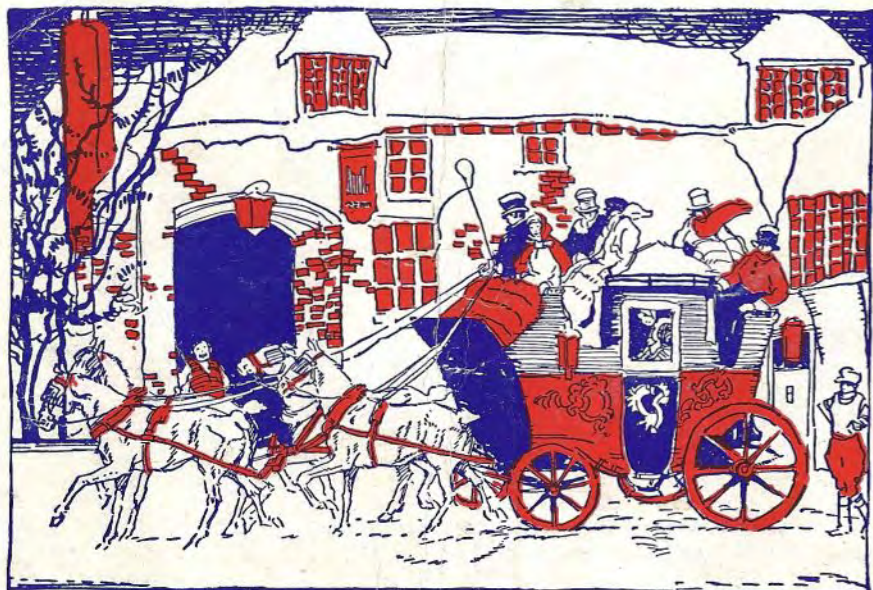
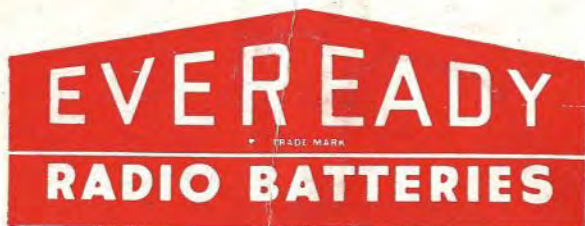


A
MERRY
CHRISTMAS

To all our VE Amateur Friends



And a Log book full of DX contacts
and pleasant QSOs in 1947.



XIAL

1946
Vol. 8 No. 10

for the
radio
amateur

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232 Benson Ave.,
Toronto 10, Ont.

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7mm.
Gordon Snow VE3ACL
Bob Macdonald VE3APS

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from the Gang at Headquarters

Al Gillie VE3AZI
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 (2) Plate 1250V 250 MA. Screen 350V 32 MA.
 (3) Plate 1000V 200 MA. Screen 300V 24 MA.
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Other Types of Plate and Screen Modulation Transformers

TYPE 2065 (Modulating Two 807's)
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 (2) Plate 500V 100 MA. Screen 275V 5 MA.
 (3) Plate 450V 100 MA. Screen 225V 5 MA.

*When only 30 Watts Audio Output are needed, 6L6's or 807's will give sufficient power at pri. impedances shown.

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 (2) Plate 1750V 175 MA. Screen 400V 16 MA.
 (3) Plate 1500V 150 MA. Screen 350V 16 MA.
 (4) Plate 1250V 125 MA. Screen 300V 12 MA.

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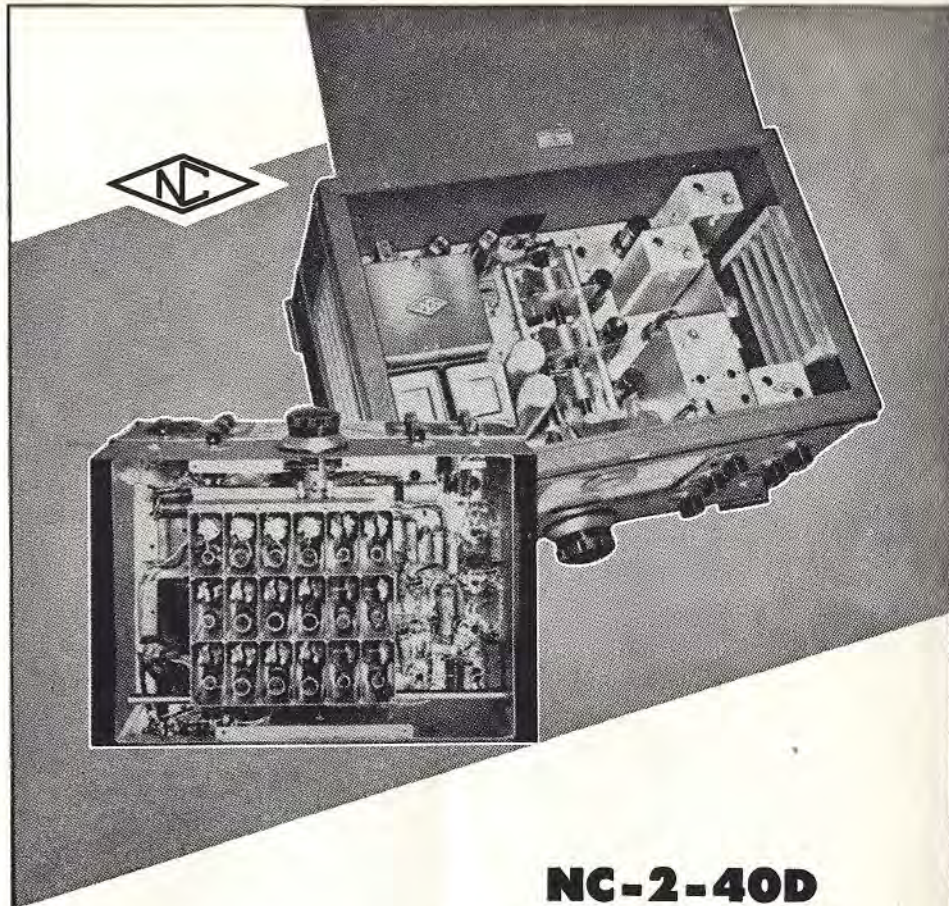
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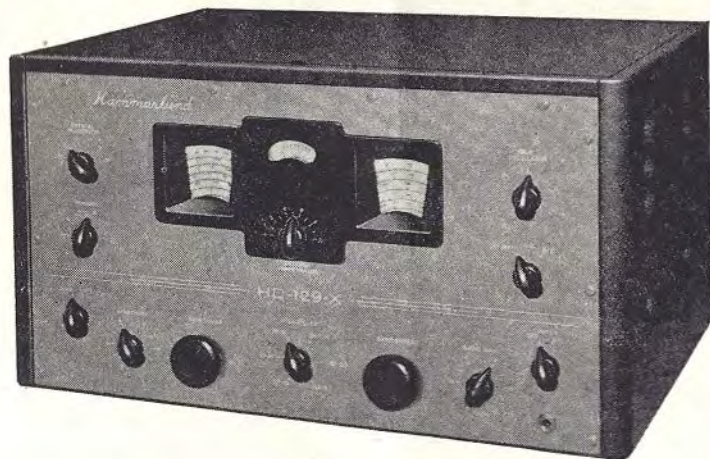




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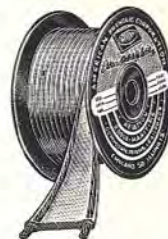
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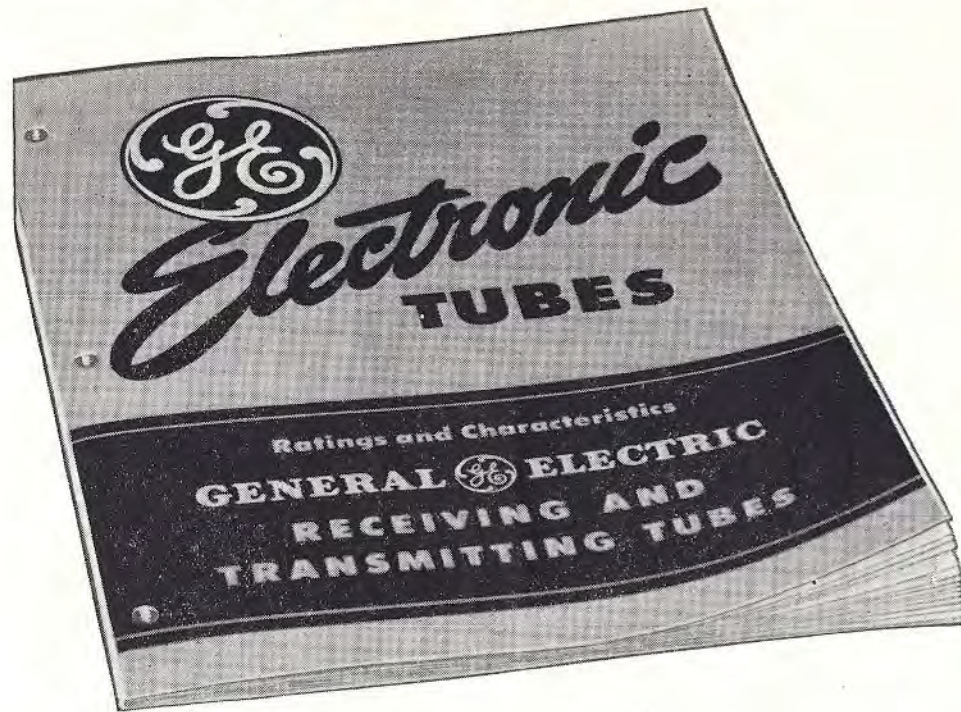
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XTAL
 [C R Y S T A L]

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 NO. 10

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I HEARD the bells on
 Christmas Day
 Their old, familiar
 carols play,
 And wild and sweet
 The words repeat
 Of peace on earth, good-
 will to men!

LONGFELLOW—
 Christmas Bells

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... the CGM is the ARRL ...

