW is too busy with his bank, Boy Scouts, etc., to get on the air very much, but he sure gets out when he is on. 6OA is running 250 watts to a pair of 810's on 75 fone, when he isn't repairing radios in his shop. 6MT is on 3515 Kc with an 807 osc. and is getting out fine. 6FS is getting in a lot of new test equipment for his radio repair shop. 6SR, now that Stan has built a ham shack on the house, he calls it the great metropolis of Glenwoodville. 6NA is back on 75 fone and has a visit from 6AA. 6OD is still looking for a clear spot in the 75 mtr band to put his official broadcasts. Doing a nice job, Eric, tnx. 6AC says he hasn't much time to get on the air lately. 6PP pays yours truly a visit on his way back from W-land. Call in again, Pere; we enjoyed it. It is with very deep regret that I report the passing of one of our active fone members. Ve6WC lost his life while answering a fire call. I am sure that all the Ve6 hams and many others extend their sympathy to his family.—73, W. R. Savage.

Ve7

Ernie Savage, Ve7FB, DR, 4553 12th Ave. W., Vancouver, B.C.—To each and all, make this for forty eight: I am going to join a radio club or be a more active member and will take interest in all affairs; pay my back dues and see that CAROA's DR hears about my doings; also read my XTAL and other magazines that will do my hobbies the rights it deserves. Births—To Mr. and Mrs. 7SN, Port Alice, a Jr. opr., John Robert; to Mr. and Mrs. 7ADF, Vancouver, a Jr. opr. 7AHH, Jim, way up in Vernon, swears that the QRN caused by the street lights he can light a neon bulb. Well, you tell him. 7SO, Wally, the man that says give 813's the works and in cold weather give them more so you can heat the shack, is now reported off the air and installing 810's. Possible that they didn't take it, Wally? Never hear much from Victoria Short Wave Club. Guess now we will hear less. Heard that they are buying easy chairs for the club. But do get word from Victoria by QSO's. 7XX, Steve, is now back on with an 813 and 1500 volts behind it, also a modulator coming up, with all the fittings. 7ADL, Percy, at Sandspit, Q.C.I. Thanks for the report. He reads XTAL. Here is the gang from there, and you may hear them on when they get in their houses. 7UG, Fred, from Sidney Island. 7AJI, Fred, from Vancouver. 7AJO, Melvin, from Carmi, and 7ADL, Percy, from Prince George. Of course they are active now but wait till they get all set.

Good old Collingwood Radio Club. You can always get some action from them. They are now looking into the ultra-highs, and bet they see lots of fun. 7ADV, 7AME and 7HF (he should be) are now on two meters.

7AFH, Bill, will be on with a 19 set real soon now. 7UU, Joliffe, has a 312, but now wants some one to make his converter work. All the members of the C.R.C. can't. Could ask V.A.R.C. 7AGP, Bill, it is said, is now using the very ferocious oscillator. 7AFM, Mickey—well, the rumors are still showing that he is thinking of coming on again now he has bought a receiver. 7AL, King, who has been just sitting and thinking of the new rig, is finding more dx cards coming in than the stations he has logged.

7ABY, Jim, is still our silent man, but stories say just wait.

7DB, Bill, of Oliver, says the club is now going great and the membership is way up and will let you all have the info next month. Ve8BJ, Gordie, from White Horse (not the wet one) and his old call was Ve7AEX, is now in town and will be on 40. 7AEU, Herb, has given up CW for a while and is now on 75 phone with 810, cathode modulation. 7JT, Pete, the secretary of B.C.A.R.A. and doing a good job. Was heard with sparks and fire and squeals and a quick hello on 3849 Kc. "Am running T125," he said, "but I must scam and see what is burning and arcing." V.A.R.C. is still going great guns and had a full turnout. The last meeting was a quiz and there was many

QSY to next page

WESTERN HAM HEADQUARTERS

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CANADIAN RECEIVING STATIONS

By H.A.M. Whyte, Ve3BWY/G6WY

For some time we at CAROA headquarters have realized that we have had as members a considerable number of enthusiastic but serious-minded shortwave listeners.

It is realized that many of these are prospective hams, and it has therefore been decided to recognize and encourage these non-transmitting amateurs by inviting them to join our new listeners' section.

CAROA will give official recognition of all bona fide shortwave listeners (whether present or future members) by granting them a listener's number, beginning C.R.S.-1, meaning Canadian Receiving Station No. 1. This number may be carried on QSL cards and will add value to your reports sent to your transmitting fellow-hams. The official number may also be carried on membership, correspondence, etc.

A hearty invitation is also extended to our friends across the border to join this section of the association, and successful applicants for membership will be given official recognition by Canada's National Amateur Radio organization and issued with a number beginning the series U.S.R.S.-1.

