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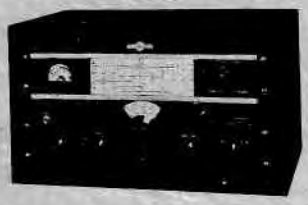

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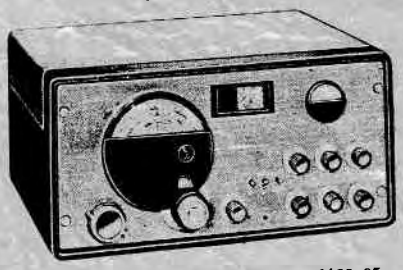

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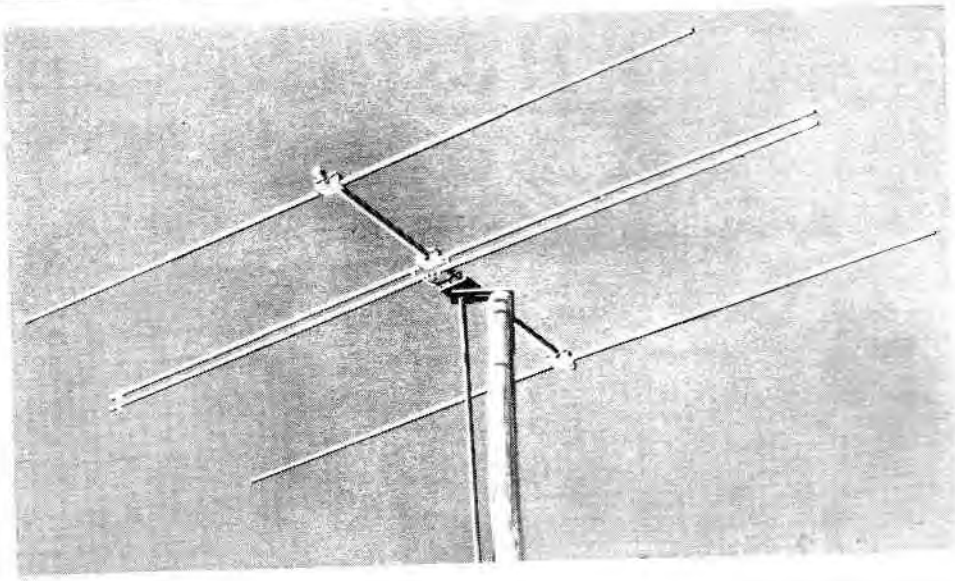

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SIDEBANDS

Summertime has rolled around again, with the usual easing off of amateur activity quite noticeable on the bands. There isn't the usual bedlam resulting from QRM. Golf, boating, fishing are beginning to take their annual toll, and static is building up, with only a comparatively small number of husky signals to poke it aside.

But before the filaments are cooled for the final time this warmer weather, there's one more activity, which down through the years has become a must among the more progressive and serious members of our fraternity - Field Day, 1950.

This year, this exciting and highly profitable outdoor event will take place on the twenty fourth and twenty fifth of June - not quite a month away. A good many clubs and individuals who enter year after year and chalk up fine scores are all ready with the portable and mobile equipment needed. But there are a good many hams who will be reading this column who have never participated in the event. It is to these hams we say - get out with a rig this year and see how much more kick you get out of your hobby than ever before.

Even at this somewhat late date, there is still time to design and build a rig to do the job for you. There's no shortage even of good surplus rigs which could be used in the Field - outfits like the extremely popular Command rigs which can be made to operate on any band with a minimum of trouble. These little power houses have another very distinct advantage in that they can be made to load everything from a hair pin to an old pasture fence, and get out well.

But this is just one suggestion. Any ham worth his salt can come up with a half a dozen more, perhaps better suited to his own particular needs. The big thing is to get out on Field Day and do some operating and have some real fun. You'll gain a lot in otherwise unobtainable experience that could be very useful at some future date if ever an emergency arises. There's no telling when it's going to be useful.

Take the case of Winnipeg where the hams have been handling traffic smoothly and efficiently during the flood. Mobile and portable rigs pressed into service by the authorities have kept communication lines, badly overloaded at times, open for use and functioning smoothly. Field Day operations can provide the background of experience you need under such conditions to be able to operate efficiently. ... Incidentally, we are hoping to have a full report on the flood and disaster work done by our Canadian hams in Manitoba, in time for the next issue of Skywire.

It will be interesting to see how many hams take advantage this Field Day, of the very definite extra possibilities offered by Single Sideband Suppressed Carrier. Altho' some of the Field receivers might give trouble handling S.S.S.C. most of those in use today should be capable of staying put and not drifting off the frequency.

Single Sideband Suppressed Carrier would be particularly advantageous for Field Day work because of the spectacular performance which could be expected from relatively low power inputs. You could use the low power multiplier, and still be in the high power class! And it's a cinch that you can make the contacts if you're V.F.O. because on SSSC you use the other fellows carrier for your communication. Try it out, if you have time to put one together now and you'll find nothing else, transmitter-wise, can give so much for so little in money, time, or power consumption. And the same goes for the house transmitter. If you haven't tried SSSC yet, and are considering rebuilding this summer, don't overlook it any longer. Toronto hams have been invited by Radio Trade Supply on Yonge Street, to come in and see the relatively high-powered Single Sideband transmitter now in the final stages of test. Ask Doug Langford, himself a ham, to show it to you.

AND - on Field Day, June 24th and 25th, get out there with all you've got.

de V E 3 W O

Suppression of TVI

Cure in Detail for a Typical Case

The heading of this article almost suggests a medical treatise on a rare disease. Unfortunately, TVI is no strange malady and is becoming increasingly common. Like many other diseases, there is no one certain cure for it. But the exhaustive investigation of a particularly difficult case as presented here is of great interest for the thoroughness with which our contributor has tackled the problem, the success he has been able to achieve, and the lucidity with which he presents his findings. This article will go a long way to settling TVI for many transmitters in the fringe areas, where TV receivers operated wide open are over-sensitive to every sort of interference.—Ed.

By **F. T. WILSON (G2XX)**

IN view of the information already published on TVI and its cure, it seems at first sight difficult to justify yet another article on the subject. Much of the available information, however, has appeared in American publications and not every amateur has access to these. In addition, the writer feels that some of the difficulties which may be encountered have not been made sufficiently clear. These notes are based on work carried out over a period of six months under conditions of peculiar difficulty and, it is hoped, will assist and encourage others who experience trouble with TVI—more especially those in the so-called "fringe areas."

Hitherto, harmonic radiation has been of relatively small importance since the amateur bands are in harmonic relationship and little, if any, trouble has been caused to other services. Undoubtedly the problem existed in the London area before the war but was probably masked to a certain extent by the power limitation imposed upon amateur stations.

With the use of power inputs up to 150 watts and the improvements in VHF technique as a result of the war, the problem has ceased to be a purely local one, and many amateurs who might reasonably expect not to have TVI troubles are finding them right on the doorstep.

It will be noticed that emphasis is placed on harmonics as the cause of interference. There is no doubt that this is the *primary* and most serious problem. Tests on a very unselective television receiver have proved that up to one volt from a harmonic-free oscillator operating in any of the amateur bands can be fed directly into the aerial circuit and produce no effect on either sound or vision channel. whereas considerably less than a millivolt of harmonic energy at the TV frequencies will block the receiver completely.

The purpose of this article is to show that radiation of harmonics in the TV channels can be entirely suppressed. Any reasonably efficient Class-C amplifier is bound to generate harmonics, but there is no reason why these should be radiated. The transmitter at G2XX is a modified Hallicrafter HT4E Since there are a number of these in use in this country it is felt that the experience gained here may be helpful to other owners of this particular piece of surplus equipment, as well as giving a line of approach to operators of other types of transmitter.

No investigation has been made into the possibilities of single-sideband, NBFM or Class-B linear amplifiers ; all these systems should, theoretically, produce no harmonics, and the only case dealt with is the one considered to be most common—the Class-C CW or amplitude modulated amplifier.

The Test Conditions

It is felt that the set-up at the writer's station constitutes about the worst possible case for TVI suppression. The location is well outside any fringe area, being about 100 miles from Alexandra Palace, and although measurements in the neighbourhood have given figures as high as 500 μV/m, the average field strength is probably nearer 50 μV and is usually very much lower. The resulting reception thus varies from moderate to nothing at all. On rare occasions a steady picture and good audio signal provide really satisfactory entertainment, but generally the receiver gain is turned up to the limit and the overall result is something which includes the signal from A. P., all

the cars in the district and any stray amateur harmonics that may happen to come along. At this distance outside the service area the television set owner has, of course, no grounds to complain about interference and the Post Office could not reasonably be expected to take action if complaints were made. But, after all, one has to live with one's neighbours, so at the beginning of this year the writer set about the task of cleaning up harmonic radiation from the transmitter.

A brief description of the layout will be useful. The transmitting equipment is set up in the living room of the top flat in a block of three. In the corresponding corner of the living room of the middle flat and immediately below the transmitter is the television receiver. The transmitting aerial in use at present is a 14 mc wire, three half-waves long, running from the roof of the house to a tree at the end of the front garden and is fed with 600-ohm feeders which come in through the left-hand window of the room. Mounted on a wooden framework projecting from the right-hand window of the centre flat is the TV dipole and reflector. The TV aerial is thus to the right of the transmitting aerial and below it, the spacing between the feeders and TV aerial being about 15 feet.

Working on the basis that the third harmonic from the 14 mc band would produce the worst interference, preliminary tests were made using a frequency of 14,200 kc. As expected, the TV set was completely blocked. The radiating aerial was then removed and a dummy load connected across the transmitter output. No change was noticeable on the TV set. Next, the final PA (push-pull 35T's) was switched off. The vision channel was now clear of interference but the sound channel was still blocked, showing that a strong harmonic was being radiated directly by the exciter. The owner of the set then co-operated by carrying out the tests referred to earlier, using a signal generator to feed fundamental signals on 3·5, 7, 14 and 28 mc into the aerial circuit of his receiver. No interference was produced which finally proved harmonic radiation from the G2XX exciter to be the cause of the trouble.

Finding the Solution

This completed the initial work and a careful survey was then made of the whole situation. First of all, every written work on harmonic radiation that could be found was read thoroughly. This involved the expenditure of a very considerable amount of time studying issues of *QST* as far back as 1936, numerous textbooks from a well-equipped technical library and, more particularly, the recent articles on TVI in *QST*. Notes were compiled and many ideas acquired for dealing with the problem. The time spent was well worth while and a list of the most useful references is given at the end of this paper.

Several definite conclusions were reached. First, it did not seem likely that the fundamental would cause much trouble even with 150 watts input, providing the harmonics were well and truly suppressed. Secondly, a large part of the harmonic was being radiated directly by the exciter and this would obviously have to be cleaned up first. Finally, some really good and dependable test gear would be required.