IN OTTAWA, in Washington, in Rio, in Cairo, Canadian amateurs are officially represented by the American Radio Relay League. This arrangement has existed for several decades and has always enjoyed the approval of a majority of VE's. To the best of our belief, that approval has not yet been withdrawn, despite the erroneous impression which prevails here and there that the birth and growth of the CAROA indicates that the arrangement is no longer satisfactory. We have made it plain (July-August XTAL, page 6) that if any change is desired, Canadian hams are at liberty to request it, but we also pointed out that the subject should not receive too serious consideration for several years at least.

In the meantime, and until those sections of the League by-laws which have reference to the Canadian Section of the League are amended, the ARRL will continue to act as custodian of Canadian amateur interests. This is quite fitting and proper when it is considered that those by-laws were enacted at a time when there was no national organization in existence in Canada. As a consequence, Canadian Official Quarters have deemed the League to be the authorized representative of amateur radio in the Dominion. Sound prudence dictates that they should continue to do so until the League and some exclusively Canadian organization of national calibre shall, by an amicable and complete accord, agree that the burden of Canadian representation shall be assigned to, and accepted by, the Canadian organization. The day has not arrived when that procedure would be appropriate, and CAROA does not withhold the fact. We admit our present inability to assume the mantle of responsibility which the League by-laws clearly anticipated would some day be handed down to some Canadian organization. We can only hope that, in co-

operation with CAROA, the ARRL will continue to serve Canadian interests with the sincerity and zeal suggested by its by-laws. In the light of the above, it is the duty of every ham privileged to sign the prefix VE to see to it that we are represented with the maximum usefulness and efficiency. Right now we are engaged in electing the Canadian General Manager for the next two years, and while nominations may have closed by the time you read this, you can still vote intelligently. In this connection we have a few rags to chew.

In the first place, we often wonder if Canadian amateurs realize just how the Canadian section of the League functions. Most of us, when we stop to consider the matter at all, probably regard the Canadian General Manager as just another ARRL Director. He is, of course, but he is much more than that; to a very great extent the CGM is the ARRL in Canada. It is true that many decisions affecting us originate in West Hartford, but few if any of them are prejudicial to our national interests, and in the main Canada still retains her status as a separate entity. That we are free to make basic policy decisions of our own is illustrated by the fact that we have certain phone privileges not possessed by the U.S.A. and which would probably not be approved by that country if the decision were in her hands. The responsibility for our affairs, therefore, which is in the hands of the CGM, is greater than that shouldered by any of the Directors in the States. Reference to the Constitution and By-laws of the ARRL corroborates this fact: for example, By-Law 7, which states that SCM'S are responsible to and report to the Communications Manager, except in Canada where they are responsible to the Canadian General Manager. By-Law 9 points out that nominations and ballots for SCM'S are forwarded direct to the Com-

QSY to page 26

Mathematical Great Circle Calculations

by W. H. Anderson*

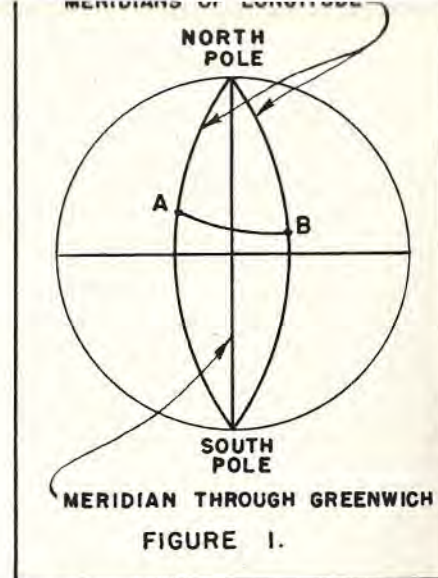


FIGURE 1.

REFERRING to Fig. 1 and comparing it to a globe should one be at hand, P is a pole (either north or south) and A is one point, possibly the latitude and longitude of your own location, and B is the other point of known latitude and longitude, the direction and distance to which are the required quantities. By joining these three points, a triangle will be formed. Now it can be seen that the angle at the pole will be equal to the angle between the meridians on which the points lie, in other words the difference between their longitudes. In radio work, this will never ordinarily exceed 180 degrees as the shorter distance around is generally calculated. In Fig. 1, this angle will be equal to 150 degrees as the longitude of A is 80° W. and that of B is 70° E. Should both be east or both west the numerical value of the angle would be obtained by subtraction. Inasmuch as the latitudes of A and B are known, in other words their distances from the equator, and also since the equator is 90 degrees from the poles, the sides PA and PB of the triangle may be computed. Should both latitudes be south or both north merely subtracting the latitude from 90 degrees will give sides PA and PB, but should one be south and the other north, obviously 90 degrees will have to be ADDED to latitude of one, in order that sides PA and PB will both be referring to the same pole.

*TCA, Moncton Airport, Moncton, N.B.

Now presuming the correct values for angle APB and sides PA and PB have been found, calculations toward the solution of the triangle may begin. For this purpose a set of tables of logarithms of functions of angles will be required. These may be found in appendices of most algebra and trigonometry texts, or
The formulae for the calculations are: in separate sets of mathematical tables.

$$\begin{aligned} \text{Tangent } Z &= \text{Tangent } PA \times \text{Cosine } APB \\ \text{Angle } Y &= \text{Side } PB \text{ minus } Z \\ \text{Cosine } AB &= \text{Cosine } PA \times \text{Secant } Z \times \text{Cosine } Y \\ \text{Sine } PAB &= \text{Sine } PB \times \text{Sine } APB \times \text{Cosecant } AB \end{aligned}$$

Without going into the fundamental trigonometric theorems involved, the following rules obtain:

1. The value of the logarithm of a function of an angle over 90 degrees equals the logarithm of the function of 180 degrees minus that angle. E. G. Log Sine 140 degrees equals log sine (180-140) 40 degrees. This may be said to hold true for all other functions such as tangent, cosine, etc. as far as these formulae are concerned. Obviously this will create ambiguity as to whether to make Z, AB, etc., when found, as being more or less than 90°.
2. Take all answers as being less than 90° except: (a) Z is greater than 90° whenever APB is greater than 90°. (b) AB is greater than 90° whenever Z is greater than 90° unless Y also happens to be greater than 90°.

3. When computing PAB, the correct value may be noted by reference to the fact that, for instance, if AB is greater than PB which in turn is greater than PA, then angle APB will be greater than angle PAB which in turn will be greater than angle PBA. In mathematical language—the order of magnitude of the angles of a spherical triangle is the same as the order of magnitude of the sides opposite the angles.

4. The above rules make it possible to treat minus angles, when encountered, as positive, without error.

The numbers in parentheses after calculations below refer to the above rules.

The ensuing examples illustrate most of the possible sets of conditions encountered in applying these formulae, and should be readily followed even by those unfamiliar with trigonometry or logarithms.

Case 1:

A is New York, N.Y. Latitude 40° 40' N., Longitude 73° 45' W.

B is San Francisco, Calif., Latitude 38° 29' N., Longitude 123° 23' W.

Then PA=49° 20' (90° minus Lat. B)

PB=51° 31' (90° minus Ltd. B)

Angle APB=49° 38' which is difference of longitudes since both are West. Note that in order to subtract in this instance, it is necessary to convert 123 23' to the exactly equivalent value of 122° 83'.

Log Tangent 49° 20'=10.06594

Log Cosine 49° 38'= 9.81136

19.87730

Since these are logarithms, they are added. Then disregarding the figure two places to the left of the decimal point, in this case (1), and looking up the angle whose log tangent is 9.87730, Z is established as 37° 1'.

Y will then equal 51° 31' minus 37° 1' or 14° 30'.

Log Cosine 49° 20' = 9.81402

Log Secant 37° 1' =10.09775

Log Cosine 14° 30' = 9.98594

Adding (disregard tens) 9.89771 From

Log Cosine Tables AB = 37° 48'.

Log Sine 51° 31'= 9.89364

Log Sine 49° 38'= 9.88191

Log Cosecant 37° 48'=10.21261

9.98816 From

Log Sine Tables, PAB=76° 41'.

In the subsequent illustrations, the same general methods are followed, so the explanatory notes have been, for the most part, omitted.

Case 2:

A is Los Angeles, Calif., Lat. 34° B' N., Long. 118° 15'.

B is Strait of Gibraltar, Lot. 35° 53' N., Long. 5° 42' W.

PA= 55° 57' PB=54° 4'

Angle APB=112° 33'.

Tan PA 10.17020

Cos APB 9.58375

9.75395 Z=150° 26'(Rule 2A)

Y= -96° 19' (4)

Cos PA 9.74812

Sec Z 10.06059

Cos Y 9.04149

8.85020

AB=85° 56' (2B)

Sine PB 9.90860

Cosec AB 10.00109

Sine APB 9.96546

9.87515

PAB=48° 36' (3) (PAB could not be 131° 24' as side AB is greater than PB, therefore angle APB must be greater than angle PAB.)

Case 3:

A is New York, N.Y., Lat. 40° 40' N., Long. 73° 45' W.

B is Rio de Janeiro, Lat. 22° 55' S., Long. 43° 9' W.

PA=49° 20' PB=112° 55'

Angle APB=30° 36'.

Tan PA 10.06594

Cos APB 9.93487

0.00081

Z = 45° 3'

Y = 67° 52'

Cos PA 9.81402

Sec Z 10.15089

Cos Y 9.57607

9.54098

AB = 69° 40'

Sin PB 9.96429

Sin APB 9.70675

Cosec AB 10.02794

9.69898

PAB = 150° 0' (3) (PB is much greater than AB, therefore angle PAB will be much greater than angle APB.)

Case 4:

A is New York, N.Y., Lat. 40° 40' N., Long. 73° 45' W.

B is Auckland, N.Z., Lat. 41° 18' S., Long. 174° 51' E.

PB = 131° 18'

APB = 111° 24'. APB may be calculated

that there are 90° between each pair of adjacent cardinal points on the compass such as north and east, south and west, etc. Similarly if B is east of A then angle PAB will be measured east of true north. If (see Case 4) an antenna in New York were desired to be oriented on Auckland, N.Z., its major lobe should point 114° 24' west of true north, which is equivalent to stating 24° 24' south of west.