The reports sent out to transmitting amateurs must obviously be of a nature likely to be of value to the recipient, and from time to time the contests committee will originate awards for participation of C.R.S. and U.S.R.S. entrances in recognized contests.

Some of the best logs received in our recent 4-in-1 contest were from receiving men.

Dx and VHF reports will be of use to our dx and VHF editors for their respective columns.

That preoccupied fellow on the front cover is your dx editor, Roy Carter, Ve3QD, looking for dx or news for his column.

dollars given away. But they didn't win the jackpot. 7BQ, Jack, president of B.C.A.R.A., was there and gave us a very fine but short talk on the association and what the clubs and members should do.

7TQ, Ronnie, flew back to Calgary for a look see at the radio setup there. He tried to tell us it was in the kites that he was interested.

But why was he on the air few hours after arriving? Say, did you know that 7OM, 7AEV, 7DO, 7EI, 7ACW, 7ALP, 7GM, and there are others, are the British Columbia Police?

In Vancouver we have one that I know of and he rides a motorized tricycle. 7VD and he are rebuilding, but you wait, he says.

Did you write Alex. Reid? He asked you to. Oh, you forgot!

73, Ernie.

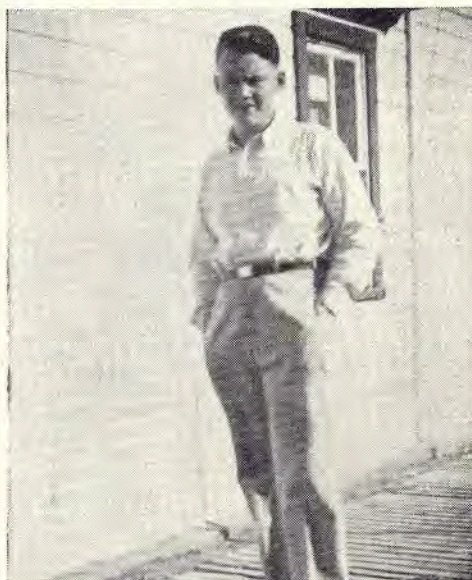
INTRODUCING YOUR D.R. . . .

BILL GORDON, Ve5MW

Ve5MW's first ticket was issued in January, 1946. He started on 5 meters with transceiver cross-town with Ve4AU. 4AU was the ham who got him going in radio after his return from the R.C.A.F.

On April 1, 1946, went on 80 CW with 24A ECO into a 46 buffer, running 25 watts. In summer of 1946, put a pair of 807's in parallel behind the 46.

When 40 was opened, he worked 40 until winter of 46-47, then went down to ten-meter phone. Receiver was Hallicrafters S-41W. Got phone endorsement for restricted bands in May, 1947, and ran grid-modulated for while.



The old ECO didn't work so hot on phone, so he rebuilt to crystal and ran class B linear using pair 6V6 modulators. In fall of 1947, put the old 807's in push-pull. Present rig is 6L6 xtal-6L6-PP807's. The 807's run at 875 volts and 200 mills.

Speech amplifier and modulator is 6SJ7-6SF5-6V6-PP807 class AB2. Only antenna is 75-meter zepp end fed. Receiver at present is a modified Hallicrafters S-40A. Mike is an Astatic JT40. Works 75 and 20 phone and CW. Holds ORS, OBS appointments as well as member of Rag Chewers Club.

Bill is 19 years old, absolutely not married. Hobbies include record-collecting and chasing down noise level in Oxbur. He has worked 18 countries and 5 continents; worked all states except Vermont and Delaware.

HAMS IN THE NEWS

PROPOSES BY RADIO

After four years' shilly-shallying there was nothing timid about 22-year-old Marc Vermander, 324 Metcalfe street, when he finally got nerve enough to ask his girl to marry him.

In one explosion of courage Sunday afternoon, he popped the binding question — by amateur radio all the way from Ottawa to Winnipeg with hams all over the world listening in, for all he knew or cared.

It may be a historical incident in amateur radio in Canada. At any rate his brother, Claude "Doc" Vermander, says he doesn't know of another proposal and acceptance quite like this one.

"I have known of fellows who met their girls by radio but I haven't heard of other proposals."

It all started from a routine chat with the folks at home. Marc, who has been in the army in Ottawa for the past four years, joined his brother Sunday afternoon to talk with their parents, Mr. and Mrs. A. Vermander, of Winnipeg.

Doc, Ve3BOC, had made previous arrangements with Dan Wood, Ve4LF, Winnipeg, to take his parents to the station for a cozy chat.

