

XTAL

for the

radio amateur

J. H. Doble, VE3AGC
Ashtown,
Ontario.
2/50

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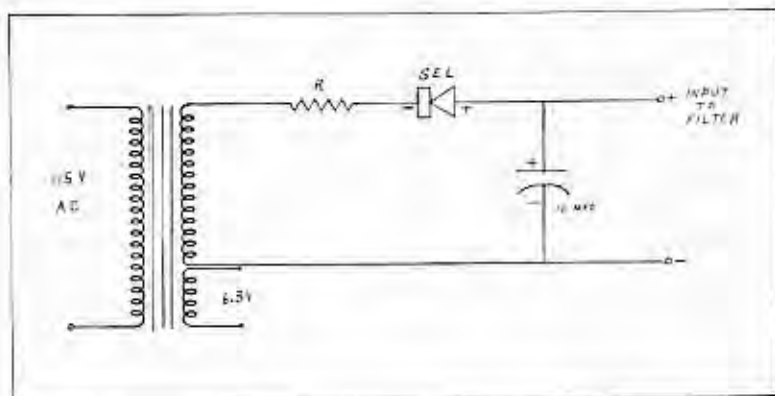
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XTAL

XTAL is published by THE CANADIAN AMATEUR RADIO OPERATORS' ASSOCIATION, 46 St. George St., Toronto, and is authorized as second-class mail by the Post Office Department, Ottawa.

MESSAGE FROM THE PRESIDENT

December 6th, 1950.

The Executive of CAROA has just passed through a very trying experience through no direct fault of its own, but through a series of unforeseen circumstances resulting in a serious depletion of the Executive, and I have been requested by the remaining Members of the Executive to accept the Office of President *pro tem*.

I have done so, not because of any personal desire, for I am fully occupied with many other interests, but with the hope that I might be of service to CAROA and Canadian Amateurs as a whole. I have always been a very firm believer in a strong and fully Representative Canadian organization to deal more especially with purely domestic problems, and to keep us all pulling together in our own interests and for our future existence and the remarkable part that Radio Amateurs have played in times of distress and emergency; and with these thoughts in mind I hope to make known some encouraging information to us all by the time next month's XTAL goes to "Press."

Just as soon as we get into ship-shape and the funds are available, it is the

(Continued on Page 10)

Fair Winds or Foul in '51?

ON September 13th CAROA sent out a circular letter to radio clubs across Canada, outlining the aims and objects of the Association. In other words the radio clubs were told the reasons why CAROA should exist. We say 'should' because at the moment this existence appears to be teetering in the balance, waiting for a puff of wind from the wrong direction to snuff it out altogether. Maybe this was the reason for the circular letter. Maybe they were holding up a damp and cautious finger to test the direction of the wind.

Some of the replies to this circular are summarised below. Some are warm and some are cool. Read them through carefully and see what you think.

FROM FRAN HADDON VE4KN, SECRETARY OF THE BRANDON, MAN. A.R.C.—*"We wish to inform you that our Club fully endorses and agrees with the principles and policies for which you are working. We wish to cooperate and assist in any way possible to bring about a Canada-wide organisation of Amateur radio operators."*

H. E. ARCHIBALD, SECRETARY OF THE KIRLAND A.R.C. SAYS—*"You asked for it and now I'm afraid you're going to get it! The present Executive have a lot of ground to make up before any measure of confidence in CAROA can be regained. How about four members of our club who sent in subscriptions and have so far not even received an acknowledgment, let alone a membership card or a copy of XTAL? The first thing to be done is to get the Association running on a business-like basis, and then do a real selling job. I don't see how you can get along without a full-time and well-paid secretary. You can't do the job on a dollar-a-year basis either."*

FROM GORDON MOOGK VE3DPB, SECRETARY OF THE KITCHENER WATERLOO CLUB—*"We are solidly behind you in your attempt to form an all-Canadian Amateur*

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FAIR WINDS OR FOUL IN '51?

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Radio Organisation."