Tan PA 10.06594

Cos APB 9.56215

9.62809

Z=156° 59' (2A)

Y=25° 41' (4)

Cos PA 9.81402

Sec Z 10.03755

Cos Y 9.95482

9.80639

AB=129° 49'

Sin PB 9.87579

Sin APB 9.96898

Cosec AB 10.11458

9.95935

PAB = 114° 24' (4). (PB is slightly greater than AB, therefore angle PAB will be slightly greater than angle APB.)

When the above method becomes familiar, a somewhat simpler version of the same formulae may be used and thereby eliminate a few calculations. Letting Lat. 1 and Long. 1 represent Latitude and Longitude of point A, and Lat. 2 and Long. 2 represent point B, the above formulae may be rewritten thus:

Tan Z=Cotangent Lat. 1 Cos (Long. 1—Long. 2)

Y=90°—Lat. 2—Z

Cos AB=Sin Lat. 1 Sec Z Cos Y

Sin PAB=Cos Lat. 2 Sin (Long. 1—Long. 2) Cosec AB.

Assuming AB and PAB have now been computed. To find the great-circle distance from A to B, take the value of AB and reduce it to minutes. e.g. from Case 1, AB=37° 48'=37 x 60 plus 48 or 2268 minutes. One minute on the earth's surface equals one nautical mile, and a nautical mile equals 8/7 of a statute mile, so great circle distance from New York to San Francisco will be 2268 x 8/7 or 2592 statute miles. The longer distance around could be found by subtracting the value of AB from 360° and reducing this angle to miles as outlined above.

If the point B under consideration lies west of point A, then the angle PAB will be the angle west of true north that the line of direction AB takes upon departing from A, incidentally bearing in mind

that there are 90° between each pair of adjacent cardinal points on the compass such as north and east, south and west, etc. Similarly if B is east of A then angle PAB will be measured east of true north. If (see Case 4) an antenna in New York were desired to be oriented on Auckland, N.Z., its major lobe should point 114° 24' west of true north, which is equivalent to stating 24° 24' south of west.

A number of other methods and systems are available, possibly the best among these is the method described in H.O. 211 mentioned below. For those desiring an exposition of the fundamentals of the procedures used, the texts below should be of assistance.

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- Practical Air Navigation—Lyon. Superintendent of Documents, Washington, D.C.

Q V E

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Membership in the CAROA is not limited to licensed amateurs. Associate membership is available to anyone interested in our activities. The fee is the same as for full members.



Season's Greetings

'Twas the night before Christmas

by Eric Adams, VE3ALG

CHRISTMAS should be a happy time and it would have been if it wasn't for that guy Gus Belcher. I suppose Belcher is okay when you get used to him. It's just that I'm not used to him. He comes around about four times a year which is exactly four times too many as far as I'm concerned and whenever he shows up something drastic happens.

The first time I saw him was just after I'd worked him on the air. He dropped over and five minutes after he'd been in the shack he sat on an 813 I'd parked on a chair for safety. Naturally it finished the 813 but it didn't seem to bother Belcher. He didn't have to pick out any bits of glass or anything. That's one of the things that gets you about the guy. Everything seems to turn out alright for him. It's just the other fellow who suffers.



"... didja see the handle fly off'n that meter?"

I guess it was during his third visit that he wrecked my analyzer while checking a circuit in a portable rig he'd built. "My gosh," was all he said, "did you see the way the hand flew off that meter?"

Luckily I hadn't. It was a sight I don't think I could have stood and when Belcher, on his next visit, merely blew a couple of fuses I was so relieved that I began to believe that this idea of him bringing bad luck was just superstition. Nevertheless, when he showed up on Christmas Eve I couldn't help feeling a bit apprehensive. However, it being the season for good cheer and good will and all the rest of it I extended a welcom-

ing hand and after murmuring a brief prayer urged him to sit down and tell me what was doing.

We chewed the rag about DX and new rigs and receivers. Belcher, as usual, had been having all sorts of good luck. He'd just finished getting WAC, he'd bought a swell new receiver and the boss had promoted him and raised his pay. That's the way it always seemed to be with Belcher. Life was a series of cheerful and lucky events. Nothing ever went wrong. It was only guys who came within shouting distance of him that had things happen to them.

Just as I was all set to tell Belcher about my new antenna, mother came into the shack. Mother thinks Belcher is all right. He is a very polite sort of bird and since she has no 813's for him to sit on I guess it's hard for her to see things my way. Belcher leapt to his feet and although he knocked his chair over I caught it in time to keep it from busting a meter on the front of my rig.

Belcher was bowing to mother and after a few minor preliminaries I heard her say brightly, "Oh, Mr. Belcher, you'd be just the person to play Santa Claus at the children's party downstairs. Do you think you'd mind?"

It turned out that some old guy who was going to take the part of Santa Claus at my kid sister's party had failed to show up. Mother didn't want to let the kids down and she was coming up to see if I'd take over with an old Santa Claus outfit we had. But when she saw Belcher's somewhat bulky figure he seemed a natural for the job and I can tell you that I didn't mind. I felt no urge to run around the living room in a lot of red flannel and a phony beard and it also occurred to me that it was a swell way to get Belcher out of the way. Not having any of my rig in the living room it was pretty hard to see how he could wreck anything. I was all for the idea and moments later when Belcher said he'd do it I applauded heartily. There was always the chance that he'd acci-

dentally kick some kid in the teeth, of course, but if he did, mother would see what I meant and anyway, I guess Santa Claus can get away with a lot.

"It's very simple," mother was saying brightly. "After you put on the costume we'll get the children out of the way and you can slip into the living room and hide in the big fire place. When they're back playing again you just step out and give them the presents we've got."

The way she said it you'd think nothing could go wrong. But that wasn't making allowances for the fact that Belcher was mixed up in this thing. Anyway, I wished him well and urged him on his way. "Don't bother hurrying back," I told him. "Take your time, Gus. Give the kids a big show."

"Okay," he told me. He waved a fat hand and disappeared with mother and I went back to the rig. DX was pretty good and it wasn't very long before I forgot all about Belcher and the Santa Claus act. I remember glancing at the clock and figuring that it was just about time for Belcher to be starting his show. I hoped he'd make it last a long time for the benefit of everybody. Then I heard an LU calling CQ and I went after him. He was very close to my kc and with my new beam I figured I had a good chance. This new beam of mine was a rotating job run by a motor and while I was waiting for the LU8 to stand by I swung it around and got all set.

Then a funny thing happened. There was a sort of a chirp and all the sigs dropped about five R's. The LU8 disappeared altogether and just as I was trying to figure it out I heard the kids in the living room start to laugh and yell. Some of them were squealing and all in all there was an awful racket. It sounded like 40 meters on Saturday night and I figured Belcher was really putting on a good show.

But moments later mother came running into the room. "Oh, my goodness," she cried. "Mr. Belcher fell down the chimney. I do hope he hasn't hurt himself."

I gagged slightly and my brain whirled. I recalled the strange disappearance of the sigs on my receiver just after I rotated my beam and a rather nasty thought came to mind. I shut my eyes and counted to ten, then I asked mother what the devil Belcher was doing on the roof and just where he'd been.

"It seems he wanted to put on a good act," she told me. "Before I realized what he was planning he'd gone up on the roof and was all set to come down the chimney. He was standing on the edge of it, he says, when something swung around and hit him and knocked him in head first. That's the way he explains it."

"So that's the way he explains it," I murmured. "Well, well, well."



"... Mr. Belcher fell down the chimney."

"Now don't lose your temper," mother said hastily. "Mr. Belcher grabbed some stick up on the chimney but it broke and that's why he fell."

"Some stick!" I roared. "That's part of my beam antenna. I mean it was part of it."

"Now sit down," mother told me. "You're not going downstairs and spoil things. Mr. Belcher is putting on a very good act and the children love it."

That's about all there is to tell. Belcher came upstairs afterwards and of course mother was there smiling at him. "You were wonderful," she cried. "I'm sure no one else could have handled it the same way."

"I'm sure no one else would have wanted to," I added coldly.

Belcher cautiously pulled stray bits of cotton off his face. "Awfully sorry about your antenna, old boy," he added brightly.

"When I fell into the chimney I grabbed at it and it sort of snapped."

"Yes," I said, "it wasn't very strong. I hadn't figured on Santa Claus when I put it up, you know."

"It just shows what can happen," said Belcher thoughtfully.

He struggled into his overcoat and said goodbye to my mother. Then he

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C A R O A NATIONAL REPORT

Greetings from Ontario's SCM, A.R.R.L.

GREETINGS to all VE3 hams from your new ARRL SCM. I sincerely appreciate the honor bestowed upon me by the boys who nominated me for the position, and consider it a privilege to represent the ARRL in the province of Ontario.

I wish at this point to congratulate the boys of the CAROA for the magnificent job that they are doing for the Canadian Amateurs, and to state that the CAROA and ARRL are co-operating 100% concerning certain matters common to both organizations.

When one looks back to the days of '21-'22, when I started in the game, with the galena crystal and oatmeal box coil forms, along with spark coils and cage antennae, etc., one wonders how QSO's were ever made. That, however, is what makes good hams, making the most out of the least equipment available. Any one can work DX with a KW, but my hat is off to the lads who concentrate on efficiency and low power, and work the DX just as well as the KW boys.

Now that we have all our 7 and 14 mc bands back, with 14 mc phone frequencies of 14150-300 kcs, it behooves us to watch our operating practices. Phone men, don't let that rig splatter away down into the CW frequencies, as the CW boys already

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VE1

DCM—R. J. Hesler, VE1KS, Sackville, N.B.—The newly-formed Lakeburn Amateur Radio Club recently held a social evenin, the highlight being a very enjoyable visit by the Sackville gang and their XYL's. Seventeen in all braved very inclement weather to be with them for their regular meeting of Nov. 4th, and included QF, KC, HF, JU, SH, KS. The visitors on arrival were conducted through the TCA and DOT offices at the nearby airport, where they received some idea as to how an airline and its associated functions operate. The meeting then convened at the Lakeburn Community Hall where Ex G8 "Tug" Wilson presented a very interesting talk on antennas. TN gave a very interesting demonstration on the wire recorder. RE is getting Hi Power lined up (this means more than 6 watts). QT's latest baby is two tube V.F.O., still active on 80 and also handles TFC. PA is bedridden at time of writing and hope Hec. will be up and at em on 20 and 80 soon. QS busy de-fleaing the bugs in his new home-brew 16-tube super., has 3 element on 10 doing nicely. ST (still trying) should be on 40 and 20 by Xmas (1947). BF working fb DX with RE's xtal—that's what lend-lease does. TN old reliable Tommy gets paniky when he can't sked KS in Sackville, and keeps busy in his spare time as BCL investigator "Dogpatch". GI was a recent visitor at the L.A.R.C. meeting. JO is on 75 phone. IZ got his oscilloscope working. IE has 500 watt "rockerusher" working on 75 phone. MA has 10 meter three element beam practically completed. LG has his new Meissner xmtr on the air on 75 and really puts out a fb signal. SY has new S 40 receiver. KC active on 20 and ten. BC and OW have new TEMCO xmtr on the air. NZ putting a fb signal around on 75 lately. JU rigging up his xmtr and sky hook for winter season on 75. MA recently caught a wildcat while on a hunting expedition—who shot it Harry while you were up in the tree? 73—Ron.