At about 1.30 Ottawa time, Mr. and Mrs. Vermander came on the air for 45 minutes and they and their two sons exchanged commentaries on the weather, mutual friends and everybody's health.

Then came the surprise. Said Mrs. Vermander non-committally, "There's someone here who would like to talk to Marc."

And Jean Drouin, 20, whom Marc has known since earliest school days but has seen only a couple of times in the past four years, said, "Hello, how are you?"

Marc gulped; remembered the volumes of letters exchanged during the years; decided it was now or never; and—"Hello Jean; I have something important to ask you on the next transmission."

"All right, dear; what is it?" Long pause.

"Will you marry me?"

Then a much longer pause before a mike-shy, suddenly self-conscious Jean gave a feeble answer, "I accept."

There was a lot of heckling from Dan Wood, the Winnipeg operator, pointing out that she should give a more enthusiastic response; but the only result was a more audible, "I accept."

The whole conversation became an exchange of congratulations. Marc's parents who have always liked Jean and had had her with them for Sunday dinner, were delighted and showed

it. And so was Marc—once he recovered from the shock of his own daring.

Asked where he had found the courage, he grinned, "I've had it on my mind since the middle of December."

FIRE MESSAGES GO ACROSS CONTINENT

From Moncton Transcript

With ordinary lines of communications broken when a disastrous fire broke out in Shediac, sixteen miles from Moncton, ingenuity was called in to send a call for aid from this city's fire department. Eugene Fougere, of Shediac, Ve1BB, offered his assistance, and sent out a QRR, asking whoever picked up the message to relay to Moncton a request for a fire engine.

The ether carried the young man's voice across the continent and it was picked up in at least two sources. At Galveston, Texas, another ham picked up the message, while at the same time W4DCQ in Clayton, North Carolina, got the Shediac signal. The Galveston listener informed the U.S. Coast Guard which relayed the message by teletype to Sea Air Rescue Squad in Halifax and from there the message was passed along by interphone to Blissville, N.B., and finally to the Air Traffic Control office at the Moncton airport.

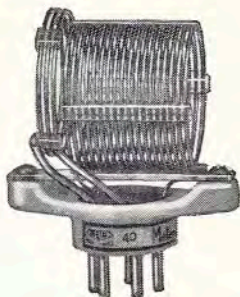
Meanwhile the North Carolina operator relayed the call for aid and it was picked up in Nome, Alaska, by a ham who again passed the message along and in Milford, Mass., an amateur picked up the message and telephoned to Moncton.

First word of the Shediac fire which left 29 persons homeless, came to Moncton via the C.N.R. telegraph lines. The dispatcher at Shediac sent through a message to the Moncton station where the operator here received it and telephoned Mayor J. E. Murphy, who in turn advised the Fire Chief.

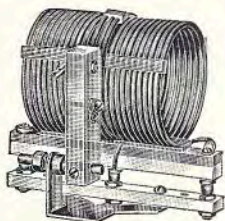
The urgent message, through one or the other of these channels, reached Moncton in sufficient time that the city was able to send one fire truck and fifteen men to the scene promptly.

The Victoria gang lost one of their old timers with the death of Fred Butterfield, Ve7FX, prewar Ve5AP. Fred was a surveyor, and used his old call while on trips in the mountains. Using a hand-cranked generator to charge his battery, he once performed the unusual feat of working New York on 7 Mc at noon, with an input of about 4 watts to a 171A. He was a member of the V.S.W.C. in its first year of existence.

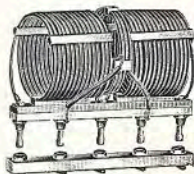
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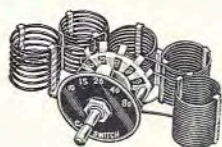
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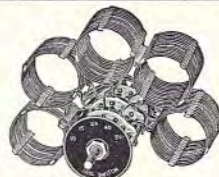
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2ND ARMoured DIVISIONAL SIGNALS

IT can be seen, in the light of the recent Atlantic City Conference, that year by year, the position of the amateur operator becomes a little bit more insecure. This is true mostly in foreign countries, of course, and Canada and the United States have shown themselves to be very much in favour of our carrying on. All of us know that one of the best arguments in our behalf is that our ranks provide a large backlog of trained operators, many of whom can be called upon in time of emergency.

The three services, the Navy, Army, and Air Force, both Active and Reserve, are at the present time conducting a nation-wide recruiting drive, in order to build up the strength of our armed forces. The 2nd Armoured Divisional Signals Regiment, whose armouries are at 184 Spadina Ave., Toronto, along with all other Signal Corps units across Canada, are on the lookout for boys and young men who would be interested in obtaining a basic military training, along with other such subjects as code practice, operating and procedure, instrument maintenance, etc., and actual operation of military and civilian equipment in an up-to-date radio station, along with the added attraction of an enjoyable social life with congenial friends.