The first move was to take stock of the test gear on hand. Available were an SX-28 receiver covering 43 mc on the top range, a TN16/APR4 convertor unit tuning from 38 to 95 mc and a sensitive field strength meter using a 0-50 μA meter as the indicator. Unfortunately, no grid dip meter was available at G2XX and from experience since it cannot be too strongly recommended that anyone following the same course should beg, borrow, steal or even make one. Much time in cut-and-try methods would have been saved had such an instrument been used.

The TN16 unit is illustrated in the photograph. The line-up is a 6AK5 RF amplifier, 9002 mixer and 9002 oscillator. The IF is 30 mc and the output is fed into the SX-28. The bandwidth of the converter is not very great but the sensitivity is probably better than that of the average television receiver.

The field strength meter is also photographed and its circuit is as Fig. 1. There is nothing unusual about this with the possible exception of the meter which is 0-50 μA. Published articles on this type of instrument generally recommend the use of a 0-1mA or 0-500 μA meter. Neither of these is sufficiently sensitive for detecting harmonic currents in chassis wiring.

Transmitter Points

As previously mentioned the transmitter is a Hallicrafter HT4E and has been extensively modified. The exciter now consists of a 6AG7 crystal controlled harmonic oscillator driving a 6AG7 buffer/doubler which in turn drives a single 807 in place of the original parallel 807's. The PA is a push-pull stage using 35T's and is link coupled to the 807. In connection with the transmitter one point is very clear from the experience gained here. The old days of breadboard layouts and hook-ups have gone for ever. Any amateur who constructs a transmitter which is not completely screened is just asking for trouble with TVI. Even with a commercial rig like the HT4E (which is built into a steel case) much time was spent, albeit profitably, in cleaning off a lot of the paint to ensure that all the sections of the cabinet were properly bonded together. This alone accounted for a 20 dB drop in the harmonics radiated from the wiring.

The logical start was with the crystal oscillator stage. The drive to the second 6AG7 was therefore removed and the oscillator switched on. No trace of harmonic could be detected on the chassis wiring with the FS meter and nothing was obtainable on the SX-28 or converter until the receiver aerial was closely coupled to the oscillator plate circuit. Coupling the FS meter to the plate circuit produced a reading of 10 μA which remained unchanged when the oscillator was re-wired as a straight pentode oscillator. The use of an RF choke in place of the tuned plate circuit eliminated all trace of harmonic but there was then not sufficient drive for the second stage to quadruple.

The 6AG7 buffer/doubler was next added and tuned to resonance. Although the FS meter showed a reading of 50 μA when coupled to the tank circuit, nothing could be detected outside the cabinet and the harmonic was only just audible on the receiver with the gain turned well up.

Now the 807 was connected, whereupon the S-meter on the receiver went over to S9 plus 20 dB and stayed there. Obviously, the 807 was producing practically all of the harmonic. Since this valve was operating as a Class-C amplifier on 14 mc an attempt was made to find out whether it was generating the harmonic itself or merely amplifying one produced by an earlier stage. No definite conclusion was reached but the indications were that a lot of the harmonic was developed in the 807 circuit since the grid drive could be reduced almost to zero before any significant drop in the harmonic radiation took place.

Isolating the Harmonic

The next stage was the location of the "hot circuits." All outgoing leads from the exciter chassis are connected to two 12-way tag strips mounted on the apron and from these a cable form runs up and along the chassis, the various leads being connected to the appropriate points. Several attempts were made to filter the leads at the tag strips without success and so an attack was made on the cable form. All unnecessary leads were cut out whilst others were re-routed and covered in copper braid earthed at each end. The net result was about 10 dB reduction in the harmonic. Quite useful, but it didn't mean much since the S-meter still read 10 dB above S9.

Source filtering was then tried by inserting by-pass condensers at each end of the 807 grid resistor and anode choke, thus forming pi-section filters. This gave no apparent improvement. A 10 $\mu\mu$F ceramic condenser was connected directly from grid to cathode forming, in conjunction with the 50-ohm grid stopper, a low-pass filter, and a copper tube RF by-pass condenser was connected directly between anode and cathode. The bias was reduced to 60 volts. All this produced a further reduction amounting to some 10 dB, but the signal on the SX-28 was still S9. Substituting link coupling for capacity coupling between the 6AG7 and the 807 gave no noticeable improvement.

The difficulty which now arose was that the FS meter was not sufficiently sensitive to give any indication of harmonic RF on the chassis wiring, whereas the signal picked up by either the SX-28 or TN16 unit was too great to permit of these being used to locate the radiating leads. However, by checking and re-checking it was eventually discovered that a very slight movement of the microammeter

needle occurred when the FS meter was tightly coupled to the filament leads of the PA. At first sight this seemed a most unlikely source of harmonic radiation since the PA was entirely disconnected from the circuit except for the filament supply. Examination of the circuit diagram, however, showed a possible route for the harmonic. The filament transformer mounted on the exciter chassis has three windings, 6·3 volts for the exciter stages, 5 volts for the HT rectifier filament and 5 volts for the PA filament. All these windings had already been bypassed and an elaborate filter inserted in the primary circuit. It was just possible that the harmonic was feeding back from the 807 heater and so into the PA filament winding. With more hope than expectation, a ·002 μF condenser was therefore connected from the live side of the 807 heater to the cathode, mounted right across the valve base. The heater lead was removed and an RF choke consisting of 48 turns of 18 SWG enamelled wire on a 2-in. length of $\frac{1}{4}$ in. tufnol rod was connected between the heater terminal and a convenient tag. Another ·002 μF condenser was connected between this tag and earth with the shortest possible leads and the transformer lead reconnected to the tag.

The harmonic was again checked on the SX-28 and had dropped to S4, a reduction of 30 dB. *Not* so bad !

After this further reduction was comparatively easy. The TN16 converter unit was used in place of the FS meter, the co-axial aerial lead being employed as a probe to locate further leads which required bypassing. Finally, a point was reached at which no indication could be obtained on the S-meter and tests carried out in conjunction with the owner of the television set showed that no trace of any harmonic could be found on either the sound or vision channel. The final circuit of the 807 stage is shown in Fig. 2.

Some Immediate Conclusions

At this stage it was interesting to check the

Table of Values

Fig. 1. Circuit of Instrument for Checking Harmonic Level

C1 = 100 $\mu\mu$F, variable
C2 = ·001 μF, mica
C3 = 100 $\mu\mu$F, mica
C4 = 0·5 μF, paper
R1 = 0·25 megohm, potentiometer
R2 = 25,000 ohms, $\frac{1}{2}$-watt
J = Closed circuit jack
M = 0-50 μA meter
RFC = 2·5mH RF choke
Rect. = 5mA meter rectifier
S = DPDT toggle switch
L = Suitable inductance to cover frequencies required

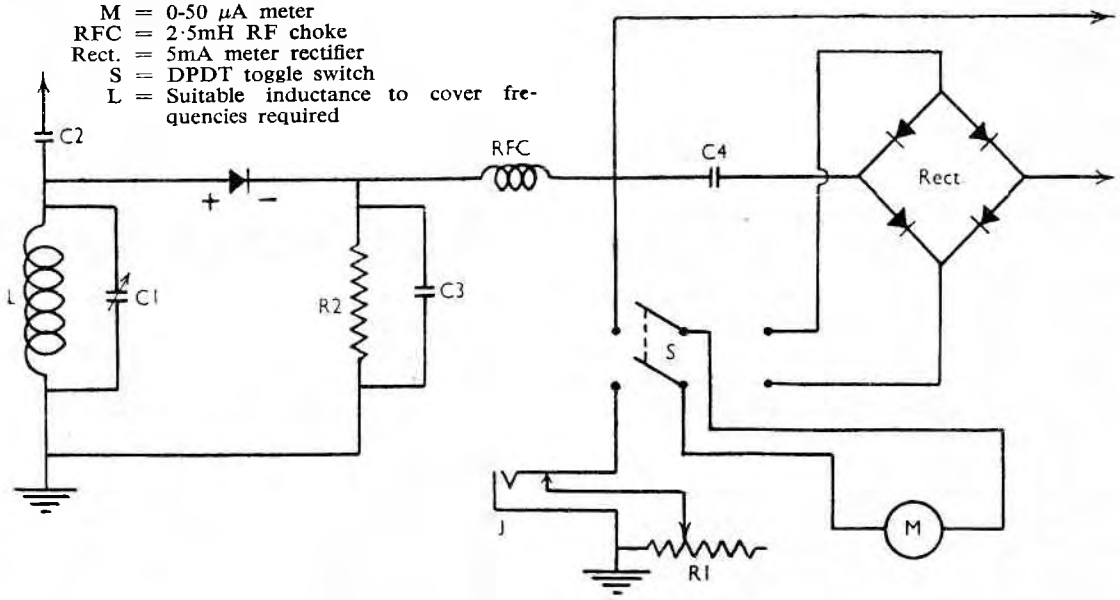
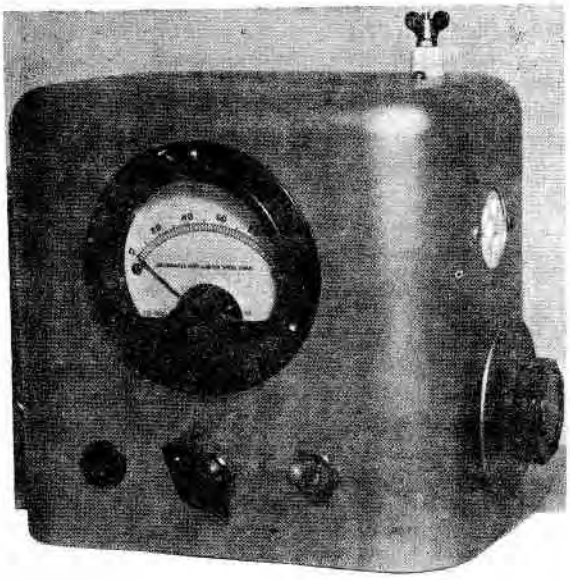


Fig. 1. Circuit of the combination field strength and modulation meter for checking harmonic level.



effectiveness of some of the filtering which originally had appeared to do little or nothing towards reducing the harmonic. Removal of even one of the bypass condensers brought up the harmonic and it is quite clear that every condenser and choke shown in the diagram plays its part, however small.

There is no easy way out of this TVI business. A fair amount of patience is needed, but, given this, together with a good supply of chokes and mica condensers and some reliable means of checking the harmonic level, the result is absolutely certain. The only condensers available here were of the postage-stamp mica type. The newer button mica types would be far superior since lead inductance is practically absent, but even midget mica condensers can be quite effective if every care is taken to reduce the leads to the minmum length possible, say $\frac{1}{8}$ in. to $\frac{1}{4}$ in.

A good grid dip meter is practically a necessity because with its aid resonant circuits can readily be found. For example, suppression of the 42 mc harmonic has resulted in the appearance of one at 70 mc which is not more than 10 dB down on the fundamental. At the moment it isn't doing any harm but as soon as time can be found to construct a grid dip meter that harmonic will also be suppressed.