VE2

DCM—C. W. Skarstedt, VE2DR, Montreal, Que.—At the moment of writing the perspiration is still flowing freely after the first gruelling week-end of relentless SS'ing. For some reason or other this Section does not take much interest in this contest. Let us hope that the big event of the year, the VE/W contest, some time in the early spring, will stir the competitive spirit of the gang. Needless to say a contest is a prime opportunity to test both station and operating skill. It gives you an exceptional chance to really prove the qualities of that new beam you have erected. This report as you might have noticed by now (if you've gotten this far) is lacking in the usual "Jack did this" and "Jill did likewise" sort of stuff. Reason? Obvious. No reports from you. Not even our usually dependable roving reporter has come through with his interesting provincial report. Please, fellows, a little more co-operation, if only a few crumbs. So instead of gabbing about all the nice and nasty goings on on the air these days, let us instead grasp this golden opportunity to wish you all the very best during Christmas, and of course may the coming new year bring you all sorts of added DX and enjoyment with all those mighty 100th's, etc., that the understanding XYL no doubt will slip quietly under the tree on Xmas eve. Yes, sir, being married for countless years ourselves we know exactly what is in store; there'll be plenty of nice big bottles but they won't emit anything but gurgles and hiccups.

It is a pleasure to announce that the Montreal CW Flight of the APARS is "struggling" ahead. The cited word is used purposely. It has not been a rose-covered path, but gradually the boys seem to realize that perhaps here is something after all. Let us remember that before the war under the excellent guidance of the late John Stadler (VE2AP) every effort was expended to interest one of the Services in the usefulness of Ham

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DEPT. OF TRANSPORT REGULATIONS

Frequencies now authorized.

WE HAVE had, from time to time, requests for the following pertinent information. The Department of Transport, Radio Division releases these regulations covering Canadian Amateur Experimental Station Frequency Bands as of November 2nd, 1946. Note carefully.

(b) The transmitter shall be of a type which is preferably crystal or which has a stability and constancy comparable to that of a crystal controlled oscillator.

(c) The modulation system shall be so designed and operated as to ensure intelligible speech, must not in any case

Frequency Bands	Types of Emission
3.500- 3.800 mc/s	A1
3.800- 4.000 mc/s	A1
7.000- 7.300 mc/s	A1
14.000- 14.150 mc/s	A1
14.150- 14.300 mc/s	A1
14.300- 14.400 mc/s	A1
27.185- 27.455 mc/s	A1
28.000- 29.700 mc/s	A1
50.000- 54.000 mc/s	A1 A3
144.000- 148.000 mc/s	A1 A3
235.000- 240.000 mc/s	A1 A3
420.000- 430.000 mc/s	A1 A3
1215.000- 1295.000 mc/s	A1 A3
2300.000- 2450.000 mc/s	A1 A3
5250.000- 5650.000 mc/s	A1 A3
10000.000-10500.000 mc/s	A1 A3
21000.000-22000.000 mc/s	A1 A3

All emissions from Amateur Experimental Stations must be confined within the limits of the bands indicated, including sidebands developed in the modulation of the carrier.

Radiotelephone Transmission (A3)

Radiotelephone transmission (A3) may be used in the following frequency bands subject to the conditions indicated hereunder:—

3.800- 4.000 mc/s (a) (b) (c) (d) (e)
14.150-14.300 mc/c (a) (b) (c) (d) (e)
27.185-27.455 mc/s (a) (b) (c) (e)
28.000-29.700 mc/s (a) (b) (c) (e)

(a) The station shall at all times be equipped with a reliable frequency meter and a visual means of indicating over-modulation.

exceed 100 percent., and must not disturb the frequency stability of the transmitter.

(d) The licensee shall have been the holder of an Amateur Experimental Station License for at least two years, during which period his station shall have been in active operation on either CW (A1) or telephone (A3).

(e) The retransmission of signals from a station with limited telephone privileges, on a restricted band, is prohibited.

Note—Licensees desiring authority to use radiotelephony in the above frequency bands must submit application to the nearest District Radio Office.

No restrictions are placed on the use

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VE1PN—RCAF Ham Shack at Dartmouth, N. S. Partially hiding the AT3 and grouped from left to right are John McMahon, Bus Lowden, Eric Ulvaan, Dawson King, Frank Laborgne, Jack Hart, Del DeLong, Ed Edey and Alf Brooks. Behind the lens and not pictured was Dave Harvey VE3DN.



JOHN BEARDALL'S VE3MJ is little brother to CFCO in Chatham, also owned by Mr. J. B. Ham rig fed CBC with tornado news during Windsor disaster. Formerly VE9AT, John is one of Canada's pioneer Amateurs.

★ . . . SPEAKING OF

PICTURES . . . ★



John Paddon ex G2IS, now VE3BLZ caught by ye Ed's Camera while operating VE3HC.



ZB2A—Station of RAF's chief signals officer at Gibraltar. 10 and 20 meter boys are working Cyril, Les, Bob or Des, quite regularly.



VE3GT at 3 o'clock in the morning during the Field Day activities. 3TB and 3QK repose in tent while Sam CQs and freezes.

Bob Declerk VE2OG, Montreal, and his modern Ham shack, during a visit there by Rupert K. Grant, VE2QQ, Montreal. The log shows thirty-two countries worked since the bands were returned.



Amateurs . . . your Simpson Panel Instrument Catalogue

(Remove and File for Handy Reference)



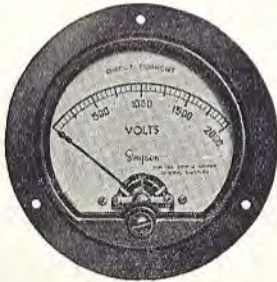
4 1/2" RECTANGULAR Flush Mounting

Case 4 5/8" x 4 1/8"—Body 2 3/4" diameter; D.C.—Model 29, Thermocouple R.F.—Model 39; A.C.—Model 59, Rectifier Type A.C.—Model 49.



3 1/2" RECTANGULAR Flush Mounting

Case 3 7/8" x 3"—Body 2 3/4" diameter. D.C.—Model 27, Thermocouple R.F.—Model 37; A.C.—Model 57, Rectifier A.C.—Model 47.



3 1/2" ROUND

(Open Face Style)—Flush Mounting Flange diam. 3 1/2"—Body diam. 2 3/4". D.C.—Model 25, Thermocouple R.F.—Model 35; A.C.—Model 55, Rectifier A.C.—Model 45.



2 1/2" ROUND

(Shroud Style)—Flush Mounting Flange diam. 2 3/4"—Body diam. 2 11/64". D.C.—Model 126, Thermocouple R.F.—Model 136; A.C.—Model 156, Rectifier A.C.—Model 146.

DIRECT CURRENT

- Microamperes - *25, 50, 100, 200, 500
 Milliampers - 1, 1.5, 3, 5, 10, 15, 20, 25, 50, 75, 100, 150, 200, 250, 300, 500, 750 and 1,000
 Amperes - 1, 1.5, 2, 3, 5, 10, 15, 25, 50, 15-0-15, 30-0-30, 50-0-50 (N.B. Higher ranges available with external shunts)
 Voltmeters - (100 ohms per volt) - *3, 5, *8, 10, 15, 25, 50, 100 (200 ohms per volt) - 150, *200 (500 ohms per volt) - *250, 300 *(1000 ohms per volt) - 50, 100, 200, 300, 500, 1000 *External Multiplier - 1500, 2000, 2500, 3000, 4000, 5000

ALTERNATING CURRENT

(Moving Iron Type)

- *Milliameters - 10, 15, 25, 50, 100, 250, 500
 Ammeters - 1, 1.5, 2, 3, 5, 10, 15, 25, *50 (N.B. Higher ranges available with current transformers).
 Voltmeters (Internal Multipliers) - *1.5, *3, 5, 10, 15, 25, 50, 100, 150, 300
 Voltmeters (External Multipliers) - 500, *750, 1,000

— RANGES —

THERMOCOUPLE R.F.

- Ammeters *(Continuous Duty) - 1, 1.5, 2, 2.5, 3, 5, 8, 10, 15, 20, 25 (Intermittent Duty) - 1, 1.5, 2, 2.5, 3, 5
 *Milliameters - 115, 150, 250, 500 (N.B. 1—Milliameters from 1.5 to 100 available on special order) (N.B. 2—External type Thermocouples available in all ranges)

RECTIFIER (Low Current A.C.)

- *Voltmeters (1000 or 2000 ohms per volt) 1, 3, 5, 10, 15, 50, 100, 150, 300 (Available in 3 1/2" and 4 1/2" sizes only)
 *Milliameters - 1, 2, 5 (Available in 3 1/2" and 4 1/2" sizes only)
 Volume Level Indicators (-10 to -6 D.B.)
 General Purpose - 5,000 ohm for 500 ohm line 2,500 ohm for 500 ohm line
 *High Speed - 5,000 ohm for 500 ohm line
 *Low Speed - 5,000 ohm for 500 ohm line (N.B.—Only General Purpose available in all sizes—others only in 3 1/2" and 4 1/2" sizes)

DIRECT CURRENT GALVANOMETERS

- 75-0-75 Microamperes D.C. Scaled 50-0-50
 500-0-500 Microamperes D.C. Scaled 50-0-50
 NOTES: *1. Available in 3 1/2" and 4 1/2" sizes only.
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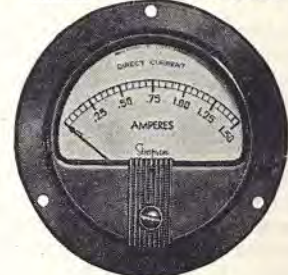
3 1/2" RECTANGULAR Surface Mounting

Case 3 1/2" x 3 7/64". D.C.—Model 275M, Thermocouple R.F.—Model 375M; A.C.—Model 575M, Rectifier A.C.—Model 475M.