ETHEL L. PICK VE2HI, SECRETARY OF THE MONTREAL A.R.C. WROTE—"The general feeling here is that your idea of an all-Canadian Club is excellent in theory, but would be a difficult project in practice. In these unsettled days, with the prospect of Canadian Amateurs losing some of their prized privileges, perhaps our total support should be given to A.R.R.L., which has the membership, the prestige and the money, to protect these privileges."

AN ENCOURAGING NOTE FROM BERT VINEY VE3AZX, SECRETARY, WEST SIDE R.C., TORONTO—"The members of this club are thoroughly in support of CAROA and its policies. We are all unanimous in our hope that CAROA and XTAL can reach the level of previous years."

FROM E. R. HUMPHRIES OF THE TRAIL B.C. AMATEUR RADIO CLUB—"We agree that Canadian Clubs should organize togeth-

er, but in some way such an organisation should be linked with A.R.R.L. Perhaps each organisation could have representation with the other. We are very pleased to hear that some efforts have been made to set up a Canadian organization. Perhaps each local club in Canada should pay a registration fee to belong to it. This would create a fund which would help the parent Association in its work."

We think this represents a fair cross-section of the advice, criticism and encouragement that CAROA received from all parts of the country. The whole point is of course—"Does the Canadian Amateur require a Canadian organization to represent him?" If he does then he must give that organization his fullest support, not only for his own sake but for the sake of his 6,000-odd fellow hams across Canada. For such an organization to be a success and to fulfill its aims and obligations, it must have a full-time and paid staff of some kind. As Kirkland Lake so sensibly points out, this cannot be done on a dollar-a-year basis, at least not when

Special Christmas Offer...

Here is an opportunity to give your Ham friends an inexpensive Christmas Gift, yet one that will be thoroughly appreciated by them throughout the following year.

A \$1.50 will buy any one Ham friend the following:

- ✓ 1 year's membership in CAROA
- ✓ 12 issues of XTAL magazine
- ✓ 1 sterling silver CAROA lapel button

All you have to do is fill out this form and forward it to us along with money order or cheque for \$1.50 and we will send your friend his membership card, the next issue of XTAL and his lapel button, with your 73's.

Clip this and mail to CAROA, 46 St. George St., Toronto, Ont.

I wish to take advantage of your Christmas Offer on behalf of

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Please send him/her the three items mentioned above with the compliments and best wishes of

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you have only 1700 members. That is why we'd like to see all you Hams right across Canada rise up in a body and join CAROA tomorrow. Then you'd *have* a Canadian organization with full representation! You see, in the final analysis it's really up to you.

We realize, of course, that during the last year or so, CAROA has been slipping down-grade, and with it has gone XTAL. There is no use trying to cover up this fact, as it must be obvious to most of you. The reasons need not be gone into too fully. Whatever the reason, finger-pointing is not going to help now.

Something is being done to get CAROA running once more on a business-like basis. At the moment negotiations are under way to hand XTAL over to a publishing organization, who, it is hoped will be able to produce a bigger and better XTAL that will not only pay for itself but also produce profits which can be used to further the aims of CAROA. The magazine is still to remain the official voice of CAROA and its editorial policy will be decided by the editor, who

will be a member of the executive committee. This arrangement is to take effect from the first of the year. Don't expect miracles all at once though! The magazine has a lot of re-building to do, and the confidence of advertisers must be regained. It is hoped, at least, that 12 issues will be published next year, and one thing is certain—any ham who sends in a dollar will receive his membership card and every issue of XTAL that is published during the following 12 months. If Mr. Archibald of the Kirkland A.R.C. will send us the names and addresses of the four "forgotten men" he mentions in his letter, they will be put on the mailing list then and there.

We wish to thank all those clubs that took the time and trouble to reply to the circular letter, and we are sorry that there is not enough space to publish all the replies. To those who expressed encouragement and support, we offer our assurance that we will not let it run to waste. To those who were not so warmly disposed—well at least keep your fingers crossed for us in '51.

A Selective Outboard I.F. Amplifier

By ART STEPHENS VE3YS

Much has been written about various types of so-called Q5ers and no claim for originality is made for the one herein described. Being unable to secure a BC 453 we selected ideas from various magazine articles and combined them. This particular unit is designed to work out of the 915 Kc. IF of a BC 348 receiver but can be used with any receiver by a suitable choice of oscillator frequency.