(Part II of this article will follow)

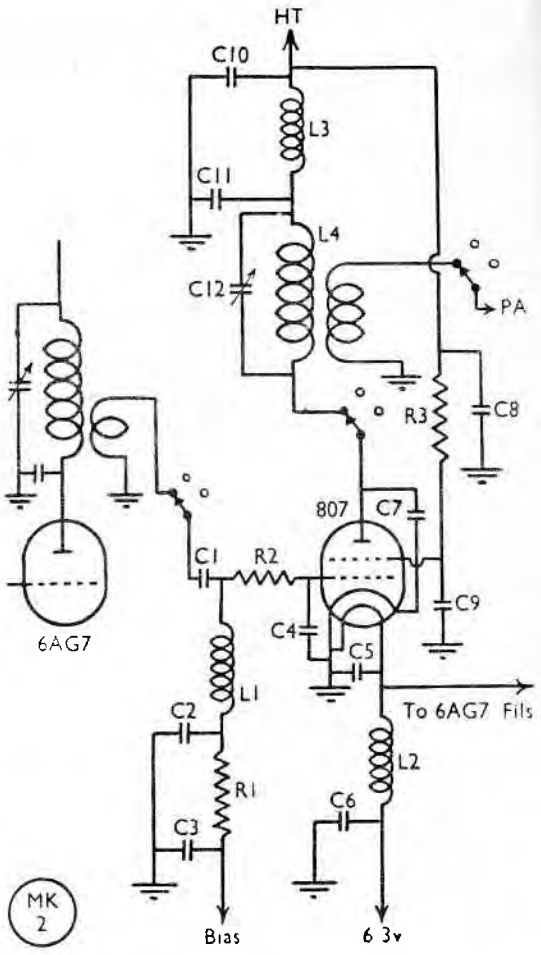


Fig. 2. The 807 amplifier circuit with TVI filters incorporated. Values are given in the table.

C1 = ·004 μF
C2, C3 = ·001 μF
C4 = 10 μμF, ceramic
C5, C6 = ·002 μF
C7 = Copper tube RF bypass *(see text)*
C8 = ·002 μF
C9 = ·006 μF
C10 = ·002 μF
C11 = ·005 μF
C12 = 100 μμF
R1 = 4,700 ohms
R2 = 50 ohms
R3 = 20,000 ohms
L1 = 2·5mH RFC
L2 = 48 turns 18 SWG enam. on 2-in. length of $\frac{1}{4}$-in. diam. tufnol rod
L3 = 2·5mH RFC
L4 = 8 turns 16 SWG enam. 1-in. diam.

The Versatile BC-357

Surplus Unit with Unusual Applications

By **V. J. COPLEY-MAY (G3AAG)**

This is the marker beacon receiver carried on aircraft fitted for SBA landings. It is unique of its kind in that the output stage operates a relay, and such a unit obviously has considerable practical applications in the field of Amateur Radio. Our contributor suggests a few of them.—Ed.

SPENDING some time in "Surplus Avenue" in search of equipment containing sensitive DC relays the writer came across the BC-357 marker beacon receiver, which in addition to providing the necessary relay also led to an interesting series of experiments. As it stands the receiver is of little use to the amateur but with a few simple modifications it can be made to perform a variety of useful functions.

Theoretical Explanation

In the unmodified form the receiver consists essentially of an RF amplifier followed by a detector and two-stage audio amplifier and a further detector. These functions are obtained using only two valves—a 12C8, double-diode pentode and a 12SQ7 double-diode triode.

Referring now to Fig. 1, a modulated carrier (it is essential that the carrier be either pulse or amplitude modulated) is coupled to the input tuned circuit from the aerial terminal. This signal, being applied to the grid of the first valve *via* the condenser C2, appears across the anode load L2 in amplified form. From the anode it is passed *via* C9 to the detector tuned circuit C11/L6 and thence *via* C10 to one of the diodes of V1 ; R4 is the diode load across which the detected audio will appear. The network L5, C4 and C3 serves to prevent RF from returning to V1 grid. The audio signal now appears across R2. (It is probable that R1 is incorporated to prevent oscillation in the first valve.)

The audio signal is thus applied to the grid of V1 and after amplification appears across L3. V1 is operated as a reflex amplifier. Further amplification of the audio signal occurs in the triode section of V2. The signal developed across L7 is applied to the diodes of the second valve ; the relay itself forms the diode load. The small value of C2 is accounted for by the fact that the unit was used for the reception of "pulsy" signals.

In its present form the receiver is tunable with C1 and C11 in the range 60 mc to 75 mc.

The Relay

The relay forming the heart of the receiver has a DC resistance of 12,000 ohms. It gives a positive "make" on 400 microamperes and then breaks when the current is reduced to 150 microamperes. This sensitivity varies with different receivers but a tension spring adjustment is incorporated enabling a critical setting to be obtained. Single-pole change-over contacts are operated by the armature and these are suitable for controlling a low voltage current of up to 500 mA.

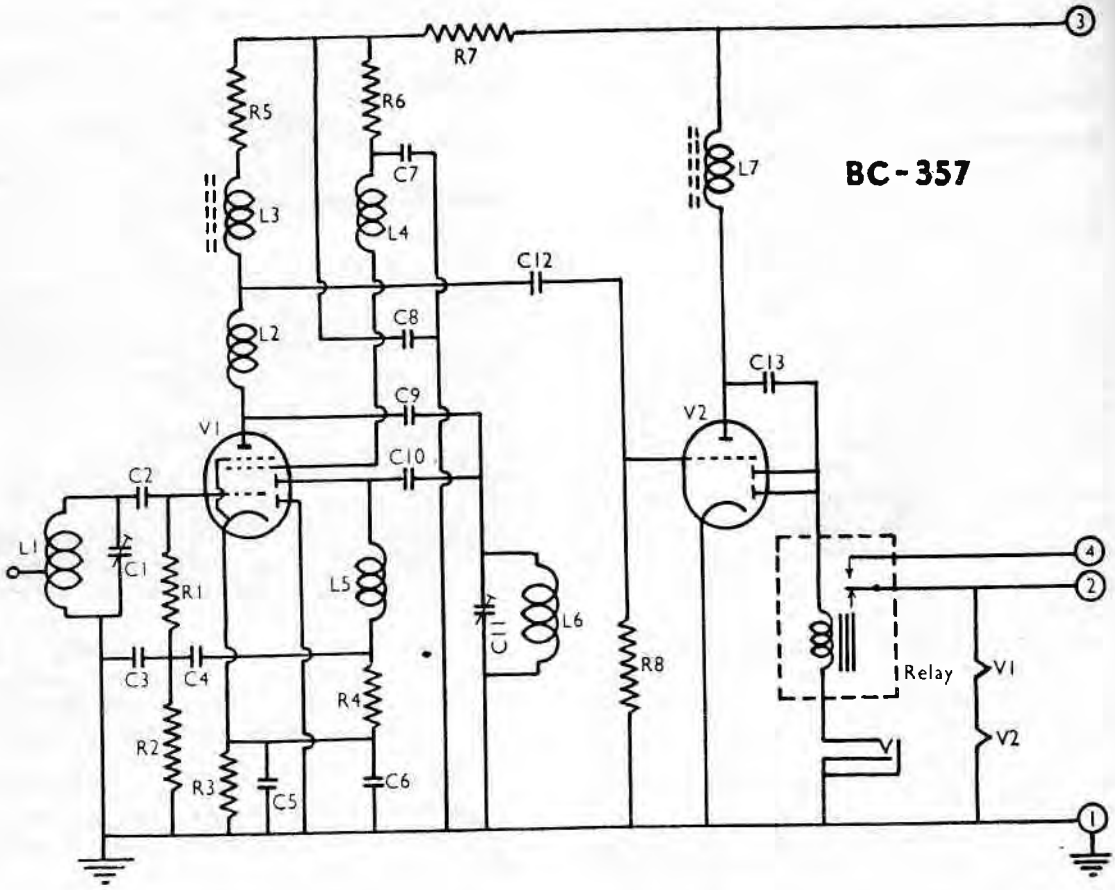
With a 30 per cent. sine wave modulated carrier on 65 mc the relay was made to function with an input of ·04 volts applied to the aerial terminal.

Modifications

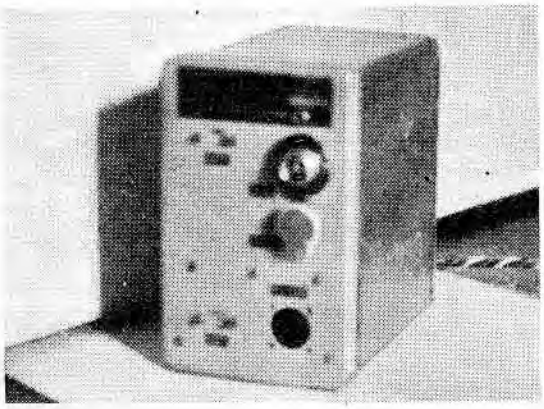
The reader will have doubtless thought of a number of practical applications for the unit. Two modifications successfully carried out by the writer may, however, prove of interest.

Converting the unit to accept signals at the intermediate frequency of the station receiver was easily accomplished by dividing the sections of an old IF transformer and incorporating these in place of the existing tuned circuits L1/C1 and L6/C11. The value of C2 was increased to 150 $\mu\mu$F. The new tuned circuits were resonated to 455 kc (IF of the HRO). A pick-up wire connected to the aerial terminal of the BC-357 was loosely coupled to the last IF stage of the HRO.

CW signals of the order S7 to S9 were found to operate the relay satisfactorily and it was possible, by connecting the BC-357 relay



Circuit of the BC-357 before modification. All controls and connections are brought out to the front panel, and the whole unit measures 5¼-in. × 5¼-in. × 3¼-in. only



General view of the BC-357 Marker Beacon Receiver on which G3AAG's experiments were carried out.

Table of Values

Circuit of the BC-357 Marker Beacon Receiver

C1, C11	=	18 $\mu\mu$F
C2	=	25 $\mu\mu$F
C3, C9, C10	=	50 $\mu\mu$F
C4	=	·004 μF
C5, C6, C12	=	750 $\mu\mu$F
C7	=	·01 μF
C8	=	0·5 μF
C13	=	0·34 μF
R1, R2	=	1 megohm
R3	=	200 ohms
R4	=	0·5 megohm
R5	=	10,000 ohms
R6	=	150,000 ohms
R7	=	20,000 ohms
R8	=	2 megohms
L1	=	Aerial coil
L2	=	Detector Coil
V1	=	12C8
V2	=	12SQ7

contacts in series with the keying relay of the transmitter, to re-radiate transmissions being received. (It was of course necessary to use separate aerials and operate on widely different frequencies.) The BC-357 could also be used for actuating a Morse inker, but possibly one of its most amusing functions was in converting a T6 note into a T9x by keying an audio oscillator from the relay !