3 1/2" ROUND Surface Mounting

Maximum diam. 3 1/64". D.C.—Model 255M, Thermocouple R.F.—Model 355M; A.C.—Model 555M, Rectifier A.C.—Model 455M.



3 1/2" ROUND

(Shroud Style)—Flush Mounting Flange diam. 3 1/2"—Body diam. 2 3/4". D.C.—Model 26, Thermocouple R.F.—Model 36; A.C.—Model 56, Rectifier A.C.—Model 46.

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 Flush Mounting
 Flange diam. 2 3/4"—Body diam. 2 11/64". D.C.—Model 125, Thermocouple R.F.—Model 135; A.C.—Model 155, Rectifier A.C.—Model 145.

2 1/2" RECTANGULAR Flush Mounting

Case 2 3/8" square—Body diam. 2 1/8". D.C.—Model 127, Thermocouple R.F.—Model 137; A.C.—Model 157 Rectifier A.C.—Model 145.



HEADQUARTERS HAPPENINGS

CAROA ELECTIONS. It is set out in the Constitution of your Association (see June, 1945, XTAL) that its affairs shall be administered by duly elected representatives in the democratic tradition. But because we have undergone an uphill struggle to get organized on a paying basis, it has not been found practical to hold elections to date, and the CAROA has been operated in a manner referred to by some people as dictatorial. We trust the dictatorship has been benevolent, and we hope in addition that it will not last much longer, for among those looking forward most eagerly to seeing the control in the hands of a truly representative Directorate and Executive are those individuals listed on page five. One of the problems now confronting us is the need for revision of the Constitution necessitated by our phenomenal post-war growth, with emphasis on the question of representation from the various call areas. A Committee now has this matter under consideration as the first step towards our first election in many years.

DX'ERS OF THE MONTH Starting with the February, 1947, issue of XTAL we shall publish a column listing the DX achievements of Canadian hams in the second month preceding. To be eligible for inclusion, you must have worked ten or more countries (outside of the U.S. and Canada) in the appropriate month. For example, if you work the requisite number of countries in December, send us the details before January 15th for publication in the February issue. The following information must be included: (a) number of countries worked in month, together with prefixes, (b) total number of countries worked since Nov. 15, 1945, (c) your call letters. The Headquarters staff, using the latest ARRL countries list, will pass judgment on debatable prefixes. Honourary mention will be accorded special feats, such as working a PA on eighty, or Byrd's Antarctic Expedition or the like. This will be a continuous contest and a monthly feature in XTAL, so let's find out who is the most consistently DX'er in this country. Remember—December is the month to start concentrating on those elusive stations!

VE3CAR. We have done some testing on 75 meter phone, but operating schedules have not yet been drawn up for our Headquarters station. We are, however, making plans for official broadcasts and other features to be transmitted regularly on all bands, CW and phone. Informal contacts with our members are also in the books and are looked forward to by the gang here. In the meantime, we are also very much indebted to the following firms for their wholehearted co-operation in supplying us with the necessary equipment: Canadian Marconi Company, Communications receiver; Canadian Electrical Supply Company, Microphone and crystals; Stromberg-Carlson Co., Modulation meter; Measurement Engineering, frequency meter; Alpha Aracon Radio Co., semi-automatic key.

FORTY AND TWENTY. As is now pretty general knowledge, these two bands are now available to hams in their pre-war widths, and have been since November 1st last. You may have noticed in our announcement in the November issue that the decision to extend the twenty meter phone band by 50 kilocycles will be reviewed before next year's licenses are issued. This of course refers to the portion between 14150 and 14200 which is now open to Canadian phone but not to American (while 14200 to 14300 is open to both). The CAROA is at the moment in favour of this extension, although it is quite possible that the sentiments of our members may alter our stand before next March. Our current attitude arises not only from the results of our recent survey but from several other factors affecting the problem. The most important of these is the not-to-be-denied fact that the United States telephony sub-assignment governs the way in which every other country in the world divides up its bands between phone and CW. That applies to Canada, too, and explains why we seem to be

preoccupied with phone rather than with continuous wave; it's not because we are unconcerned with what happens to the latter, but because the question of "where to put the phone boys" currently constitutes a problem of international scope. Look at it this way: congested conditions now prevailing in the U.S. result in their phone bands being in a condition which might be termed "saturated." In consequence, phone stations elsewhere in the world refuse to operate on these frequencies, since not only would their signals be inaudible in the States but even local communication would be rendered difficult. The same applies to CW stations. Thus we find the hams of a great many countries taking the view that the bands assigned to American phone are to all intents and purposes useless. Canadians, because of their proximity to the U.S., are no exceptions to this. Assuming a U.S. phone band of 14200-14400 (which is expected to become a reality in a few months' time), VK's, ZL's, VE's etc. are left with 14000-14200 to split up between phone and CW. In the light of this, 50 kc. for Canadian phone does not seem out of place. It should also be borne in mind that this 50 kc. is not closed to CW in the way that 14200-14400 is, simply because the band is not "saturated."

In the meantime, the U.S. phone band is limited to 14200-14300 due to certain legal technicalities, which also are delaying the final answer to the proposed forty meter phone band. We have hopes that Canada can act sooner to open at least a portion of the 100 kc. at the high end of twenty to our phone stations. A Canadian telephony assignment of 14150-14350 would merely anticipate the extension of the American band, and should the latter for any reason remain as it is now, such an allocation would represent a 50-50 division of the band between phone and CW in this country.

QSL BUREAU

Please add the following additional appointments to list of QSL Managers published in November XTAL, page 22: VE1—L. J. Fader, VE1FQ, 125 Henry St., Halifax, N.S.

VE5—Fred Ward, VE5OP, 899 Connaught Ave., Moose Jaw, Sask.

K6, KH6—A. H. Fuchikami, KH6BA, 2543 Namaau Dr., Honolulu.



from the gang

at



Irv.
Sid
Ben
Lou
Andy
Toby
Harry
Bill, VE3SV
Charlie, VE3IM

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CGM—from page 10

munications Manager in the States, but in Canada they are sent to the CGM, who has full responsibility for the management of such elections. Quoting from By-Law 29, we find that "The Canadian General Manager. . . shall be the liaison officer of the League between the Board of Directors and its Canadian members. He shall have general supervision of League activities in Canada, and shall be responsible to the Board of Directors for League welfare in all matters in Canada." It can be seen how he alone must formulate all decisions affecting this country, whether they concern fundamental policy or routine traffic. It should be obvious that his job can't be done efficiently unless he has some co-operation from Canadian hams.

It is our opinion that the CAROA can fulfill a useful function by working hand in hand with the CGM in all matters concerning Canada. In fact, this is probably the only way we can justify our existence, unless we are content to regard ourselves as magazine publishers. The CGM, however, is an individual, not an organization. At the expense of be-

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"ED"

Sez :



WELL, ya ole goat, we haven't forgotten ya down there in the wilds of Toronto. Have been trying to write for a month. Over a month ago we cornered VE3AJP in one of our soothing syrup emporiums and wangled a buck out of him for XTAL. Have been sticking pretty close to 7 mc band of late. Tried twenty a few times and wonder if anyone works out on that band. It seems to be exclusively a fone band from about 14000 to 14400 kc!!!! Even on 40 its getting so a guy can't get clear of fone QRM by operating out of band, hi! Sure wish the B.B.C. stations and those other furiners would find some other frequencies.

If they try to put fones on part of 40 they're sure agonna get a fight outta me. The only way I'd be in favor of letting 'em in wud be after 257.5 yrs. of CW opping.

Ole DU is slipping back into the way of the wicked. Getting out wid 3AQJ es arriving home at 4.30 a.m. of a Sabbath morning.

Jim, 3HI, went into the local dissecting laboratory on the 11th to have the gravel removed from his larynx. We told him long ago that those parasitics were in his throat and not the sig. The way he's been working that DX on fone wid his tight shoe baritone he shud oughtta be able to gso the man in the moon on his return.

Met our old pal 3BBC last Saturday getting his winter alcohol in and he mentioned an 812 and on Sunday afternoon when we arrived home from ploughing a few furrows at one of the local golf courses we found a nice new shiny 812 gracing our table. 3BBC is leaving this Saturday fer Sudbury to work on new BC xmtr.

3A00 has pr of 807s in par in final now es can't figure where his drive goes when he only has 150 volts bias on em.

VE3NB TO
CANADIAN LINE
MATERIALS



George W. Crossan Jr.

Canadian Line Materials announces the appointment of George W. Crossan, Jr., as sales engineer of their Special Products Division. Mr. Crossan was previously chief engineer of the Associated Broadcasting Company, who are the Canadian franchise holders of the Muzak. He has been souped up by a local Elec-responsible for studio design and supervision of Muzak installations in Toronto, Hamilton, Montreal, Rochester and Syracuse. In 1941 Mr. Crossan joined the engineering staff of Research Enterprises Limited (Radar Division) as a project supervisor, assisting in the design and production of radar equipment for the armed forces. He is an Associate Member of the Institute of Radio Engineers and a member of the Canadian Amateur Radio Operators' Association.