Since we already have five licensed amateurs, Ve3PL, Ve3PO, Ve3YY, Ve3AGV, and Ve3BLV, and one more coming up, there is not the same opportunity for the ham in our organization, although this may not be true in others. We wish to enlist young lads, of from 17½ years of age, with a desire to learn. Nearly every ham has at least one neighbourhood lad who comes around, and perhaps even pesters him about amateur radio. Here is an opportunity to tell these fellows about coming down to the Signals and having us help them in their desire to learn about radio, and at the same time instruct them in subjects vital to the defense of our country.

We received a nice letter from W. H. Allen, Ve3XY, who is on the staff of CKTB, St. Catharines, Ontario, enclosing a cheque for \$31 towards the CAROA fund for food parcels for G's.

This generous sum was raised among the staff CKTB, due to the fine co-operation of Mr. W. B. C. Burgoyne, helped by Ve3XY and Ve3BKO.

We are glad to give publicity to this matter, as possibly the staffs of other radio stations throughout the Dominion might care to follow suit. Thank you, CKTB.

HATS OFF TO OTTAWA HAMS

Ve4ADB left Winnipeg recently to work in the Government service. He was suddenly stricken down by sickness one evening and the local hams immediately rallied to his aid. He was rushed to the hospital, and the local hams did all they could for him financially, and in addition, they donated blood for transfusions. The boys on 75 phone put out an appeal, and a further \$50 was sent from Mrs. Ve3DD of Toronto, on behalf of the Southern Ontario 'Phone net. It is known that at least one W joined in. By these efforts nearly \$200 was subscribed within a few days, as Ve4ADB had no hospital insurance or salary. We learned with regret that Ve4ADB passed away on Feb. 24. We publish this to make note of another case of the wonderful friendly support to be found in the ranks of ham radio.

BOOK REVIEW

Ultra and Extreme Short Wave Reception, Principles, Operation and Design, by M. J. O. Strutt, D.Tech.Sc., published by D. Van-Nostrand Company (Canada) Ltd., 228 Bloor St. West, Toronto, Ontario, Canada. 387 pages, 248 figures and diagrams, price \$9.40 (in Canada).

Dr. Strutt, electronics consultant to the N. V. Philips Co. Ltd., Eindhoven, Holland, and author of many authoritative engineering papers since 1928, is to be complimented on his modern interpretation of a subject about which little information is available in book form. From his wide experience in the fields of HF, VHF, UHF, and SHF, the author has given us a text which covers reception on frequencies from 6 Mc to 30,000 Mc. Every phase of the subject has been treated effectively somewhere in the text, and many new concepts are simply explained.

In order to acquaint the reader with the useful experimental data available at present, Chapter V consists of a compilation of such data and the methods of obtaining them. The author hopes that this will foster research which will fill the gaps in our present knowledge. This chapter, as well as Chapter II, which covers noise due to tubes and circuit elements, should appeal to the amateur experimenter. Although portions of the book include intricate mathematics, there is still sufficient reading matter to make it appealing to the newcomer.

The serious researcher will be assisted by the copious reference to publications issued between 1920 and 1946 in America, Britain, Holland, France, Germany, Italy and the U.S.S.R.
—G. Coleman.

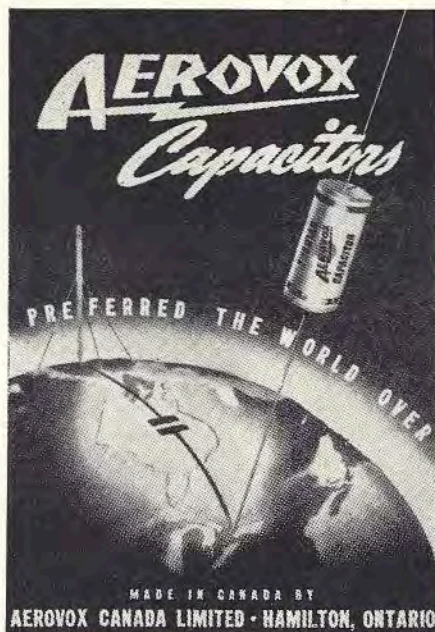
HYDROPHOBIA—from page 7

tap. I couldn't see any sense in letting the beam down after all this, so I got Dad to unscrew the hose a bit at a time until the beam came down a few inches, allowing us to shove the bolt through the two holes in the pipes which would hold the whole affair up after the water was drained out.