The signal being received must be reasonably free from QRM in any of these applications. It should also be remembered that for correct operation the BFO of the main receiver must be switched on. The fact that the BC-357 will respond without the BFO is because keying transients give the "impression" of modulation. Critical adjustment of the main receiver RF gain control is necessary and it should be set to just beyond the point where the relay begins to function. The speed at which the relay will operate is mainly governed by the time constant of the circuit and was found satisfactory for speeds up to 16 w.p.m.

Other Functions

A further adaptation was in the conversion of the BC-357 to a "negative audio squelch control."

Many operators will have experienced that most irritating phenomenon which occurs when a local QRO station suddenly comes up on the same frequency as a weak DX station. Having a fast reflex action the writer has frequently grazed his knuckles in an attempt to turn down the gain of the receiver in the shortest possible time and before losing aural sense !

Modified exactly as before, the relay was arranged to introduce additional cathode resistance in the first RF stage of the main receiver. With full RF gain the holding action of the relay was sufficient to mute the receiver partially during periods of strong signal reception. The delay, on the other hand, was short enough for the DX station to be heard at full gain during interruptions of the strong carrier's transmission.

In this application the coupling to the BC-357 must be fairly tight, ensuring that a strong signal will hold the relay over for the full period of the QRO station's CW characters.

Conclusion

No elaborate details are given of the modifications required as it is felt that with the assistance of the theoretical explanation these will be self-evident.

The chassis of the BC-357 is ideal in itself for the construction of a wide variety of small test units, head amplifiers, phone monitors, wavemeters and so on. Whilst there are a number of possibilities it may in conclusion be interesting to suggest the suitability of the BC-357 after modification for remote control by radio, for voice operation, positive squelch control, actuating alarm circuits, meter protection and even automatic aerial change-over when changing bands.

But no success has yet attended attempts to make the BC-357 write out QSL cards during transmission !

Bert gets quite wrapped up in his short waves, Mr. Glenderhurst.

Emergency Communications

CANADIAN RADIO AMATEURS IN ACTION AT CABANO, QUEBEC, FIRE

Editors' Note - The following account of the recent disaster at Cabano in the Province of Quebec, was written by *Richard Daignault*, a Canadian Press Staff Writer who reported the fire, and the part played in this great tragedy, by Canadian radio amateurs.

Riviere du Loup, Quebec - May 12th (CP) Speedy arrival of the Army and the Red Cross prevented panic, needless suffering and looting in the fire-devastated mill-town of Cabano, 45 miles south of here, but a lot of the credit is due radio hams and radio station CJFP here.

While Cabano's houses were still crackling in a fury of flame and explosions ripped through a drug store and a furniture plant, two CJFP employees were operating with a portable transmitter, calling radio hams to stand-by for urgent messages requesting aid from the Red Cross and Army. Through an amateur radio network that stretched from Yamachiche, near Three Rivers, 90 miles East of Montreal, through Charlesbourg, near Quebec City, Montmagny, Riviere du Loup and Presquile, Maine, the two men got Red Cross planes to fly in with urgent supplies and organization personnel, and arranged for the arrival of troops a few hours later. These two men were Luc Simard, VE2TC and Rene Viel who holds VE2VR. Their messages went through another Riviere du Loup amateur - Raymond Lavoie, VE2ABC and a CJFP man himself. All Quebec messages were handled by the famous Charlesbourg amateur station, operated by Dr. J.A.E. Mignault, VE2ZL, who got messages through to the Red Cross and to the Honorable Anoin

Honorable Antoine Rivard, Solicitor-General for the province of Quebec, for permission to call in the Army.

At Rimouski, another amateur, who remains unidentified, reached Brigadier J.V. Allard, Commander of the Quebec Military Region. A radio ham in Presquile, Maine, asked the mobile unit in Cabano, run by Simard and Viel, if the Lower St. Lawrence Power Company would consent to receive electric power from the state of Maine.

After getting in touch with a Lower St. Lawrence Company official in St. Jacques, New Brunswick, the Cabano mobile unit told Presquile to feed the power, and several surrounding towns and villages were given it, as well as a portion of Cabano. The suggestion to ask Maine for the much-needed power came from an English speaking ham - Dick Bird, VE2XO, of Yamachiche, Quebec.

The Cabano amateurs helped to get fire trucks and pumpers into the town again, that were already on their way back from the Rimouski disaster, and Simard and Viel sent more than 100 messages for residents and soldiers who wanted to advise their families they had been detoured to Cabano. A conversation was also arranged between Major Paul Triquet, Victoria Cross winner of the Second World War, and his elderly father Florentin, whose home was one of those which had been spared in the disaster.

Simard and Viel also kept their own broadcast station informed continuously and provided eye-witness accounts of the fire to newspapers everywhere.

Through their combined efforts, radio hams got into Cabano fire-brigades despatched, at an early hour, from neighbouring towns, several of them from Maine, and some from Edmunston, N.B.

Armand Belle, President of radio station CJFP said he figured that Simard and Viel had advanced rescue operations by at least five hours. Skywire salutes two Canadian amateurs, VE2TC and VE2VR, for doing a most magnificent service to not only the people of Cabano, when help was so badly needed, but to the Canadian Fraternity of Radio Amateurs, generally. Congratulations, Luc Simard, VE2TC, and Rene Viel, VE2VR!!

LADIES PRESENT

Electricity, the marvel of the first half of the century, is refusing to be elbowed into the background by atomic energy. As a matter of fact, atomic energy is much more likely to become the servant of electricity - to take the place of coal, while electrical-electronic devices continue to be the wonder of the world.

A group of Westinghouse engineers have prepared a list of predictions for the part electricity will play in the second half of the century. The first thing they conclude is that the consumption of electricity will grow in the next fifty years faster than it did during the first five decades.

In the past seventy five years, the North American consumption of electric power has doubled every five years. And it looks as if this rate will continue for the next decade too. Not only the greater use of electricity by homes and existing industries, including atomic laboratories, but so many new industries, starting every week, are using vast quantities of power. One new industry in the future, will be the manufacture of synthetic gasoline from coal, an electro-chemical process. Electrical smelting of low grade iron ore, and the refining of this, are other uses.

Moving stairways and private elevators and much more air conditioning in the homes will increase its use there. The high speed electronic stove known as the Radar Range may replace the gas stove, or oil unit completely. In fact your new home-to-be may use so much electricity that every house will have its own power transformer to keep the line voltage at the right point. Home lighting may go through a revolution in the next century. Just as we are likely to learn to heat our homes, almost entirely by sunlight without burning any fuel, so in the next fifty years we may learn to light our homes, streets and highways from the sun, without burning any other fuel.

This might be accomplished by having our walls and streets and road curbs impregnated with phosphor substances not yet known which would absorb sunlight in daytime and give it off at night. We have a few such plant-like phosphors now, but they are of comparatively low efficiency. Electrical men think it quite possible that in 50 years they may be developed to a high degree so as to make possible the lighting of entire cities, and even remote country roads at very little cost. But long before these phosphors come, it is expected that the efficiency of ordinary electric lighting will increase tremendously. Engineers consider present electric lights only from six to twenty five percent as efficient as they should be.

Next to light, the field of electronic control instruments may see the biggest development in the next half century. For example, the ignitron, an electronic power tube can go through billions of operations and can open and close a circuit at nearly any rate of speed. And it can control the rate of flow of power through a circuit. The ignitron and many other electronic brain machine units are due to be adapted to reasearch, and machine control in many industries. And their manufacture and operation is bound to make big changes in industry and our own living.

We are already learning to harness electricity and make it safe, in much greater voltages and powers. Last year

a circuit breaker was built that tripled the interrupting capacity of power lines. And a lightning arrestor was produced that raised the maximum voltage of transmission lines enormously.

In fact it now looks as if switching and safety equipment not only will handle huge voltages and amperages, but as if many power sub-stations in remote regions will be operated by remote control by radio. This will make it feasible to have power lines crossing desolate and un ppulated areas and will reduce the cost of power distribution in settled areas.

Electric motors are also due for tremendous improvement. Some engineers think that the next half century will bring us a motor that is proof against burning out, and will last for an indefinite period without any attention at all. It will have built into it, a complete protection against overheating and overloads, and it will contain its own starting equipment.

The generation of electric power in the first part of the next half of the century will see a great extension of hydro electric power and the building of many new dams. But after that, such source of power will be less important because most of the accessibledamsites will have been used.

From then on it will be a case of steam generated power and either coal or atomic power will furnish the heat to generate the steam. But we will get far more power from a ton of coal or from an equivalent amount of atomic energy and this will be accomplished in two ways.

First, the generators will be better. They will be smaller and lighter, and yet deliver twice as much total output as todays largest which can turn out one hundred and fifty thousand kilowatts of electric power.

Generators capable of three hundred thousand kilowatts are envisioned in the next quarter of the century, because new metal alloys and new insulating materials are expected to be available.

Of course we can't go on increasing generator size and output at the same rate as in the past fifty years, for since 1900, the output of electrical-generators have increased sixty times.

In addition to the net increased power available, the industry hopes that the generators and turbines of the future will be light and safe enough to reduce the industry's capital cost for buildings and other equipment needed. It thinks todays heavy generators use up too much space, and the vibrations while operating require too heavy vibrations - all very expensive.

New and improved insulating materials not only will benefit the power industry, but all industry and homes and buildings too, permitting smaller motors with greater power and smaller and lighter buildings, with safer conditions in factory, home and office.

The other way of getting more power from coal or atomic energy will be by using much better steam turbines. Here again, everything depends on developing new metal alloys that can withstand much higher temperatures and pressures.

For example, the superheated steam of the year two thousand or even earlier, may have the density of water - a pressure of 3200 pounds and it may enter the turbine at a temperature of twelve hundred degrees. Even with todays generators, such a turbine would increase electrical output. And with the prospective new generators, it would mean a tremendous increase in output per ton and resultant fuel saving. With fuels getting shorter, this is important.

A retired American scientist, Dr. Saul Dushman has written an eight hundred and eighty two page volume about the foundations of vacuum technique. In recent years, vacuums have come into wider and wider use. All the light bulbs in your home are vacuum tubes, and from the light bulb, the vacuum principles moved on into radio, television, the cyclatron, betatron, and so forth, and how vacuums are utilized in all kinds of industrial operations.

Of course, a vacuum is an approach to nothingness. A perfect vacuum would be absolutely nothing at all. So Doctor Dushman after those nearly nine hundred pages of learning, likes to think of his book as a complete treatise on the most modern methods of producing - nothing. And there's nothing we could add to his definition.

Perhaps your Hobby.hubby likes to argue with the speed cops. Or tell it to the judge. Maybe you weren't speeding and your speedometer was wrong, but don't try to argue with the radar speed meter. It can't be told off, and when you talk back - well - here's the story of what happened in Columbus Ohio where they use the radar meter.