INCIDENTAL INTELLIGENCE

The watch bird tells us that VE3QU cranked up his rig one night on 80 (he's usually of the Found-on-Forty variety) got all 30 watts stuffed into the sky-wire and listened (as all good FOFers do before CQing). 80, the surprise band, produced none other than a CQ, from an F8! After Mel picked himself off the floor and called the Frenchman, straining

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MAY YOUR CHRISTMAS

Be Merry and Bright



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TORONTO



VE3UV

VE3YB

VE3BFB

CONTINUED from page 18

have enough to contend with, with all the foreign fones in the CW bands, without some VE or W fone gumming up reception further. Both fone and CW men, do not use the high power rigs for cross town QSO's on the traffic and DX bands, use your VFO alone or have a low pwr rig for that purpose, or else use the UHF. CW men, do not make endless CQ's, make them short and snappy, and you will find that you will have many more QSO's, and these days of congested conditions use break-in if possible. Another point I would like to stress to the CW boys, is to concentrate on quality sending, not speed, with uniformity in characters and correct spacing. If you get stuck for something to say during a QSO, for heavens sake do not keep sending BT, turn it back to the other fellow and let him give you

something to talk about, or else terminate the QSO. The above remarks are not in the nature of a lecture, but I would like to see the Ontario Section second to none in operating procedure and practices, as it makes QSO's much more enjoyable if the fellow on the other end is up on the bit on procedure, and makes a nice snappy QSO. One other thing more that I would like to see the boys do, is to copy the code proficiency runs of WIAW and get your certificates. What is the use of sending 30 w.p.m. when you can only copy ten? Here is wishing the Ontario boys all the best that ham radio has to offer for the future, and asking for your continued support while I am SCM for Ontario. And last but not least a Very Merry Christmas and a Happy New Year to the gang.

VE2

Radio. The attempt was not successful. Now, when the shoe is on the other foot, many fellows show reluctance at the idea. Surely it is not spite? Let us bury the hatchet if such is the case. Let us get behind the wheel and push hard.

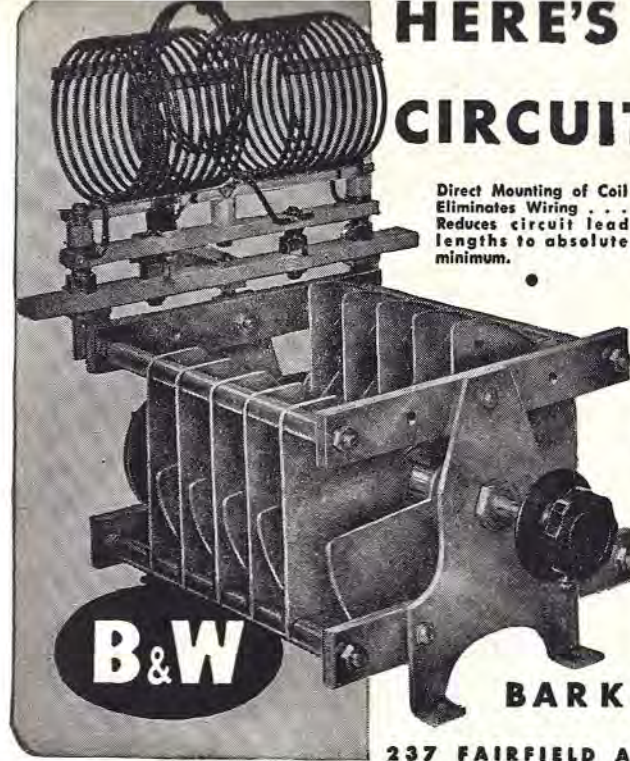
May we particularly remind all the out-towners that we in the city are always anxious to know what you are doing. Drop us a line, won't you. And that is all for 1946.

VE3

DCM—R. C. Hunt, VE3WX, London, Ont.—The following took part in the first attempted AFARS Trans-Canada net. 2DR, 3AL, 3BFX, 3ADR, 2PZ, 3WX, 4AM, 6GD, 7XX. Invitation is extended to all ASC's and FL's to join in at 10 p.m. E.S.T. nightly on 3625 k.c. QK arranges moving by radio. DJ handles Toronto traffic. WX has vertical antenna rigged and worked VE7FG on 3501. Skeds 3QK 2DR nightly. AZA-Ex 5AAE turns up at Malton. BMR, former Windsorite, now at Toronto. OI has a new nickname. Call him "Beam" from now on. ALO advises re Peterboro gang. ATR reub looking for traffic outlets. Skeds WY and SC. JH on vacation. AWJ heard in Windsor. Might make a good traffic man, Tom. CP tied up trying to get his phone working. XYL makes a good operator and snags in on CQs. TM borrows transmitter to get on air for one night. New transmitter is to be the last word. Mebbe you won't have to rebuild every season now, Bob. BC skeds Boston. MB whit on the air once in a while now. Visited by 2AR, 2DU, 2HF. OJ has portable fone on 75. AXQ takes the big leap in November. Good luck. AEA new station of Peterboro Club. HRC new station of Hamilton Club. Traffic:—AL6, GN17, HP1E, QK8, ADR6, AEM9, ASX6, AZA7, BCC6, BC43, AVA6, BME20, WX26, QT7. New DRS, OI, DJ, CP, ATR. Still some appointments vacant in Communications Department and would appreciate reports from those interested. The QTH is 103 Garfield, London, Ont.

VE6

DCM—W. R. Savage, VE6EO, Lethbridge, Alta.—We paid a visit to MN the other night to see his FB rig and finds he keeps a shotgun by the door. (Could be for BCL's). NB writes in some FB dope—first of all he shoots six nice geese with two shots from a No. 12 DB shotgun, the other odd fact is that he has held the following calls VE4NB, VE5NB and VE6NB. Ex 4ADW is now 5DW and is on 75 fone. DN is looking out for S-39 receiver. Ex 4GT is now VE7WP and is getting a rig going again. Good luck Art, be seeing you. VN is getting out PB with his new crystal. WC is quite active on 75 fone when not busy putting out fires. EL is eyeing the nice new Bug his dad has. OD is building a crystal calibrator. EB is busy with beams. LA is looking out for an oil burner to put in his shack. DR gets snowed in (3 ft. of snow). AO is doing FB with DX on 10 mtrs. SO is also on 10, and expecting some juicy DX cards. ZI is on 75 fone now with his gasoline driven power plant. AY puts out a FB sig. US has just about completed his new house and will soon be on the air with his rig. NB has his xmitter well under way and is also coaching a new prospective candidate to hamdom. HQ has a new rig ready to put on the air. SR must be working lots of DX on 10, we don't hear him much on 75. VN is back working in Lethbridge. DR has been busy bucking snow drifts. IC is in Seattle on biz. HW is batching for a while and has been doing a lot of work on his rig. AA had the misfortune of losing his antenna pole on Hallowe'en night. PP is very busy with his new Parish Hall at Lac La Biche. MN is back to school (Electrical) in Calgary. FK is on 10. SV has been very quiet lately. EV is still running the GYP joint in Lethbridge. EO is very busy looking for stations who would like an appointment in CAROA as District Relay Stations or District Phone Stations when he is not busy sorting out QSL cards for the boys who have not yet sent in their envelopes. HI. WW is putting out a nice CW sig. with his 6-volt storage battery. CH has



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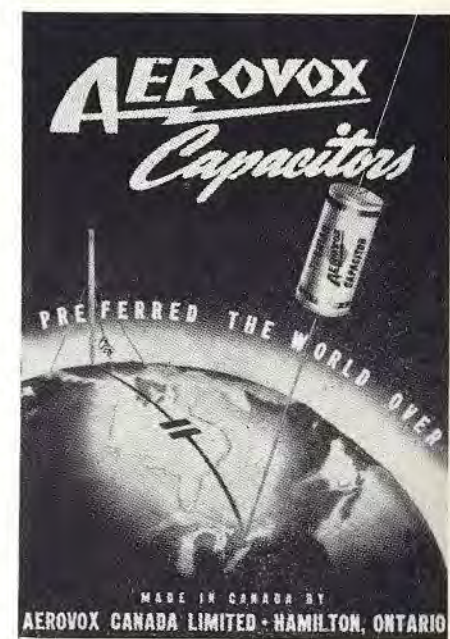
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an emergency rig operating now. YD is heard on 80 CW. LA has a rotary beam up. AL pays a visit while in Lethbridge. JJ is getting around on a pair of canes now and thinks it will be another 3 or 4 weeks before he can really do anything. BC says he is on 20 and working DX. EQ is now on 75 fone with a good sig. DC has XYL with lovely mike voice.

VE7

DCM—D. E. McLennan, VE7JY, Vancouver, B.C.—From the Collingwood Club, Vancouver, six of their members visited the Vancouver Amateur Radio Club and had a hot but pleasant evening, starting the ball rolling on inter-club activities. BE Club President, Harold Olsen, is on 80 CW and never seems to get on anywhere else. AJR hooked XL1BY on 10 CW using a 40 meter set. OJ is heard frequently on 40 CW with 100 watts. GH and AKK have combined efforts to produce a really decent home brew receiver. The club members are wondering if it will show up AZ. AK finds 10 meter phone very lonely at night and has QSY to 75. AZ has been off the air for a long time but it has given others a chance to work out. Hope you get that rig going soon, Jack. We need more locals on 10 at night. ADV can be worked on 10 phone almost any night . . . has all the parts ready for a 10 meter mobile job. UU heard occasionally on 10 phone . . . sporting a brand new 3 element beam. From Port Alice, B.C., comes a report that Art Musckett, VE7DO, is back on the air again on 70 meters with an 807 25 watts. Ken Sturdy, Port Alice, is listening on 75 and will be on the air soon. From Prince George, we have a list of the gang up there: ADL, AEP, FG, AAU, ADH. I have been trying for some time to get some details of their activities. How about it there, gang? At Woodfibre, Adam Wood,

QSY to page 32





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CGM—from page 26

ing paradoxical we opine that the CGM is not the League organization in Canada, but is the voice of the ARRL in Canada.

If we have frankly admitted the position of CAROA perhaps we may be permitted to frankly appraise the Canadian situation in the light of expressed opinion reaching us. If the CGM is not the League organization in Canada, then he must have a complete organization in order that he may properly discharge his duties and responsibilities, and in order that he may properly discharge his duties and responsibilities, and in order that the League may give us the utmost services in accordance with its desires and intentions. There is a popular belief that no such organization has existed prior to CAROA. This does not depreciate the splendid value of the Communications Department of the ARRL. Nevertheless, without expressing an official CAROA opinion as to the merits of the popular belief, we offer the observation that CAROA presents to the CGM a ready-made national association of over two thousand members spreading from coast to coast as a medium for the co-operative furtherance of League activity. There is nothing sinister about the suggestion, which is made from the two following points of view:

- (1) Canadian amateurs apparently desire a Canadian organization
- (2) Canadian amateurs still need the ARRL.