Well, fellows, we now have a beam and, by the Old Man's Beard, if I don't get a 30 DB over R9 signal report from Joe out in Saskatchewan after all this trouble, I'm going out there and dunk his receiver in the lake!

Ve3AEL (Toronto) has a regular schedule with G4CY on 28 Mc whom he works consistently together with other G's. He informs us that he is a good friend in Mr. F. King, Royal Hotel, Mundersley, Norfolk, England. Mr. King listens regularly for Canadian hams and sends reports by air-mail each week to Ve3AEL.

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Dear OM . . .

Editor, XTAL:

I have just read article by Ve3GE and might add I am thoroughly in agreement with what he has to say. In regard to receiving equipment produced in Canada at present, I am of the opinion that Canadian manufacturers in order to obtain a market for their sets, should not offer them to the buyers at an American price today plus customs charges. For it is a well known fact that American prices are 50% higher for labor and material. Therefore it would be a difficult thing to convince anyone that Canadian costs of production are higher than American. Under such considerations it would be a benefit both for producers and buyers if they assumed this attitude. It is a well known fact that there is a limited field for the sale of communication receivers, nevertheless, it is wide enough for any manufacturer to sell a receiver at a price much lower than American costs plus importation charges. It is a field to my way of thinking that C.A.R.O.A. could very well inquire into and give us a few low-downs on what is actually occurring.

"Suggestion."

* * *

Dauphin, Man.,
February 5, 1948.

Editor, XTAL:

We agree heartily with the sentiments of one Ve3GE in your last edition.

It is quite understandable that, with your limited circulation and advertising, you can't be expected to have half a dozen reporters out covering every happening of interest to hams, but we think for our two bucks we might get a few more articles.

McLain mentioned a case of B.C. receiving license being required of a ham. It's a point that has often been questioned but nothing done about.

Here's another one for you.

We recently received a QSL (Ve1) which bore only a one-cent stamp. Upon questioning, the local P.M. assured us that a printed card with less than ten written words could travel for a cent. We doubted it, but were not required to pay any additional postage.

It's worth digging into, anyway, and would make an interesting article.

While we have the mill in hand we might as well voice our displeasure at the lack of Ve4 news in your mag. We can only remember seeing one edition running anything on the 4's. So how about jacking up your Manitoba reporter or getting a new one so that we can read something besides the worn-out dope on the Ve5 75-meter corporation.

Lyll McDerimid, Ve4PA.

VHF—from page 11

a ham, as she certainly has a good knowledge of ham terminology. From Halifax we hear that Ve1QZ's junior op is occupying a lot of his time lately, but Oscar still finds time to be active on six with Ve1DN, Ve1JK and Ve1SF, and on two with Ve1SF and the occasional W1. Ve4DG and Ve4CD report that six-meter activity has taken a nose-dive in the Winnipeg area lately, but that two-meter work is on the upswing. Ve4EK heard a Wø from Minnesota on 144 recently. Since this is over 200 miles from Winnipeg, it was cause for some excitement. Skeds have been arranged with two-meter stations in Minnesota to establish contact. Ve4KK, 4JO, 4GQ and 4DG are anxiously awaiting revival of six-meter dx, and Ve4FU, 4NT, 4KX, 4EK, 4EA and 4DG are on two. For the most part they are using SCR 522's and horizontal beams. Ve3OJ, Ottawa, Ont., reports some progress on VHF here, with Ve3BDY, 3EK, 3BBW, 3PC and 3MX active on six meters. Power is 30 to 50 watts into horizontal antennas. Ve3OJ and Ve3BBW, with occasionally Ve3BCL and Ve3ZZ, hold the fort on 144 Mc with SCR 522 and horizontal antennas. The Ottawa boys are looking for an answer to the advice from an interested local man who tells them that they would do better to use vertical polarization on VHF as well as LF bands in the Ottawa area, due to the nature of the soil cancelling out part of the horizontal radiation. We have been compiling data on this polarization subject with a view to writing an article on VHF antennas in the near future, and have recently uncovered data to substantiate this statement. More, we would prefer not to say at the present, but the fact that the C.B.C. listening post during the war was moved out of the Ottawa area for technical reasons points strongly to reception difficulties in the immediate vicinity of Ottawa. Ve3AHE, who was becoming active on six in Port Credit, has recently moved to Ottawa, and should be ready to go soon. The Smith's Falls, Ont., VHF group have swapped notes with Ottawa and Brockville and are planning to interest Kingston, Renfrew and Arnprior in VHF. Nice going, fellows. That's the kind of pioneering spirit that helps. Active on 144 Mc in Brandon, Man., are Ve4AU, 4NB and 4YW, and at Shilo is Ve4DN. Ve4YW's six-element beam is pointed at Winnipeg, 130 miles east. Considering the fact that Brandon is 440 feet higher than Winnipeg, they may have a chance at that!