Out of one hundred and twenty eight persona hauled in for speeding, only two didn't confess - and they were convicted anyway. That s because the engineers say the margin of error on the radar speedometer is a scant one or two percent. It stays on the beam, and in places where radar sets the standard you can argue but the judge comes back at your arguing with the frequency and the speed - and the fine.

The forty-five pound radar meter is simple. It sends out a signal which picks up targets within a range of one hundred and fifty feet. The reflected, radar wave is proportional to the speed of the car, and it shows up on a meter in miles per hour.

Connecticut started this ball rolling. Then Virginia used it too, and other states have followed suit. So accurately does the meter clock cars, that once the word gets around, there are few convictions. Drivers find it is less expensive to keep their speed down and that means more motoring safety.

Musical medicine is helping a number of sick persons forget aches, pains and fears. Doctors now use music as an aid in surgery, mental illness and in the treating of many diseases. But the medicos have also found that music, like drugs, will aid many patients, and disturb others. Music must be handled by a trained therapist if best results are to be obtained.

Music has been used to stimulate patients whose muscles need exercise, to prepare patients psychologically for surgery and to soothe persons taking shock treatments. And in one hospital in Chicago, patients may hear music, if they wish, in the operating rooms.

There is one topic of conversation in the Raymond Perry family across the border is an expert on. It's railroad telegraphy. Perry, of Greenfield, Mass. and his four sons are telegraphers on the Boston and Maine Railroad. Mrs. Perry is a former Western Union Telegraph operator herself, so the kids didn't stand a chance of getting away from it.

And since summer is here again, these getting hotter-every-day days, you should be interested in how a Norwegian farmer made his summer living easier. He built an electric tractor from an unused otherwise four horsepower electric motor and automobile transmission. A light weight cable led from a plug, at the field edge, to the improvised electric horse.

And that's all the news for this month

CLUB ACTIVITIES!

The Ontario Phone Club of the air is going to hold a picnic gathering, on Sunday, July 9th, up at Jewett's Grove, Bayfield, Ontario. Tickets, for adults are half a dollar each, with children under the age of fifteen admitted for free. This annual outing is a great opportunity fone operators won't want to miss. Load the car and meet the fellows you've talked to on the rig. Keep Sunday, July 9th open for this.

For the first time in two years, no news has been forthcoming from the Montreal Amateur Radio Club about their annual picnic. It is known the club usually holds it in mid-July at the Lachine Recreation Grounds, on a Saturday afternoon, and in the past there have been some wonderfully good times had there. Let's have the exact date in time for June issue of Skywire, so the other hams in the Montreal area can attend.

The North Bay Amateur Radio Club is sponsoring a general Hamfest which is scheduled for two days - July 1st and 2nd. This looks like a hamfest to end them all, with the top prize one of the new Eddystone receivers Model 750, about which Canadian hams will be hearing much more soon. A price of fifty cents, or three for a dollar has been set on the raffle tickets being sold coast to coast on this set. Get yours now. You will be able to buy them through your own club, or by writing direct.

The Hamilton Amateur Radio Club points up a very topical subject these days in their formation of a Hamilton Joint Committe on Amateur Radio-Interference. Purpose of this is to study ham interference as it seems to affect the amateur, listener, looker, radio technician, salesman or manufacturer and the Department of Transport. There was a lot of meeting data which will definitely be of interest to other clubs who have recently been faced with an ever-increasing amount of grief. Get information from George Crawford, VE3JU, King William and John Streets. You can also arrange to attend the next meeting on this matter, which will be held shortly, by arranging it with George.

The Nortown Radio Club Bulletin blew in, telling that the Field Day is going to see some action from a Richmond Hill location where the boys, with their equipment will be blasting the ether. Nortown is becoming a bigger club by the month, with 50 or 60 members attending meetings. If you'd like to attend a meeting, contact VE3AHA, Dick Roberts, P.O. Box 7388, Toronto. He's putting out a smartly done club bulletin.

The Queen City Amateur Radio Club held its second initiation on Friday evening, May 26th, of the Mystic Nights of the Ether, in the Auditorium of the Eastern High School of Commerce. Al Butson, VE3BOJ introduced the speaker - producer and master of ceremonies Harold Kenmare, 3JO who intro'ed in turn Prexy Jack Turner, 3NZ, and the Executive of this club. At 8.30 - curtain time and Act One of the funniest Musical Comedy ever undertaken by a ham group, since the first initiation back in 1934. There was a capacity audience of 580 hams, xyl's and friends who throughout the entire Three Acts and one and a half hours of fun, split themselves laughing. Cast included Eva Collech, 3DFC, VE3AHA, Richard Roberts, Horace Pearson, VE3UP and his xyl, plus Paul Pearson, VE3BEU and Frank Stewartson, VE3AZC. After the initiation, seventy prizes of donated amateur gear were drawn for and the large audience retired to the basement for refreshments and presentation of certificates. Every one there had a wonderful time. Incidentally, the club will be in the Club Rooms at Eastern High School, Chatham Avenue, for the last meeting for the summer on Wednesday, June 7th. Try and make it.

The West Side Radio Club of Toronto is also doing something constructive about TVI here, by distributing a reprint on TV interference and its problems which appeared in Radio-Electronics Magazine in January, of this year, plus ARRL data on the same subject. If your group is in the same boat, write Bert Viney, club president - VE3AZX for info.

The Hull Amateur Radio Club co-operated with the Boy Scouts in Ottawa and carried out a scheme in which the Scouts were defending a lock in the Rideau Canal System and the invading party members were Cadets of the RCMP. Ham stations were set up in tents, with portables running a 5 watt power on 160, handling messages for the scouts. About 100 were moved over a 24 hour period, from 6 p.m. May 2erd to 6 p.m. the 24th! It was a great Field Day rehearsal and 2IZ,TT,AJR,SD,PY and BPT were the participants. More power to you, fellows.

DX PREDICTIONS

Prepared by C.B. McKee, Engineering Division, CBC International Service.

On these pages are shown frequency predictions for amateur communications on various circuits to almost any part of the world from most major cities here in Canada Choose the city nearest you for your own DX use.

Figures shown indicate maximum useable frequency via F layer and thus do not consider effect of Sporadic E which may enable unexpected and unpredicted distances to be covered on frequencies higher than those shown on the chart. The figures shown under the local times read direct in megacycles, indicating the amateur band which may be used.

DX PREDICTIONS FOR JUNE, 1950

Sackville to	*AST*	*01*	*03*	*05*	*07*	*09*	*11*	*13*	*15*	*17*	*19*	*21*	*23 hrs.*
Europe		7	7	14	14	14	14	14	14	14	14	7	7 Mcs.
Africa		7	7	14	-	-	-	-	14	14	14	14	7
Caribbean		14	14	7	14	14	14	14	14	14	14	14	14
S. America		14	14	14	14	14	14	14	14	14	14	14	14
Australia		14	7	7	7	-	-	-	-	-	-	-	14
U.S.A.. West		14	14	14	14	14	14	14	14	14	14	14	14
U.S.A.. Central		14	14	7	14	14	14	14	14	14	14	14	14
U.S.A.. South		14	14	7	14	14	14	14	14	14	14	14	14
Vancouver		14	14	14	14	14	14	14	14	14	14	14	14
Watrous		14	14	14	14	14	14	14	14	14	14	14	14
Toronto		14	7	7	14	14	14	14	14	14	14	14	14
Montreal		14	7	7	14	14	14	14	14	14	14	14	14

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Montreal to	*EST*	*00*	*02*	*04*	*06*	*08*	*10*	*12*	*14*	*16*	*18*	*20*	*22 hrs.*
Europe		7	7	14	14	14	14	14	14	14	14	7	7 Mcs.
Africa		7	7	14			-	-	14	14	14	14	7
Caribbean		14	14	14	14	14	14	14	14	14	14	14	14
S. America		14	14	14	14	14	14	14	14	14	14	14	14
Australia		14	14	14	7	7	-	-	-	-	-		14
U.S.A.. - West		14	14	14	14	14	14	14	14	14	14	14	14
U.S.A.. - Central		7	7	7	7	7	14	14	14	14	14	14	14
U.S.A.. - South		14	14	7	14	14	14	14	14	14	14	14	14
Vancouver		14	14	7	7	14	14	14	14	14	14	14	14
Watrous		14	7	7	7	7	14	14	14	14	14	14	14
Toronto		7	7	7	7	7	7	7	7	7	7	7	7
Sackville		14	7	7	14	14	14	14	14	14	14	14	14

(Continued on the following page)

Toronto to	EST	00	02	04	06	08	10	12	14	16	18	20	22
Europe		7	7	14	14	14	14	14	14	14	14	14	14
Africa		7	7	14	-	-	-	-	14	14	14	14	14
Caribbean		14	14	14	14	14	14	14	14	14	14	14	14
S. America		14	14	14	14	14	14	14	14	14	14	14	14
Australia		14	7	7	-	-	-	-	-	-	-	14	14
U.S.A.. - West		14	14	14	7	14	14	14	14	14	14	14	14
U.S.A.. - Central		14	7	7	7	7	14	14	14	14	14	14	14
U.S.A.. - South		14	14	7	14	14	14	14	14	14	14	14	14
Vancouver		14	14	7	7	14	14	14	14	14	14	14	14
Watrous		14	7	7	7	7	7	14	14	14	14	14	14
Montreal		3	3	3	3	3	3	7	7	7	7	7	7
Sackville		14	7	7	14	14	14	14	14	14	14	14	14

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Watrous to	MST	22	00	02	04	06	08	10	12	14	16	18	20
Europe		7	7	14	14	14	14	14	14	14	14	14	7
Africa		7	7	14	-	-	-	14	14	14	14	14	14
Caribbean		14	14	14	14	14	14	14	14	14	14	14	14
S. America		14	14	14	7	7	7	7	7	7	7	7	7
Australia		14	14	14	14	14	14	-	-	-	-	14	14
U.S.A.. - West		14	7	7	7	7	14	14	14	14	14	14	14
U.S.A.. - Central		7	7	7	7	7	7	7	7	7	7	7	7
U.S.A.. - South		14	14	14	14	14	14	14	14	14	14	14	14
Vancouver		14	7	7	7	7	7	7	14	14	14	14	14
Toronto		14	7	7	7	7	7	14	14	14	14	14	14
Montreal		14	7	7	7	7	7	14	14	14	14	14	14
Sackville		14	14	14	14	14	14	14	14	14	14	14	14

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Vancouver to	PST	21	23	01	03	05	07	09	11	13	15	17	19
Europe		14	14	14	14	14	14	14	14	14	14	14	14
Africa		14	14	14	-	14	14	14	14	14	14	14	14
Caribbean		14	14	14	14	14	14	14	14	14	14	14	14
S. America		14	14	14	14	14	14	14	14	14	14	14	14
Australia		14	14	14	7	7	7	-	-	-	-	-	14
U.S.A.. - West		7	7	7	7	7	7	7	7	7	7	7	7
U.S.A.. - Central		14	14	7	7	14	14	14	14	14	14	14	14
U.S.A. - South		14	14	14	7	14	14	14	14	14	14	14	14
Watrous		14	7	7	7	7	7	7	14	14	14	14	14
Toronto		14	14	7	7	14	14	14	14	14	14	14	14
Montreal		14	14	7	7	14	14	14	14	14	14	14	14
Sackville		14	14	14	14	14	14	14	14	14	14	14	14

We would like to hear from the DX men on the accuracy of the above predictions each month. If you can take time to drop us a note, all such mail will be forwarded to Mr. McKeen, CBC, Montreal ... !