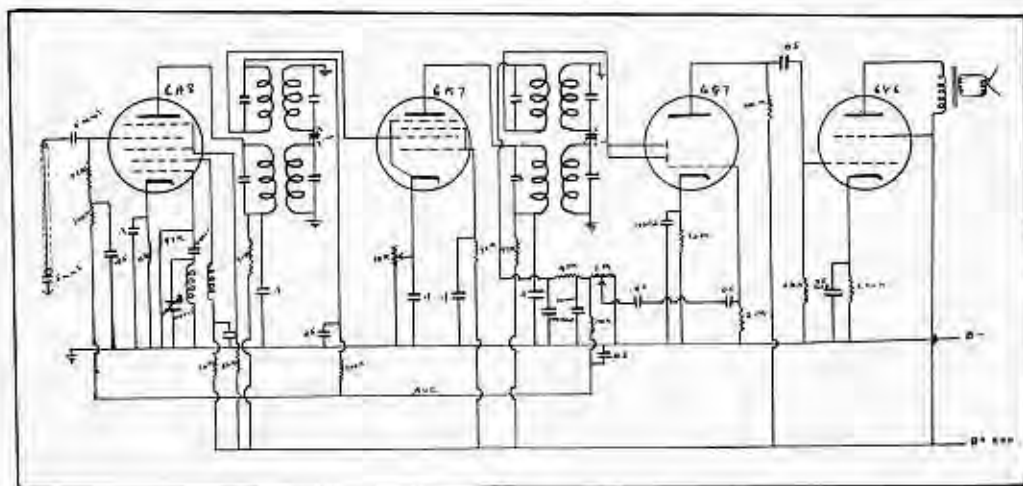
The unit is built on a standard Hammond 7" x 16" x 2" chassis and housed in a cabinet designed to fit this chassis. It could be built in a much smaller cabinet but this size was chosen in order to accommodate a separate 3rd detector, audio system, speaker and power supply. This eliminates the necessity of carving up the receiver, only 2 connections between units being required.

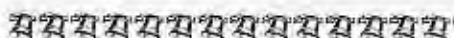
From the accompanying circuit diagram it will be seen that the unit consists of a mixer, oscillator, one stage of sharp IF, diode detector and two audio stages. A co-ax jack is installed on the receiver. This is connected through a 5 mmf. condenser to the diode of the second detector. The co-axial cable, a short length of 52 ohm, goes through a hole in the front panel of the Q5er and is con-

nected to the mixer grid circuit which is untuned. The IF frequency is $112\frac{1}{2}$ Kcs, the transformers, 4 in number, being those used in the Bendix MN26 compass receiver. The oscillator coil is a standard broadcast band unit as it is required to operate $112\frac{1}{2}$ Kcs. above the 915 Kc. IF of the BC 348. It is tuned by a 140 mmf. condenser and this control is brought out to the front panel so slight adjustments of oscillator frequency can be made to phase out undesired signals. Increasing the capacity across the oscillator coil will lower the frequency to meet the IF frequency of other types of receivers.

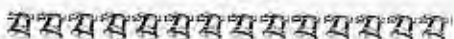
The IF amplifier, which is the heart of the whole unit, is a band pass affair using two pairs of transformers, loosely coupled back-to-back. The coupling condensers are 3-30 mmf. ceramic trimmers. The detector and audio system is similar to that used in the average broadcast receiver, the only exception being that the AVC voltage is brought out to the front panel so that it can be carried down to the receiver proper and used to control its gain if so desired. We have a SPDT switch on the receiver to select its AVC source. When chasing a weak signal

(Continued on Page 8)





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A Selective Outboard I.F. Amplifier

(Continued from Page 6)

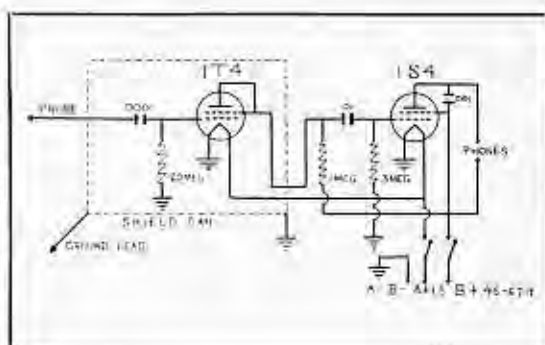
adjacent to a strong one it is advisable to use the AVC from the Q5cr.