A seed of great potentiality has been sown in the creation of CAROA. Many such seeds were sown in the past, and nurtured to flowering accomplishments of the ARRL in Canada. But something more than mere official representation is necessary. It is desired that the ARRL and CAROA get down into the shacks of Canadian Hams. All the elementary potentialities are present; the fundamental nucleus exists. Good minds from both organizations, approaching the matter without the remotest trace of prejudice or bias can give the Canadian amateur something which he has not heretofore enjoyed. If the arrangement results in improved conditions for VE's we can then claim some credit. What is accomplished is more important than how the end is achieved.

In this way, however, the person of *QSY* to page 35



QSO No. 6 of a series.

I.R.C. rag-chews with XTAL readers

A FEW DO'S AND DON'TS ON Power Wire Wound Resistors

POWER RATING. The basis of our rating is the standards of the A.I.E.E. and N.E.M.A. These ratings correspond to the watts dissipation which will cause a temperature rise of 250 degrees C. when the resistor is operated in "free air." By this we mean that the resistor under load will be 250 degrees hotter than the surrounding air when that air has plenty of room to circulate around the unit.

The "loss" in a resistor—the number of watts it must dissipate—can be calculated easily if you know its resistance and either the current through it or the voltage across it. Either square the current in amperes and multiply it by the resistance in ohms, or square the voltage and divide it by the resistance in ohms. In either case the answer will be the number of watts the resistor must dissipate.

Now, in commercial equipment, it is considered good practice to use wire wound resistors at no more than 50 per cent of their rating to take care of the fact that air circulation is not so good, and other component parts such as transformers, etc., are also giving out heat. Since the maximum temperature is the limiting factor, you shouldn't take a "50 watt" resistor and put 50 watts into it if it is jammed in a small space above your hot rectifier tubes.

You have already guessed the answer—mount your heavy wattage

bleeders near the rear of the chassis where the air will circulate around them. We even know one chap who successfully put 600 watts into a "100 watt" resistor by sticking an old piece of hose in each end and running tap water through the hole in the tube! We don't recommend this as a general practice. That water is at ground potential, don't forget.

The best bet is to put some thought into the design of your power supply just as you do into the RF portion of your rig. It will save you money in the end.

A FEW MORE HINTS: It should be remembered that, on adjustable resistors the wattage rating of any section is reduced in proportion to the location of the adjustable tap. For example a 1000 type EPA-50 watt resistor is used as a 500 ohm unit by setting the slide at that point. Accordingly the wattage rating of either 500 ohm section is reduced to 25 watts.

Don't move the slider on an adjustable unit with the juice on. An arc is harsh treatment for fine resistance wire and 1000 volts or so is uncomfortable to the touch.

If you are using a wire wound for your grid resistor, don't forget that it has some inductance. Put a good choke on the grid side of it, and be darned sure it isn't mounted in the RF field.



MERRY

CHRISTMAS GANG!



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NATIONAL—from page 32

VE7ACF is operating 20 and 80 CW and nursing 7 new hams along for their tickets. Nice going, old boy. We would sure like to hear about the progress you make. Johnny Reveille, VE7AV, is looking for the old gang on 3527 kc. Frank Carter, a new boy with a two letter call, PM. He should be heard working Victoria's AM, Bill Paret plain as night and day. AC is working like mad at the Army Amateur Radio System. CU tied up with permanent lameness writes that he now really appreciates "the only hobby". At the first meeting of the season for the Point Grey Club there was a swell turnout for dinner and the works. OT, UM, ADY, VP, QD, KH, JT, RV, JY, DJ, OM, and AS. I am glad to report that nobody was seriously injured. The gang around town will find that AAC is rebuilding the rig in a nice shiny new shack. TS has discarded his V beam now that he has the old rotary up and going again. AFL which is the alias for TS is building a big rig at home so he doesn't have to stay at work 24 hours a day. ALQ sold his rig and is now bragging about the super audio driver that he has built with the proceeds. Vic Waters, ex-special wireless now at CJOR broadcast station working the ham bands again with a brand new call, CP. FB hooked all provinces on 75 phone in 2 hours and 45 minutes. VO hangs up some good ones: CR9AC-Macau Island, also PK6TC, PZ1A, W9HTW portable Saipan Is. W8JIB portable KH6 all on 20 CW. JQ is Harold Engleson at Pinchi Lake. University Club is busy getting on their air between classes but too busy to send in any specific dope. With all the writing they do up there, let's get somebody to send the report in, fellas. YJ Adrian Lawrence spends the daytime repairing BCL sets but still has time for ham radio at night. UH finally got his 810 Class B final working fb. AFA is busting his vest buttons after working a ZS in Capetown. EH has a junior op about so big, uses a screwdriver as well as the old man. ADF is walking around with his head in the clouds after working J2AAT, Tokyo. AAN is back in town from Alert Bay, B.C., and we are not sure whether it is because Vancouver is a better radio location or there is a YL in the background. AJU, Milner, B.C., worked WAC on 10 over the Thanksgiving week-end along with a lot of the other boys, EL, AEZ, etc. Charlie Littlewood, ABQ, New Westminster, sends along this dope from their activities: FY has a new rotary up now. ACJ, Bill Davis, finds that he has greater QRM troubles since getting married on November 2nd. ZJ is back with us now and pounding brass on 20 meters. YB decided that Vancouver was better than China and made the trip back by plane. BQ says that the old pre-war ham pamphlet called "The Amachever" will resume publication at the end of the month. The Royal City Amateur Radio Association is maintaining a pool of parts donated by members. All moneys received go to fatten the club treasury.

Howie MacKay, VE1GO, has been testing a rotary 10 meter beam preparatory to hoisting it on a 30-foot tower. Elmer Naugler, OD, is usually to be found on 75 meter phone. Recently he handled a message to VO1A for a transient from Newfoundland. Bazel Bragg Randall, RA, blew out a 813 before he left on a three weeks' business trip. We will be holding a wake over it when he returns! Craig Trenholm, EC, has now a new location and is working on fb on 10 meters. The junior op (2 months) modulates the rig now and again. Howie, George and Charlie Mann, PF, take turns working the rig and have done some nice DX lately. Their new receiver is a beauty. Neil MacNeil, FI, has a fb

CHRISTMAS—from page 17

turned to me. "Merry Christmas," said Belcher, "I hope you have a very merry Christmas."

What can you do with a guy like that?

shack next to his home which may be the club's headquarters before long. Neil has a great many souvenirs from his overseas service and some of them are quite useful in a hamshack. Gordon Coffin, CE, reports a very poor location and has tried ten different antennas and still can't get out very well on 10 meters. Three sets of three-phase transmission lines with 23,000 volts less than 100 feet from his rig is by bd QRN at times. Reg Rogers, CR, has been too busy with a rig for Bill and Mary Snell, GG, Sydney Mines, to get on the air yet with a rig of his own, but big things are planned and lots of "junk" around his store is the envy of many the amateur that calls there. "Larry" Dias, IT, has some nice 40-foot poles and should be on the air as soon as he can get them up. Frank Novak hopes to have his station license very soon and is rebuilding his rig again. Johnny Bond, CN, is heard in Sydney frequently and is getting out very well on all bands. Harry Holden, AB, can be heard on the air when he is on the air with that two-ton transformer. Alfred Vernon, QH, has not been active yet we understand but as soon as the Xmas toys are made he will have some time on his hands. George Crowell, AL, worked the Schooner "Bowdoin" on her trip to northern waters this summer.

VE8

DCM—Jack Spall, VESAS, Whitehorse, Y.T.—AK finally made WAC by working Africa. AJ rebuilding with 809 pa for fone. AN also going up with a pair of 812. AY put up a new 50 ft. pole and still needs Africa for WAC. AW put up a V antenna—results nil. AG still on 75 an ten fone. BB got burned out of house and home and lost all his radio equipment. AQ at SNAG is with D.O.T. and works out FB. AO is on his way back to Lake LeBarge after needed holiday. We understand that MF and MR in Baffin Land get mail only once a year. MG is QRT from Wrigley, N.W.T., and now at Edmonton. Yours truly finally got his Class B transformer, so hope to be on 75 and 20 fone to help get reports from those fellows in the hard-to-get places . . . Some definite sked will be made for receiving reports. YARC held its first meeting of the season October 22. The Whitehorse gang are getting a Yukon-Alaska net on 75. QSL cards are building up here fellows if you want 'em better send in an envelope. AK is the first appointment for DRS.

DOT—from page 19

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Dear Sirs:

It is with regret that I must report the arrival, in a damaged condition, of one of the 826 tubes sent me as a prize in in the CQ CAR contest.

The tubes arrived by parcel post yesterday afternoon and were unwrapped and inspected in the presence of the writer and the Assistant Radio Inspector, D.O.T., Winnipeg District.

We are of the opinion that the damaged tube was not damaged in transit between Winnipeg and Toronto for the following reasons and that no claim can be made against the Post Office Department.

There are no visible marks or scratches on either the inner or outer cartons to indicate even the slightest mishandling by the Post Office.

The tube damage is of such a nature as to indicate that the tube would have to be subjected to considerable rough handling to cause the damage done, i.e., the complete anode assembly, and top supporting cap of the grid and cathode assembly have broken completely away from their mountings.

No "FRAGILE", "GLASS", or "HANDLE WITH CARE" labels have been affixed to the mailing cartons.