TOWN AND COUNTRY

For some unknown reason, the news on this page has all call areas among the missing except the third. The usual column of VE2 material failed to arrive, and as the only news we've had of Monty VE2KG was that he was getting started on the building of his new home, we can assume that he might have been trapped in the cellar when they poured it. If you're now unstuck, Monty, a bit of news from Quebec would be welcome. The same applies to the other areas. VE1, perhaps because the clubs are slackening off for the summer hasn't sent any LCARC, or other club Bulletin in the past month. Madolyn Sinclair and the other Western reporters have also taken a Spring Fever hiatus. Remember, that for the clubs who report activities regularly, several copies of Skywire will be made available for the use of all club members. How about it?

In Ontario, the boys have been active, and this report follows : The biggest news a ham talks about in Toronto these days is V.H.F. The first known across-the-border-contact on 420 megacycles has now been on everyone's tongue for days. V.H.F. pioneer, VE3DAN was the man to do the job. His first contact was with W2ORI, in the town of Lockport, New York. Since the initial, and historical contact, Bill and Johnny have had several further contacts, using 144 to check on conditions. P.P 6J6's in a modulated oscillator and a war assets receiver did the job at this end. Bill is a V.H.F. man from away back. BNK is a new club call on two meters, representing BTC men to a great extent. Equipment is a 522 and a four element beam. LV of Brantford, works out well on 2 with W8 and W3 contx when they can't be heard in Toronto. TVI, and all its troubles was licked by AIB. A set was installed next door about ten feet from his Yagi and on 144 there is now, according to Les - no trouble at all.

AJU is now Cl A. BYZ scored a new record of some kind, working a ZD in Sierra Leone on 10m portable-mobile. Jack made it even better days later, working a CM2 in a mobile to mobile QSO.

The Toronto Amateur Emergency Corps will be holding a meeting at West Side Clubs' HQ on Wednesday, June 7th. This meetings purpose is to deal with the May 20th emergency test. Toronto A.E.C. is open to all licensed hams, regardless of club affiliations, A.R.R.L. membership, with, or without emergency gear. Register with Bill Choat, 3IL, or Les Weir, 3AIB. This can provide excellent training for future needs. See Traffic Lights this issue, plus the story of the Cabano fire.

DJP is newest call around these parts, is using a TB-50A transmitter, mostly on 20 cw. He's getting ready for CHF with RME-152. BY worked out well on 75 with little Marconi CP-15 transmitter on A.E.C. days. AJU is now at Hornepayne and BXI at Hurst and BAX has also changed his QTH. IZ getting out on 6 meter mobile. BTL after 20 months work on rig, is ready to throw the switches and see what smokes. BJZ after a lot of kidding is readying big noise for 40 meters. VO and AHV are working load of DX from Malton locations where TVI isn't, so they say, any problem. AEJ and AAW, at the Oshawa banquet had a great time. BNQ had a bang-up house-party with FU, AHA, ANY, AMW, DFA and DFC present. AIK's TVI is getting him down. FU just got back in town after long Florida stay. Nice tan!! BFR is club call for Nortown club, with AHA as Editor of the Bulletin Board.

Remember - if you are a club secretary and will report activities in your region, Skywire will be mailed to your club for members use.

HOW'S UR OBS IQ?

The American Radio Relay League

MORE OFFICIAL BULLETIN STATIONS ARE NEEDED NOW IN EVERY PROVINCE. SUPPORT ARRL BY BECOMING ONE. ASK YOUR SCM!!!

The following Official Bulletins are reprinted for your convenience. Some of the messages are outdated by the time it is possible to get them into print. Keep up to date on what is going on by tuning the Official Broadcasts in your own area and province. Listen regularly and stay ahead. Your SCM can provide schedules to you, or to your club executive!

Official Bulletin Nr. 240, Apr 28th, 1950
You are invited to participate in a U.S. Armed Forces Day receiving competition and QSO party and message relay contest to be held May 20th. A special greeting to amateurs from the United States Secretary of defense will be transmitted from NSS at 2100 and 2300 EST on 122, 4390, 9425, 12630 and 17000kcs. WAR will transmit the message at 2100 and 2300 EST on 3495.5, 6997.5, 14495, 20994 and 27994 kc and NSS will broadcast at 2300 EST on 115 9255 and 12540 kc. A certificate of merit will be issued to anyone who copies

will be issued to anyone who copies the message without error. The QSO party and message relay contest will start at 1200 and end at 2400 EST. Any amateur licensed by FCC or by the armed forces of the United States is eligible to compete. in this contest. Complete rules may be found on page 31 of April QST, 1950.

Official Bulletin Nr. 241, May 10th, 1950
To all ARRRL. Official Experimental stations, from Communications Manager. Here is a copy of the Bulletin sent from W1AW. No guarantee but the dates indicated may mark the seasonal start for E-layer work on the v.h.f's. Retransmission of the propagation bulletin below on v.h.f for the interested locals will be appreciated. Mark your calendar on June 3rd and 4th for the June VHF Party. Tell others. May QST gives the rules. Don't miss it - signed F.E.H. W1BDI, ARRL CM! A.R.R.L. propagation forecast bulletin number twenty dated May 10th, 1950 to all radio amateurs. The latest CRPL forecast predicts ionospheric disturbances in periods May 20th and 21st and May 26th and 27th. VHF operators will find these dates worth watching.

Editors' note - Any reports on VHF DX on these dates. Send reports to Skywire!!!!

Official Bulletin Nr. 242, May 15th, 1950
The Annual ARRL Field Day and test of emergency equipment is scheduled for the 24th and 25th of June. Individuals and groups are urged to start making their plans for participation now. Check over your gear and make whatever modification is necessary to ensure full readiness and dependability. In addition to all usual classes of entry and customary rules, mobile operation is again provided this year. No special forms are required, for entry, but ARRL will furnish convenient reporting sheets upon request. All amateurs in ARRL Field Organization are invited to take part

Territory are invited to take part, either individually, or as members of Field Day groups. Full details will appear in June, QST.

A message to all SCM's in Canada. If an up-to-date list of all OBS in your province is mailed along to Skywire, we'll print this data for the benefit of VE's in every province. Send this data - now to Skywire, 435 Parkside Dr., Toronto.

TRAFFIC LIGHTS

Bert Altherr VE2GM

This is the time of year that many of us start thinking more and more of fishing, golfing, gardening and what-not - and less and less about traffic and radio. Quite a few nets close down for the summer, or else cut down their schedules to a mere trickle. Traffic men are more likely to be found chewing the fat on other bands than passing messages along. It is a good opportunity for them to get acquainted with new stations and to give them the dope on traffic net activities. Getting more of these new stations interested in traffic, and inviting them to join in the Nets in the Fall is a worthwhile project. It is only by spreading the word on every occasion that results can be obtained.

All the nets could use more stations. In fact, we even need many more nets to obtain the coverage so badly lacking in this Dominion. To mention a few gaps on the Canadian traffic map known now, CW nets are badly needed in both the first and sixth call areas. In Quebec - at least one more is urgently required, with enough traffic for at least two more there. In Ontario, another very large coverage area, one more for the Eastern part would facilitate our East-West flow of messages. We're quite sure that many more stations for new and existing outlets could be used all the way to B.C.

If every traffic man could each get one more station interested in joining a net in the Fall, we'll be on the right road to improving amateur communication facilities in Canada. In fact, we would like to hear from you fellows who can get the okay from new stations, and we'll be glad to list their calls in this column. We can even go a step further - let's run a contest to see who can sign up the most stations during the summer lull. Is it worthwhile, going to this small, but important, trouble?

Yes - exceedingly so. In our humble opinion the only reason amateur radio has continued to exist as a hobby, under the protection of the government and the public, is because we are useful and of service to the community in which we live. If this were not so, do you think our frequencies and bands would remain intact when so many commercial interests are screaming for more space in the spectrum M No sir! And thanks to the A.R.R.L. our value has been kept to the forefront whenever represntations were made to gobble up our bands.

We can't continue to rest on past services. We must not only maintain present services, but increase them to ensure the continuance of our hobby. The traffic and emergency net both practically interchangeable during an emergency, are the best means of proving that ham radio is a necessary hobby. Let's talk to the non-traffic ham and explain this to him. If his main interest is rag-chewing, or DX, there is still something he can do to further amateur radio, and make secure his privilege of operating the bands. He doesn't have to spend ALL his time on this work, but he could sacrifice one net session a week. It would take less than an hour of his time, and he'd do his share in maintaining amateur radio forever.

To invite new stations to join a net that is poorly organized is to run the risk of loss of these stations, as well as the regular net members. It might be worthwhile for net managers to look over their present organization, and net duty assignments. Make sure the net is properly handled, and that the discipline is good. This latter is not intended as a restriction of net activity, but simply to keep traffic moving, and in the right direction. The Net Control Station is the absolute boss of the net while it is in session and it is his responsibility to guide traffic correctly, and as efficiently as possible. It's a good idea to have a different NCS for each session, but making sure his responsibilities are well understood by the other net members. When everyone on the net has a clear picture, and full understanding of the operation, the net will run very smoothly.

It goes without saying that the life blood of any net is traffic. Without messages to handle, interest in the net will dwindle. If you're just starting a net, make certain

there's traffic to develop and keep the net alive. Invent traffic, if need be, but keep the net alive. Once word gets around that it is possible to send free messages anyplace in Canada, or the United States, you will get plenty of traffic. But don't rely on people coming to you with their messages. Get out and get them by starting it among your friends. When the net is running well, tap the traffic sources in your area. We'd suggest hospitals, the Red Cross and other nearby places in your own community. However, don't offer these organizations your communications service, unless you can handle it. Make sure your traffic handling machine is in good working

It is our belief that with good net operation and traffic handling organization, that the stocks of our hobby will go up. And, remember too that all traffic nets are at the service of the community during any emergency period(see right column - Ed), and that outside the emergency zone, traffic nets can provide long-haul service. Inside the disaster area, a good net will have the equipment and auxilliary power sources to cope with the situation. From a long term point of view, we believe that every existing traffic net should have these emergency facilities ready for use at all times. By doing this, more jobs are available for net members, too.