This unit can be laid out in almost any manner best suited to the builder. At the low frequencies involved few precautions are necessary other than the use of larger capacity by pass condensers than usual for higher frequency work to provide good decoupling. A BFO is a useful adjunct to this unit although we have not yet incorporated it. Coils for the BFO are available from the same source as the transformers.

After construction is completed and wiring checked it is only necessary to align the IF stage. A good signal generator is a big help. We aligned our IF at 104 Kcs. with the coupling condensers set at half capacity. If more selectivity is desired the capacity of these condensers should be decreased. If the selectivity is too great the capacity should be increased.

This unit has paid its way on both 75 and 20 meter phone. If 112 Kc. IFs cannot be obtained very good results may be obtained by using 175 Kc. IFs particularly if the windings are separated somewhat to provide less than normal coupling. We feel quite sure that anyone constructing this unit will feel amply repaid for his efforts with many hours of pleasureable operating when conditions are poor and QRM is heavy.

20 meg. resistor, is mounted inside an old electrolytic condenser can; one of the small ones which measure about $\frac{3}{4}$ " in diameter. Remove the top end of the can and remove condenser. Clean out can. Using a piece of stiff wire for the tip of the probe, shove it through the rubber end where the condenser lead came through. This solders to the .0001 mica condenser. Mount 20 meg. resistor and condenser on tube socket and use a piece of two-conductor shielded lead for the B+ and hot filament. The shield is used for common ground and negative. Make a plug from bakelite or wood to fit end of condenser can and ground the can to shield lead. The end of the two-wire lead is connected to a B battery plug. The 1S4 amplifier tube, batteries, phone jacks, switch and socket for B battery plug can be mounted in a small box. The A battery is a flashlight coil and the B is a midget B battery.



Handy Signal Tracer

By Ken Bowers, VE3BHY

This signal tracer is small, and cheap to build. With it you can check a signal from the antenna to the speaker of any receiver, check gain from stage to stage, and locate dead circuits or parts. The 1T4 probe assembly, consisting of tube .0001 condenser and

To use this handy gadget, clip the ground lead on chassis of set to be checked. Plug in phones and probe, turn switch on, check signal at antenna with probe, and tune receiver to strong station. Proceed from grid to plate of each tube in set to audio end. It will not be necessary to touch probe on plate to output tube in set; holding probe near the output circuit when set is working will give a loud signal in phones of tracer. The batteries will last for years, and you will find this a real time saving gadget to locate trouble in receivers.

Club Activities

The ORCHARD CITY A.R.C. would like to know what the Clubs in the East are doing about the contemplated U.S. move to obtain 50 kcs from 3750-3800.

The 1951 officers of the FRONTIER R.A. are: President—Robert Thompson, VE3AUG; Vice-President—Robert Potter, VE3TO; Secretary—David George, VE3BMB; Treasurer—David Davies, VE3BVU; Bulletin Editor—Walter Guillot, VE3BUR; Executive—Thomas Hunter, VE3CP; S. Postelnic, VE3AXP; Jack Wade, VE3ADN; Robert McPhail, VE3BUG. The Club has entered into an extensive emergency program, working with the Civilian Defence and the Red Cross. Windsor is also getting ready for the AC frequency conversion to 60 cycles.

The VICTORIA SHORT WAVE CLUB has elected the following officers: President—C. R. D. Ferris, VE7PO; Vice-President—F. Diment, VE7MU; Treasurer—N. Dixon, VE7PX; Secretary—D. Scholes, VE7DY; Directors—Dr. B. E. Nickells, VE7SE; A. M. Baxter VE7AJV; W. Mallet-Paret, VE7AM. The club transmitter is being rebuilt and activity is planned on the 3.5 mc band on phone and CW under the club call VE7EZ. Regular meetings are held the second and fourth Thursdays of each month in their wholly owned clubhouse, 2500 Foul Bay Road, Victoria. Visitors are welcome and those from out of town are invited to phone E-2729 (the Secretary), or G-1972 (the President).