On reviewing all the facts leading up to the arrival of the tubes, the writer feels that there may be a little "shady business" connected with these tubes. The reasons for this feeling is that the contest was held in June last, that the prize winners were announced approximately three months ago and at that time were advised that the tubes were available—Toronto hams could call for same and out-of-town hams should write in within a couple of weeks and the tubes would be forwarded. Approximately one month ago the writer received a letter from the CAROA advising that it was regretted that the tubes had not, as yet, been forwarded as it was difficult to obtain cartons in which to mail the tubes. This was the "pay-off". Had you written me three months ago suggesting difficulties in securing cartons I could easily have sent you dozens of them. Never have I seen the time when I could not find a cardboard carton suit-

QSZ to page 36

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10	6250 " "	6750 " "	3.80	2	9000 " "	9250 " "	3.80
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CGM—from page 30

The Canadian General Manager assumes considerable importance to the members of the CAROA, whether they be members of the ARRL as well or not. Whether or not you are able to vote, we suggest that you take a more than average interest in the coming election. Discuss it over the air with your fellow-hams at every opportunity, and generally see to it that the subject is well-aired. In particular, make it your responsibility to check that everyone eligible to vote has done so. In this manner we can be sure of making an intelligent choice. Remember, neglecting your right to vote now automatically cancels your right to complain later if things don't go the way you would like.

INTELLIGENCE—from page 27

all 30 watts, the F8 came back! Funny part of it all is that the sky-wire began at the fence, came up and draped over the roof and eave, down through the window and into the rig! Untuned, Un-insulated, and U-beat-that!



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IS OUR FACE RED—from page 34

able for transporting glassware and I suggest that the CAROA did not try very hard in locating such a carton. It is odd to say that I had a premonition only a couple of weeks ago that if and when I did receive the tubes, one or both of them would be damaged. One good question that can be asked is, "Why were transmitting tubes mailed in cartons without even placing a warning label on the outside of the carton to warn transportation authorities that the enclosed articles were breakable?"

I await and invite your correspondence in connection with the above matter and I will retain the damaged tube and mailing carton . . . before me the November issue of Xtal Magazine and to the uninitiated the impression gained would be that the magazine was not a journal representing the Canadian Amateur, but that it was a journal representing the VE3 Ham. The front cover photograph is a VE3 photo, the staff of Xtal are VE3's, the articles are written by VE3's, the editorials are strictly of VE3 complex. In the National Report on pages 14 and 15, there is no VE4 or VE5 column, the VE3 column takes up as much space if not more than two other districts. In fact the complete magazine is VE3.

I might mention that I have been a very active member for the past fifteen years, and have been a member of the A.R.R.L. for some time and that never in this time have I felt towards the A.R.R.L. as I do now about the CAROA. This is not only the view of the writer but that of many a ham in Western Canada. I might suggest that it may be a good plan for a member of the CAROA staff to travel into the west and attend a few of the Western Ham Meetings and social functions in order to gain an understanding of the Western Amateur and then to return to Toronto and convert the CAROA into a Canadian Association and not leave it as a VE3 enterprise. It is desirable that we should have a Canadian Association so let's get together and organize one.

I might further mention that it is rather odd that some VE3 hams received prizes in the CQ CAR contest even though they did not complete the qualifying rules. I mention here that there were several Western Canada Hams who entered the contest but were unfortunate in not completing the qualifying rules.



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HEIGH-HO and a Joyous Christmas to all our amateur friends! From the folks at STANDARD to all ye brass-pounders and phone men our Season's Best!



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VE3GT

Announcement of the appointment of S. B. Trainer, Jr., as Special Sales Representative is made by A. S. McPhail, Manager, Communications Division, Stromberg Carlson Company Limited.

Mr. Trainer is well known in "ham" radio circles, having been formerly Section Communications Manager of the American Radio Relay League and Vice-President of the Canadian Amateur Radio Operators Association. He has owned Amateur Radio Station VE3GT since 1929 and was largely responsible for the establishment of XTAL, Canada's only amateur radio magazine.

Mr. Trainer was educated at Harvard University and the University of Toronto. During the war he was project engineer of Research Enterprises Limited, working on ground and early-warning Radar developments.

So if you are going to make rules for the contest, why don't you stick to them. Draw the line—hard and fast—no qualifying, no prize.

If I appear to be aggressive, please forgive, as this is not the intention. I merely feel that we should all get together to help one another further our art and hobby—Amateur Radio. Let's have no racial, district or class distinctions, but rather be governed by the motto "United we stand, divided we fall".

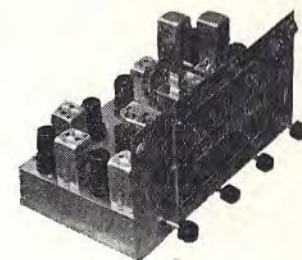
Yours truly,
 L. H. CLAYDON, VE4NT ex VE6NT.

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DEAR OM

XTAL assumes no responsibility for statements made herein by its correspondents.

QRP band?

95 Highland Avenue,
Charlottetown, P.E.I.

Editor, XTAL:

"... Today I heard for the first time that the bands had been opened to full pre-war frequencies on twenty and forty meters, and was very pleased to know that we could now operate on our old twenty and forty meter bands. As we all know these are the best all around bands we have. It seems very discouraging to hear so many fellows using anywhere from 300 to 1000 watts all over these bands. Not being very much interested in this so called high power, I was wondering how many of the boys feel as I do. Surely there are plenty of them. I cannot understand why these people consider themselves amateurs when they key a 1000 watt signal right on top of another signal belonging to a real amateur who perhaps can only afford 100 watts or even less, or probably only wants to use low power because he knows the satisfaction of working some real DX with low power and a little common sense.

Is there any possibility of dividing these two bands up and giving 100 kilocycles or so to those commercial stations with 300 to 1000 watts and let the amateurs have a portion of 20 and 40 meters for lower power operation on CW only? I would suggest that these frequencies 7000 to 7150 and 14,000 to 14,150 be limited to 200 watts input and give the fellows with low power a chance to be heard, also to enjoy their hobby which to my mind ceases to be a hobby when the power input exceeds 200 watts. ..."

E. J. G. HAMBLY, VE1IA

Wobulation

127 Edith Drive, Toronto 12, Ont.
Editor XTAL:

I have a moan . . . Like other hams I like to work the odd DX station. The ten meter band has long been my favourite (since 1936), and since this is a daylight band I find my only chance on the week-ends. So do a great many others in the Toronto area. It follows that if we are to get the maximum amount of use out of the band we should be considerate enough to use as little of the band per station as possible. Most of the boys realize this I'm sure—and have nice clean-cut signals.

Regulations require each phone station to have—and use—some means of checking for over-modulation. Surely it is generally understood that unbalanced modulation—or distortion in the modulator—might not show up as over-modulation, yet be the cause of terrific side bands.

RUSS HEAGLE, VE3TY

Adopt a Shut-In

2002 Whyte Ave.,
Vancouver, B. C.

Editor XTAL:

Here is one more letter of congratulation and thanks for the splendid job you're doing for VEs. The spirit of the headquarters gang and the quality of its publication should go a long way towards solidifying the position of Amateur Radio in Canada.

Here is a point which may be worthy of thought. Many fellows were unfortunate enough to come through the war worse for wear and are now bedridden or confined indoors. Amateur Radio is an ideal hobby for such people, can be carried on indoors and with a minimum

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of effort. It would supply the daily outside contact which would otherwise be missing.

Most of us who are lucky enough to be up and around could pool our surplus equipment and time for construction and maintenance. If each club in Canada would maintain a station for a shut-in we would be increasing our strength through the addition of new operators who would appreciate the hobby sufficiently to be a credit to the ranks of Amateur Radio. How about it fellows? One kind deed is worth a thousand DX contracts.

Ken Wheeler VE7AFL/TS

6 Meter DX

818 Mulvey Ave.,
Winnipeg, Man.

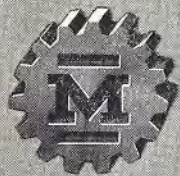
Editor XTAL:

I am writing this with the hope that the information I may be able to pass along will be of use to you in your publication. My subscription to XTAL will be forwarded to you simultaneously.

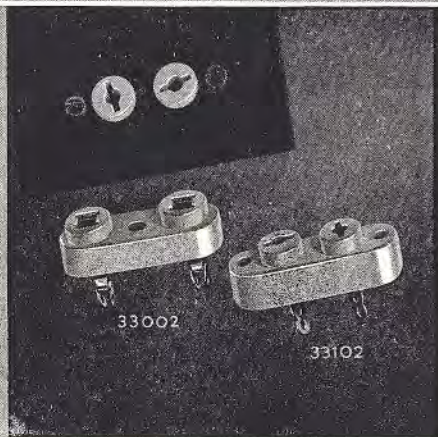
Since I received my license in May of this year, I have been active on 6 meters, and no other band. Concerning local activity, I have worked 25 locals on the band since I got on and have had about 400 QSOs. My own rig at present is a 6L6 modulated oscillator with about 8 watts input. The receiver has a 9002 super-regenerative detector with two stages of audio. All the fellows use vertical polarization, and as far as I know there are as yet no arrays used on the band. Most of the rigs around town are similar to my own, except for one xtal controlled rig and several mopa's. However, after DX openings like the one we had last nite, radical changes are expected. Work out of town has been limited due to lack of activity, and as far as I know, I am the only one that has worked as far as 40 miles. We are going to run off some tests with portable gear, and if the results are worth while, I shall forward them to you.

QSY to page 42

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These test instruments are all brand new and are surplus from a Canadian Research laboratory who has commissioned me to sell them.

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 - 1 Jackson Capacity Analyzer Model 650 A (60 cycle) 69.25
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- Only one of each! Act Fast! Marked cheque or C.O.D.

R. L. Adams, 3AMR
130 Glebeholme Blvd., Toronto
HA. 0590

6 METER—from page 41

As far as skip DX is concerned, I believe I am the only one in two to have worked any. I have heard approximately 20 DX stations in openings throughout the summer. The openings I was in on took place on June 16, 22, 24, 25, July 1, 13, August 10, 11, Sept. 2, and 22. If any further information is desired as to exact times etc. I will be glad to forward same. I have worked W9UNS Marshall, Indiana, WOZJB Gashland Mo. three times, and last night I worked W8QYD, W8DAL and W8CYE all in Dayton Ohio. The best DX I have heard was W2BQK in Bergenfeld N. J. Last night I heard 4 districts; VE3, W8, W9, and WO. Next summer many of th gang hope to be on with great gusto, including supers and stabilized rigs. I hope this will be of some use to you, and if I am able to be of any assistance by reporting on 6 meter activity in the future, please let me know. 73 and best of luck.

Doug Allen VE4DG

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