May we once again urge the use of straight CW on the VHF bands as an aid to long-distance QSO's and a means of code practise to SWL's.

W8KSL of Hazel Park, Mich., is one of our members across the line, and would like to see our Ve phone boys listen more for replies from the W's, as they often have messages for Canada.

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Eleventh edition Radio Handbook.....	3.25
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2" square bakelite case, calibrated 0-9 in "S" units to mid scale, remainder of scale reads to 40 DB over S 9, opening in rear for illumination	7.95
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956	1.30
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810	5.00
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826	7.65
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CLUBS—from page 10

MacDonald, Ve3APS, also briefly addressed the meeting concerning CAROA's present status and aims. Considerable interest was shown in the formation of a VHF net in the Kitchener-Waterloo-Guelph-Galt district.

The Ontario Phone Club, an unique "on the air" innovation, which was the brain child of some of the members of the Ontario Phone Net, has been formed. Weekly meetings are held on Sunday morning at 9.30 a.m. E.S.T., on the net frequency of 3815 Kc. The objects of the club are to provide club privileges to those amateurs in rural districts and small towns and villages which have no clubs of their own. An election was held Jan. 18, and the officers are: President, Tom Hunter, Ve3CP, Windsor; vice-president, Jim MacArthur, Ve3NI, St. Thomas; secretary-treasurer, Stan Moir, Ve3AQB, Chatham, and Frank Kehoe, Ve3VU, Clinton; Charlie Olmstead, Ve3AHP, Owen Sound, and Jim Musselman, Ve3AZH, Dundalk. The club is particularly interested in promoting safety-first and improving operating practises. They are planning a summer annual meeting and picnic to be held at some central point in southern Ontario.

The West Side Radio Club, Toronto, was host to W2BAG and W2KHO, of Niagara Falls, N.Y., on Friday, Jan. 30. An interesting address by F. A. "Lid" Lidbury, W2BAG, on the subject of 144 Mc activity in the lower lakes district, revealed their preference for vertical polarization, a view which was not shared by Ve3ADO, Toronto, a strong exponent of the horizontal mode. A lively discussion on the relative merits of both modes followed; however, the fact the some 30 Buffalo district VHF stations are using vertical polarization, should be inducement for many Ontario stations anxious to work across the border, to reconsider the situation. The CAROA Field Day Trophy, donated by the Canadian National Carbon Company, and which was won by this club, is to be circulated amongst the members who attain the highest contest score in any month. Ve3AIB, Les Weir, Ontario winner of the A.R.R.L. VHF Sweepstakes, holds the cup for the month of February.

The regular meeting of the Wireless Association of Ontario was held Feb. 10, and A. Kufluk, Ve3SS, gave an interesting and informative address on the theory of oscilloscopes and their use in checking modulation in amateur transmitters. Mr. Kufluk's lecture was followed by a demonstration on two oscilloscopes, one set for modulated-envelope pattern and the other set for trapezoid pattern. An amateur transmitter was used to simulate every imaginable type of distortion and other indicatable condition. A lively discussion period followed his lecture. Nominations were held for the general election to be held at the March meeting.

The Toronto Amateur Radio Club held a social meeting at their January meeting and discussed plans for the A.R.R.L. annual Field Day.

CAROA—from page 5

agement we now have an office manager devoting half days and the service of a full time stenographer. An advertising manager unencumbered by other association duties has been engaged.

CANADIAN AMATEUR OPERATORS' ASSOCIATION

BALANCE SHEET as at December 31, 1947

ASSETS

Capital Assets—	
Furniture, Fixtures, etc. (less depreciation)	\$ 64.50
Current Assets—	
Inventory, lapel pins, etc.....	\$161.00
Accounts receivable (less allowance for doubtful accounts)	855.25
Drawing account	69.80
Cash	839.64
	<hr/>
	\$1,925.69
Prepaid purchases	1.17
	<hr/>
	\$1,991.36

LIABILITIES

Food for Britain donations.....	\$ 16.75
Accounts payable	1,389.48
Income tax deductions.....	12.50
Donations	2.00
Surplus—	
Surplus at Dec. 31/46 adjusted to date.....	\$ 1.67
Surplus for 1947.....	568.96
	<hr/>
	570.63
	<hr/>
	\$1,991.36

THE CANADIAN AMATEUR RADIO OPERATORS' ASSOCIATION

REVENUE AND EXPENDITURE STATEMENT FOR YEAR 1947

Advertising Sales (less commissions)...	\$8,623.67
Membership dues (less commissions)...	1,564.25
Lapel pin sales (less cost).....	43.50
	<hr/>
Total revenue	\$10,231.42