The WEST SIDE R.C. have the following new officers: President—H. F. Viney, VE3AZX; Vice-President—H. Benson, VE3HB; Secretary—A. E. West, VE3UT; Treasurer—R. Neal, VE3DBY; Engineer—W. A. Porter, VE3IZ; Activities—J. Watson, VE3AJU; A. Windle, VE3BAX; E. Chiswell, VE3VO.

The NIAGARA PENINSULA A.R.C. have the following officers for the coming season: President—Murray Winslow, VE3DBF; Vice-President—George Threder, VE3KP; Secretary-Treasurer—Russ Sudden, VE3DCE. On November 25th the Club visited the Lockport, N.Y., Club and viewed the ARRL film on TVI.

The members of the HALIFAX A.R.C. have an effective means of keeping their surplus equipment moving by holding an auction sale at each regular meeting.

The HAMILTON A.R.C. has taken the lead in circulating a petition among the various clubs that a definite set of regulations, specifically outline just what standards should be maintained by an amateur station with regards to BCI and TVI caused by transmitter operation should be established, also that measuring equipment should be supplied to RI's. This was the result of meetings of representatives of the H.A.R.C., I.R.E., R.M.A. and D.O.T. The petition has been forwarded to the C.G.M. for presentation to the D.O.T.

At the November meeting of the SASKATOON AMATEUR RADIO CLUB, the main topic under discussion was emergency work and equipment. The club decided to buy a little portable transceiver to be kept available for club use at all times. Further plans were made when those interested in emergency work met at the home of 5DR, EC for Saskatoon, 5DR and 5HR. SCM elect, presented the findings of the emergency meeting to the Mayor and the Civil Defence Director and offered the whole-hearted cooperation of the SARC in the event of an emergency. The committee was well received by the City officials, who were greatly intrigued by the workings of the small transceiver. The Civil Defence Director was on his toes and immediately whipped up a test message to be sent to ARRL Headquarters. The message was picked up by a Saskatoon amateur and was in Ottawa in an hour and

a half. Now we sit with our tongues in our cheeks hoping that the boys are as good traffic handlers as they are reported to be.

LONDON CLUB HOLDS ANNUAL BANQUET

The Annual Turkey Banquet of the London Amateur Radio Club was held recently at the Knotty Pine Inn just north of the city. The Banquet was attended by about a hundred and twenty Hams, YL's and XYL's, who enjoyed one of the finest evenings entertainment ever staged by the London Club.

President Ced Tanner VE3BBI started the ball rolling and introduced the M.C., Dr. Bev. Robinson VE3BMZ. Two presentations were made during the evening. The first went to Jim McArthur VE3NI, as the "Hero of the 75 Metre Band" and the second to Bill Choat VE3IL as "C-in-C Tail Feathers Club".

A startling crimson tie, suitably inscribed, was presented to each, and the unfortunate men were forced to wear them for the rest of the night.

A main feature of the entertainment was a skit entitled "Southern Comfort", performed by a talented group, well-known both locally and internationally. This piece of nonsense, in which a Ham, his XYL and a "come-hither" Southern YL, get very much involved, added greatly to everyone's enjoyment.

Music for dancing was provided by "The Continentals" who claim half their number as active Hams. On top of all this our London correspondent reports that the evening was also a financial success. Good for London!

FOR SALE. R1155 with new set of tubes, 616 output tube, and power wires. In perfect condition. Write to Victor Neal, Palmer, Saskatchewan.

MESSAGE FROM THE PRESIDENT

(Continued from Page 3)

intention of your present Executive to hold a General Election according to our constitution, so that every Office will be contested and filled according to the wishes of our Members.

With conditions as trying as they have been, it is very encouraging to know that there are 1,500 fully paid up Members in CAROA at the present moment, and may I appeal to those who have allowed their Membership to lapse to renew it at the earliest possible moment, so that we may lose no time in rebuilding a truly representative and solid Canadian Amateur Association.