Well, that's the end of the sermon. It is our intention to run a series of articles, in three or four issues, explaining in detail how to run and act on a traffic net. We hope to start this next month so that it may help to create a little more interest in, and enthusiasm for, traffic in your area. Suggestions and criticisms will be gratefully received from all of you as this is your column. Send your reports!

A letter from Hal, VE5HR, informs us he is looking for more stations for a VE5 - CW net. For a nucleus, he already has the following men - VE5FS, VE5VP, VE5BH and VE5QW. How about it, you boys in Saskatchewan? Send Hal a card or a message at the following address - VE5HR, Hal Horn, 1044 King Street, Saskatoon. Hal is the route manager (RM) and has great plans for the Fall season.

Hal has also informed us that he and 5BH were very active on Trunk Line 'I' during the entire season. He pointed out that a statement about no VE5's on this Trunk, was in error. However, he does mention not having heard any VE6's on CW on TL 'I'. Can you fellows in Alberta close the gap from VE5 to VE7 next Fall. It would be greatly appreciated by all traffic men.

Talking of being off the beam - we have a request to make to you fellows writing in. Please make sure the dope you send is as accurate as possible. We can't make a positive check on everything sent in - we'll take your word on it and publish as it is sent in. There have been no serious boners yet, but don't do anything that will cause the Editor to fire yours truly.

SUPER MODULATION

Scheduled for completion in the pages of Skywire this month was Luke Berniers' article on Super-Modulation. It failed to arrive in time and another phone call to Luke brought to light the fact that he too was moving to another city. Under the circumstances, moving was the more important item to him. He had also run into trouble recently with his 813 final and has a little work to do. He is changing to 4-125A's!

However, the news is not ALL bad!! Another source of information is now available, where the final consists of surplus 813's, and with NO bugs, and because these tubes are in such widespread use by VE's, we anticipate the complete data will appear in June, '50 issue of Skywire Magazine.

May we offer an apology to those hams whose plans for supermodulation have now been delayed unavoidably again by this. Super-M is worth waiting for and this article will give all the important details for a high-powered rig.

NETHERLANDER G-II

By - *J.J. Zandbergen, PAØZY*

This story is true - an account of Dutch Underground work during the second World War. Our writer has been a noted, active amateur for a good many years. This is Part Two of Three installments which will be appearing in Skywire -Ed.

I stepped through the back door of the Prior's study into a black, rain-filled night, and a moment later heard the voices of a German patrol in the study I had left just a moment before. The lead given to me by the father seemed a very remote chance, but we were desperate in our need for a location in which to operate, and continue our communication with the Allies, and each lead must be run down as quickly as possible.

Time was short, and pressing hard and I had several urgent messages on hand of which I could not dispose, and so had to hurry. Getting to the hospital as quickly as possible, I asked for the Mother Superior and was soon talking to to her, explaining my position as clearly as possible. I made no effort to conceal the fact that there would be a great amount of danger to her hospital if she honored my request, but at the same time I pointed out that this was my only hope and that it was very urgent G-11 get back into operation at the earliest moment.

The Mother was quite collected and not visibly excited by my request. After a little consideration, she asked me if, about ten the next morning I would be able to return for a definite answer. I left her then and trudged home in the roaring downpour of rain, my heart pounding with hope.

Exactly on time, I presented myself to the receptionist at the hospital the next morning at ten oclock and was lead to the Mother Superiors' reception room. After a perfunctory greeting, she looked at me speculatively for what seemed to be an eternity, and then her calm face broke into a broad smile as she gave me the affirmative answer I'd been praying for. I was so relieved I was speechless and quite unable to thank her. She went on to say that she would shelter both myself and the transmitter in the Nuns' quarters, in a spare bathroom there. She pointed out that in doing this she was violating all existing regulations for an institution of this type by permitting me to live among the Nuns as suggested. However, the urgency of the situation and its great importance had made her decide in my favor. Needless to say, she gave me a multitude of instructions on how I was to act during my sojourn there. I was to be allowed to leave the hospital at certain hours only, and when I was in my converted bathroom I was to keep the door locked from the inside only. The door was to be opened on a three times repeated Vee signal, knocked on the panel. Chance meetings with the ninety five Nuns and the more than thirty nurses had to be avoided at all costs. One of the Nuns, named Sister Bertranda, was taken into our confidence, and she was to be the supplier of my meals, keeper of my retreat, and the one to give any alarm which might become necessary.

I was taken to my new home - a small bathroom in which a cot and table were already waiting for me. Right in the heart of the Nuns quarters, this place was known as cell 209, and the moment

I was able to drag my luggage inside the door and get it locked, I wasted no time setting up my transmitter and getting it ready to go. The aerial gave me some trouble, trying to find a good location which would be out of sight, but the final solution to this problem saw one end attached high in the Chapel tower, and the lower part of this insulated wire carefully concealed as it ran to my room. The Mother Superior, when I was finished, checked my work, and while she agreed that the aerial wasn't entirely out of sight, it was sufficiently so that it would cause no comment, we hoped, among the unsuspecting Nuns, and at the same time would probably escape any searching eyes.

I was in action again. At about eight the next morning, Sister Bertranda came to the door, tried our coded knock of three Vee signs in a row, and I opened it to a pleasant good morning, and a fine breakfast which inspired me to use as a nickname the word Manna from then on. By nine oclock with a full stomach to encourage me, I was in communication once more, with the Allied Forces and passing my traffic. By the way, all the messages for transmission to Headquarters had to be brought into the establishment by myself, and since there was a large number of these, I began to wonder how long I could avoid detection by the other Nuns in the building. Things went along quite well for several weeks. The transmitter kept me busy and so far as I knew, the Germans had no information on me which could be harmful to myself.

Twice I had to suspend operations, and change the codes I was using when my colleagues operating two other transmitters were discovered and shot to death. Then came minor and major mishaps in quick succession. One day, in coming from our Headquarters, with my jacket full of important messages, I entered the building and proceeded to the nuns quarters and mine - and before I was able to slide into cell 209 I was confronted by a Nun and a servant girl and had to do some quick thinking to explain my presence there. I used the excuse that I had come to repair their chapel organ, and was soon tinkering away with a small screwdriver at this mechanism, until it was safe to slip into my room. My twenty watter was in action again.

The next day was a dark one for me. In mid-afternoon I received word from our headquarters to be extremely alert, as two more members of our net had been discovered by the Germans. G-13, which had been operating from The Hague, and G-2 from Groningen were both caught redhanded and the crews, after a short and bitter fight with the Gestapo were killed, and their papers and transmitter equipment fell into the hands of the enemy. It was expected that an intensive search for G-10 and G-11 (myself) was imminent, so I scheduled a forty eight hour silence, plus a change of frequency, and posted a couple of guards to patrol the main road, leading to Alkmaar. Then I went home to my family to enjoy a short leave. At home, hunger was slowly ruining the health of everyone. My wife slipped out into the night once, and successfully managed to steal back from the Germans who had originally confiscated it from us, some Dutch wood to take the chill from our house. We sneaked past a couple of Nazi sentries, right up to their garrison area, and toted away as large a load of the precious wood as we each could carry. It wasn't much in a cold winter but each little bit of heat helped to reduce the possibility of a respiratory ailment later on. Tuberculosis, I might add, was steadily increasing, and hospital care was almost non-available for such sufferers. In spite of everything however, I did enjoy my stay at home, seeing my wife and family again, dangerous as it might be. I knew that when the time came to leave them once more, that it would be terribly hard to do so.

After two days of enforced inactivity I felt it was time to get back into operation again. I started out toward the hospital and found that the intensive manhunt I'd been expecting, was on. At that time, the Germans were shipping all men below the age of forty, off to prison camp for enforced labor work. Unless you had a lot of snow on the roof so to speak, it was dangerous to be seen at all. I was just thirty at this time, and it meant a concentration camp for sure if I was caught, if nothing more. As I walked along the road, thinking of my radio work, I ran squarely into a German trap and was caught, among some other Alkmaar men whom I knew. What was I to do ? The Germans had vans on the spot, for transporting us, and we'd heard some pretty nasty tales of what happened in the camps. I decided to try and make a break for it before they got me into a van, and watching my chance, I edged carefully over behind a tree, and on a hard run, made for the nearby woods, with two German troopers emptying their rifles at me in vain. Thankful I was that they weren't better shots. It was a very lucky escape. There had been others who had tried the same thing, and not been so fortunate as I had.

It took a little time to get back to my room by a circuitous route. I had cached the equipment prior to leaving on my vacation, just in case any Nazi searches were made of the building. After I had again collected it in the room and set it up to operate, I had an uneasy feeling of being watched - that I wasn't alone in the room. I looked hastily around, saw no one and went on with what I had been doing. But that strange feeling persisted, and automatically my hand went to my hip pocket as I looked carefully around once more.

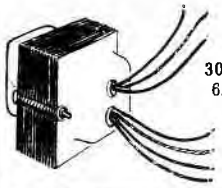
Perhaps I was just edgy from my recent brush with the Germans. I wavered for a moment, with the little receiver in one hand and my gun in the other - and looked squarely into a pair of black eyes staring at me from behind a screen which divided the room. Fortunately I could see enough of the face to realize that I *was* looking at a Nun, or I'm afraid in my excited condition there would have been some disastrous shooting In my relief, I smiled at the woman, but received no answering smile in return or any word that I was considered to be friendly. I hurried to the Mother Superior and reported the incident to her. Some inquiries were made and we found that the Nun was ill and had been put into what the rest of the staff had thought was an unused, empty room. The Mother explained to her sick sister why I was there, and once again, after a scary few minutes, I was ready to go back on the air, and make contact with Headquarters, handling large amounts of traffic.

G-11 could hardly be expected to maintain its heavy schedule of transmitting and receiving undisturbed. The enemy were quite adroit at direction finding once they could get a fix on a station, and I knew they were listening for me by this time. I had to keep shifting both scheduled times and frequencies, in the hope that I might, in this way, postpone the inevitable. The first indication that the enemy was not being completely taken in, was a raid by the Huns on our Headquarters which had been established just about half a mile from the transmitter site itself. The raid was carried out at night, and the staff and commander were fortunate enough to escape arrest, and were able to travel to nearby Zaandam City to set up new headquarters. I remained with G-11 in Alkmaar, keeping in touch with HQ by means of a secret telephone connection.

The search for me was on though, and I knew that extreme caution and wakefulness on my part would be needed to keep out of trouble. Then - one night came some frantic knocking at my door. Alarm! Sister Manna roused me from deep sleep.