EXPENDITURES

General expenses	\$9,326.96
Operating surplus	\$ 904.46
Discounts allowed	92.03
	<hr/>
Net operating surplus.....	\$ 812.43
Adjustments of prior periods.....	243.47
	<hr/>
Earned surplus as per balance sheet	\$ 568.96

Now . . . heavy duty Features in new small

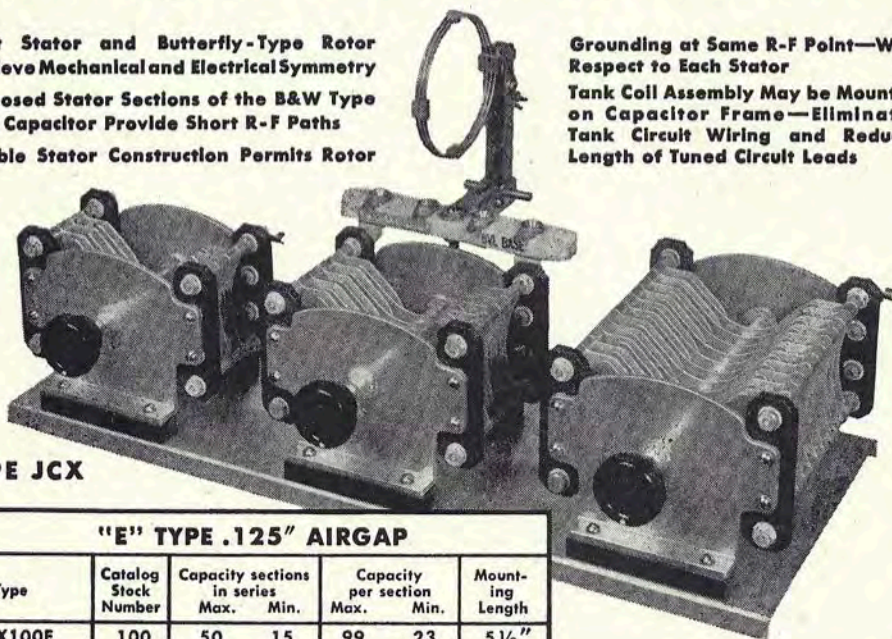


BUTTERFLY VARIABLE CAPACITORS

No other Capacitor of this size offers all these features!

Split Stator and Butterfly-Type Rotor Achieve Mechanical and Electrical Symmetry
Opposed Stator Sections of the B&W Type JCX Capacitor Provide Short R-F Paths
Double Stator Construction Permits Rotor

Grounding at Same R-F Point—With Respect to Each Stator
Tank Coil Assembly May be Mounted on Capacitor Frame—Eliminates Tank Circuit Wiring and Reduces Length of Tuned Circuit Leads



TYPE JCX

"E" TYPE .125" AIRGAP						
Type	Catalog Stock Number	Capacity sections in series		Capacity per section		Mounting Length
		Max.	Min.	Max.	Min.	
JCX100E	100	50	15	99	23	5 1/2"
JCX50E	101	25	10	42	13	3 3/4"
JCX25E	102	16	8	25	10	2 3/4"

Now—the popular B&W split stator, butterfly type of variable condenser construction has been adapted to small, compact units for medium power stages of up to 250 watts.

Having just 25% of the frontal area of the famous heavy-duty CX types, these new B&W JC Variable Capacitors are ideal for triode or tetrode stage plate circuit applications where modulated plate voltage

does not exceed 1250 volts and unmodulated plate voltage 1500 volts.

Featuring stainless steel shafts, heavy, rounded aluminum plates and high quality insulating materials, these new B&W Butterfly capacitors bring top features . . . top performance to the amateur who is looking for peak efficiency in low and medium power transmitter stages. Write for complete details.

BARKER & WILLIAMSON, INC.

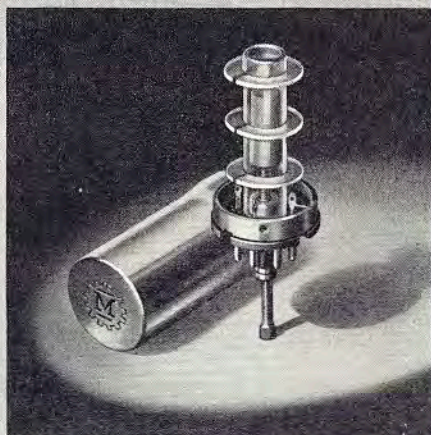
237 Fairfield Ave., Dept. XL-38, Upper Darby, Pa.