In the meantime, may I wish you all a very Merry Christmas and a Happy Radio New Year.

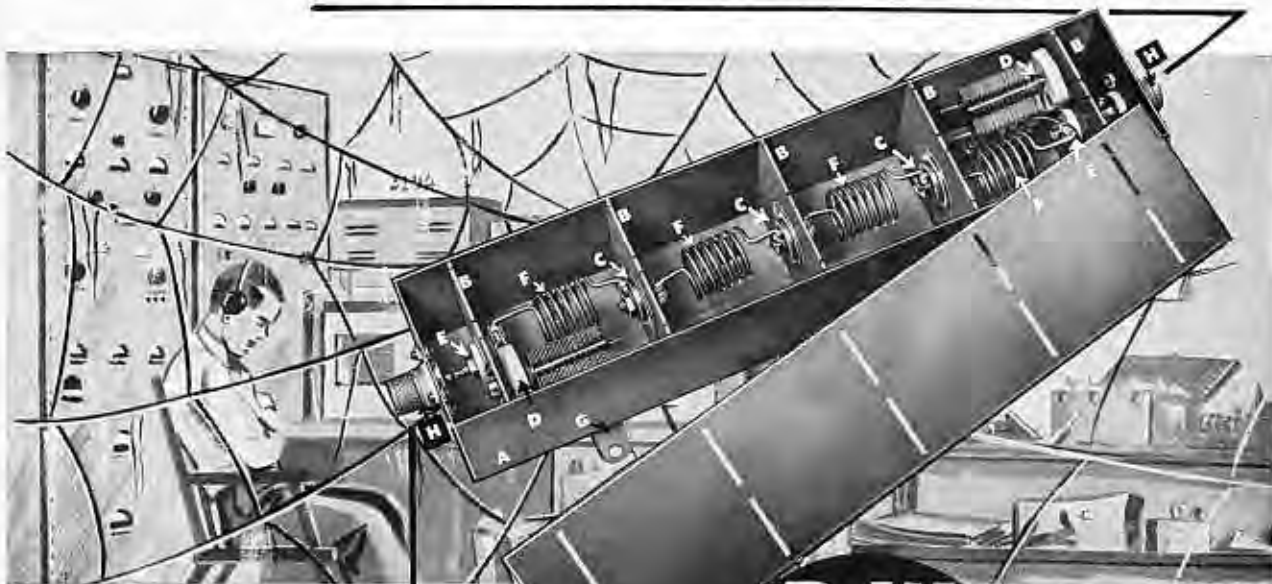
JACK BEARDALL
3MJ

VAN WAGNER'S BEACH EMERGENCY

The recent flooding at Van Wagner's Beach has once more pointed up the extremely useful and practical application of the Ham and his hobby in times of emergency. The alarm went out at 1 p.m. with a call from CKOC for help with sand-bags. At 1:30 VE3KM called the Red Cross and the police and asked if any assistance was needed. At that time he was told that everything was under control. However, after contacting other Hams in the district VE3KM lined up a small net on 75 and 10 with one mobile besides his own. At 10:30 p.m. a call from VE3IA the SCM, sent them to the police station at Burlington, where they went on the job with the portable on 75. Within ten minutes VE3ABP in Hamilton, and VE3IL, who was on the spot with his 75 mobile, had been contacted, completing the first channel. 30 minutes later, VE3AKL was stationed at the police door with his mobile on 10 and VE3KM was at Burlington, where the second break-through occurred, with his mobile, completing the second channel. They operated from 11 p.m. to 4:30 a.m. without a break, handling all types of messages. A grateful message of thanks and a personal tribute to Amateur Radio was received from the Burlington Chief of Police.

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The B&W Low Pass Filter consists of two "m" derived end sections and three midsections of constant K type. Each section is contained in a completely sealed copper compartment to prevent inductive transfer of unwanted frequencies from section to section. RF bypass condensers in the K sections are of special low inductance design having resonant frequencies higher than 500 mc thus eliminating resonances within the TV bands, a fault common to conventional types of condensers.

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