Canadian Representative: WM. F. KELLY CO., 1207 Bay St., Toronto

Designed for



Application



**The No. 74001
Tunable Coil Form**

Another new Millen "Designed for Application" product is the No. 74001 permeability tuned, shielded plug-in coil form. Standard octal base of low loss mica-filled Bakelite, polystyrene 1/2" diameter coil form, heavy aluminum shield, iron tuning slug of high frequency type, suitable for use up to 35 mc. Adjusting screw protrudes through center hole of standard octal socket. Special extension terminals facilitate connection to base pins.

**JAMES MILLEN
MFG. CO., INC.**

MAIN OFFICE AND FACTORY
**MALDEN
MASSACHUSETTS**



HAM-ADS

Copy for Ham-Ads must be received before the tenth of the month preceding issue. Rate is 25 cents per line.

FOR SALE — 6L6-807-35T, complete without power supply. Suitable 200 watts CW. \$50.00. Apply CAROA Hq., MI. 8235.

OUR SINCERE THANKS to the following for donations to the Scarboro Amateur Radio Club: CAROA, Hefco Agencies, A and A Radio, Canadian Electrical Supply Co., Wholesale Radio Co., Canadian Radio Supply Co., Radio Trade & Supply Co., Sangamo Electric, Canadian General Electric Co. Ltd., Canadian Westinghouse Co. Ltd., Canadian Marconi Co., Rogers Majestic Co., Canadian Astatic Ltd., Electro Voice Sound Systems, General Radionics, Anthony Foster Ltd., Free-Lance Photographers.

FOR SALE—Xmtr, 100 watt CW; rcvr R1155 (converted), Stark 955 Tube Tester, all my stock of hundreds of parts, incl. relays, tubes, etc. Write for list. First \$200 cash takes the lot. Must sell. VE3AJV, S. L. Dicken, Central Patricia, Ont.

QSLs for discriminating hams. Distinctive! Colorful. Highest quality! \$1.50 per 100. Samples 10 cents. VE3QS Print, 344 Pape Ave., Toronto.

FOR SALE—Millen Exciter, with tubes and coils for 10 and 20, \$40. Ve3BDI, GL. 0929.

SELL Hallicrafters S40, 25-cycle, A1 condition, \$125; also BC348R, converted, with extra audio stage, crystal and all tubes, no power supply, \$85. All terms cash F.O.B. F. Solomon, VE3AGX, 372 Pilkington St., Thorold, South, Ont.

100 Kc Bud FCC90 Frequency Calibrator, nearly new, \$10 F.O.B. takes it, or will swap for plate transformer, 1250 to 1500 volt at 300 mils. V. Oliver, VE3AXO, P.O. Box 236, Dryden. Ont

WE NEARLY FORGOT

to remind you of the B.E.R.U. Contest announced in last issue. Review the rules and send for your entry blank to CAROA. Good luck.

**JAMES MILLEN MFG. CO.
INC.,** Products are represented in Canada by

**THE
ASTRAL ELECTRIC CO.
56 Wellington E., Toronto, Ont.**

...Spots Before Your Eyes



Oh me! Oh me! What will my frequency be? Do you have spots before your eyes and kilocycles on the brain? The best cure for instability—sometimes known as "where-am-I-hope-it's-in-the-band" — is positive CRYSTAL CONTROL WITH PRs! Yes, PR Precision CRYSTALS give you peace of mind, because when you have a PR in your rig you KNOW WHERE YOU ARE . . . and your friends do, too! You can get PRs at your jobber's for the exact frequency

you want (integral kilocycle) within amateur bands at no extra cost! Tens of thousands of amateurs all over the world use and boost PR Precision CRYSTALS for accuracy, stability, low cost, dependability and activity. They're unconditionally guaranteed. —Petersen Radio Company, Inc., 2800 W. Broadway, Council Bluffs, Iowa. (Telephone 2760)



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<p>10 METERS PR Type Z-5.</p>	<p>Harmonic oscillator. Ideal for "straight through" mobile operation. High activity. Heavy drive without damage in our special circuit.</p>
<p>20 METERS PR Type Z-3.</p>	<p>Harmonic oscillator. Low drift. High activity. Can be keyed in most circuits. High power output. Just as stable as fundamental oscillators.</p>
<p>40 & 80 METERS PR Type Z-2.</p>	<p>Rugged, low drift fundamental oscillators. High activity and power output with maximum crystal currents. Accurate calibration.</p>

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Here at last is *concentrated* power—
not space-wasting bulk and weight.
Neat and marvellously compact,
this No. 758 "Mini-Max" Battery
Pack is 'the lightweight champion
with the heavyweight punch.'

For carry-home convenience, easy
installation, and economical per-
formance . . . make this lightweight
champion your choice in radio
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