(To be concluded next month)

70 MIL POWER TRANSFORMER



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6.3 v. at 3 AMPS
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$2.75 EA

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Trimmer Condensers 10-55 MMF . . . .10¢
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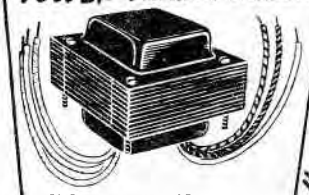
40 MIL POWER TRANSFORMER



275 v.c.t. at 40 A
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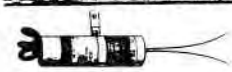

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Your cost $2.95

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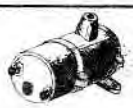

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Your cost 89¢

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Calibrates crystal plate of unknown freq. against standard plate of desired freq. Consists of standard and test oscillators whose outputs are mixed to produce an amplified beat note; the freq. is shown on 500, 5000, 50,000 cycle meter. Metal cabinet w/hinged cover. 9" H. x 13" W. x 10" L. Comp. w/4" sq. activity and freq. meter.

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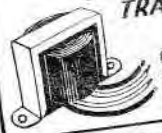

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Have for trade a quantity of very good condition used 833A's, 810's, 828's, 815's and 4-125A's. Desire good commercial communications receiver! Write-Box 8, Skywire. All letters answered promptly.

FOR SALE : Complete modern ham station, consisting of - HQ-129X, 350 watt 10-meter phone transmitter - lineup - a Millen Exciter, Millen 829-B Amplifier, pushpull T-55's, with pair 809's modulators. Completely enclosed cabinet, grey panels. Hammond transformers thro' out. C-2 frequency meter, Simpson Wave-Meter, Mike and xtals. This rig is commercial in appearance and operation. Final amplifier easily converted to cover all bands. $500.00 takes all, or will sell any part separately. All inquiries answered. VE3BSN, 1030 Frances Street, London, Ontario.

FOR SALE - BARGAIN - Complete all-band transmitter. Final, pushpull 75T's. Modulators, pushpull 811's. Separate 60 cycle power supplies, all Hammond equipped. Speech amplifier included, relay controlled, coils, Millen 500w, B&W 100w. Enclosed in 6 foot Hammond cabinet. CCS rating 450 watts. Price - B.O.B. Ottawa - $450.00. VE3OA, 443 Holland Avenue, Ottawa, Ontario.

FOR SALE - Hallicrafters HT-9 transmitter, phone and CW. 40 and 10 meter coils and crystals - 150 watts. Used one year - $285.00. Ray Sisson, VE3AEB, Box 373, Schreiber, Ontario.

No extra charges for Box facilities! Use Skywire Hamads for selling gear!

THREE HUNDRED watt phone and CW rig for 10 & 20 meters in 6 foot rack and panel. Final - pair HK-54's, HY-40Z Class B with Universal driver and 250w modulation transformers. Separate power supplies for final, Class B, oscillator and buffers. Separate pre-amp and power supplies. Reasonably priced at $225.00 for fast sale. VE3AKK, 32½ Willowmac Avenue, Chatham, Ontario.

TELEVISION

It wasn't many months ago that RCA made public the details of the new all-electronic color system of television. Their engineering department has shown that it is completely compatible with existing television in monochrome, and here are the details of what RCA color TV is.

The new system in color, a result of a number of years of research, and development by the company, requires no change in transmission standards of the present black and white telecasting. The performance obtained is equivalent to the present black and white service, both for color and reproduction of the color signals in black and white. Through its complete compatability, the new system allows present TV sets to receive color programs in monochrome, without any modification, and without any converter or adapter. Color programs can be viewed either on new color receivers, or on existing sets equipped with a color adapter. RCA's letter to the FCC was as follows -

RCA has developed a new color television system which doesn't require any changes in present transmission standards. This new system is all-electronic, has high definition and operates entirely within a six megacycle channel. The system has standards of performance equivalent to the present black and white standards, both for reproduction of the color signals in color, and in black and white. It accomplishes this on the allocated six megacycle channels, without any degradation of picture quality.

Demonstrations will show that when a TV transmitter shifts from black and white, to color transmission by the RCA method, the viewer on an existing black and white receiver will be unaware of the shift. On the other hand, by means of this new system, a viewer of a color set, receiving programs in color, will when the station changes from color to black and white transmission, see black and white pictures without making any changes in his receiver.

Thus, with this new RCA color system, the transmitting station can change at will, either from color to monochrome, or the reverse, without disturbing the viewers of existing receivers, or color receivers, and without requiring adjustments to either type of receiver. Therefore there is no loss of audience.

The new system is also an adaptable one. Color programs can be viewed either on the new color receivers, or on existing receivers, equipped with a color adapter

This new RCA color system is the fruit of years of research and development. During the last decade, RCA has carried on much work, looking toward a practical system of color television. During this period, the engineers have investigated many systems and their advantages and disadvantages. Their object has been to develop a high-definition color system which could be integrated into the existing black and white system without obsoleting present transmitters and receivers.

During the hearings in 1946 and 1947, RCA demonstrated a simultaneous color system which the FCC recognized as having considerable merit. This system however, needed further development and the Commission was advised at intervals of the progress made.

This simultaneous system which was first demonstrated in 1946 needs a minimum of twelve megacycles for transmission and because of problems of frequency allocation it was necessary that the system be proposed for operation only at ultra-high frequencies. In 1947 and 1948, RCA conducted extensive transmission tests at UHF among which were the tests at Washington. The results of the UHF propagation tests showed that much more work was needed in the UHF band before reliable public service could be given in that band.

This necessarily involved delay in bringing high-definition color television service to the public, in the UHF band, not

for reasons connected with color, but because of propagation difficulties. At that time, concern was also felt because the VHF six megacycle channels did not provide color television without degrading the quality of the received picture.

Therefore, even before the Washington UHF tests, RCA began a concerted attack on the widely accepted conclusion that high-definition color television could not be provided in a six megacycle channel. The objective of this was to develop a method of transmitting color in this bandwidth, without any degradation of quality of the received picture. At the same time, RCA retained its previous requirement that the system must be completely compatible .... that is ... present receiving sets would need no modification of color transmission in mono chrome and existing transmitters would continue to be useful as well. The result of the experimenting was the color system just described.

For the studion, RCA utilizes the same equip ment as for the wide.band simultaneous system. This equipment provides three signals, one for each primary color. Following this and preceding the transmitter modulator, the signals are rapidly sampled electronically in time order for each color, and are then combined. The resulting single channel signal is transmitted in time-multiplex fashion, requiring a total modulation bandwidth of only four megacycles.

The head-end radio and intermediate frequency circuits of the receiver are the same as for current black and white sets. The video signal is then fed to an electronic arrangement which is the inverse of the signal sampler at the transmitter. This results in restoring the three color signal channels of green, blue, and red, and these are fed in a simultaneous fashion to a three color picture-reproducing system, to be viewed as a single picture.

The RCA system has the following characteristics. 1. 6 megacycle channel. 2. Fully compatible. 3. 525 lines. 4. 60 fields per second. 5. Field interlaced. 6. Picture dot interlaced. 7. Fifteen color pictures per second. 8. Time multiplex transmission. 9. All electronic operation.

The same transmitters presently used by the television stations can be used for transmission of the RCA color system. Changes required for transmission of the new system are in studio equipment to produce the color pictures, and the addition of a small amount of electronic equipment required to perform the sampling and time multiplexing.

RCA's contention is that their system provides for the first time, a sound basis for bringing color television to the public, as well as full scope for continuing development of color as the art progresses, without involving obsolescence of present-day black and white receivers.

There has been another very unusual development in television recently - an engineering wonder devised in the labs of the Stewart-Warner Company in Belleville. For the first time on the North American continent, extension television was demonstrated on March 2nd, 1950. The demonstration then covered the use of one main television set and one antenna, and three extension reproducers or viewers. Engineers stated that this development can eventually be used to provide TV entertainment in as many as one hundred rooms at one time, from one master television set, equipped with auxilliary power.

The comments before the demonstration got started were to the effect that AM or FM radio could easily be extended to many rooms, but with television it could not be done.

And yet the demonstration on March 2nd, proved beyond doubt that multiple television, from one set, was entirely possible. What the gathered specialists saw was this -

A television set was placed at one end of the plant and tuned in to a live channel. The program was clearly received. Arthur Godfrey and other shows were clearly reproduced, in spite of the fact that reception was in a factory where electrical noises are always present. Then, with a twist of a wrist, an engineer extended the same program to an extension viewer two hundred feet away. How this was done, is, naturally, secret information. There was a single cable connecting the extension to the main source and the program was entirely reproduced on the extension viewer which is definitely not a complete television set. Similarly, there

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was no loss of definition, picture contrast or volume on the main unit.

While technical data has not been fully released, the engineering has been accomplished and production is scheduled to start soon. The spectators at the demonstration asked a number of important questions. One of these was - will turning on the extension weaken the picture and sound on the main set and the answer was no. Another - can the extension be used with the main picture and sound turned down, with the answer in the affirmative. Again - can the user of this extension set control the picture and the volume without changing these on the main set. The answer was again yes - it was done at the demonstration. And in the case of an out-of-focus picture, or loss of horizontal or vertical sync, as was purposely illustrated, the extension picture was okay and stayed put.

In every case, the many technical and other questions were answered by an actual demonstration to show the engineers and the other viewers present at the show, that the new development meets every conceivable desirable requirement. Nothing was left to chance, and the engineers were unanimous as to the proven fact and worth of multiple television entertianment from one TV set and antenna installation.

The possibilities of this remarkable step forward are numberless, because of the infinite variety of uses to which it can be put. Its use in schools with many classes would provide lessons from one source. In hospitals for children, kiddies confined to bed for long periods will now be able to get their education properly. And in military hospitals, and their civic counterpart, the possibilities are tremendous. Hotels are another likely type of user and the list will grow by leaps and bounds.

If you happened to be in a neighbourhood in which the cost of a good television set was out of the question, a neighbourhood pool could buy the main set, and each person then would purchase an extension, which would cost about half what a complete set does, and for which no antenna is needed.

Now for some of the other television news! Perhaps you've wondered how TV broadcasters were going to be able to handle any special events which were happening at the same time as regularly scheduled programs. Just as in ordinary sound broadcasting, it is done by recording the material, and then playing it back when it is wanted.

The system for doing this is called kinephoto equipment. Basically it is a projection type of kinescope, or picture-producing device, and a suitable camera, plus amplifiers and other accessories. The kinescope and camera are mounted on a double cabinet rack which houses the power supplies.

The equipment utilizes standard video signals supplied directly to it from the switching panels in the studio itself. The kinescope is a special five inch, flat-face aluminized projection-type cathode ray tube of short persistence screen. The color of the picture produced is bluish, and the actinic light value is very high. The motion picture camera can be supplied with sound recording equipment, to place the sound track and the picture on the same film or the sound signals may be fed to a separate recorder for editing, re-recording, and dubbing.

There are two different camera-recording units in use in this application - one of which will give a completed movie film in just a little more than a minutes time. To show what this means, here's a story a New York television station publicized recently. A three round boxing bout was televised by WPIX, and the Paramount Theatre in Times Square, picked up the show on a receiver of the above type, photographing it with the movie camera section. Then a fast developing film was used and in 66 seconds flat the show was photographed, the movie film processed and fed into the projector to be shown right on the theatre screen. The picture, in spite of the vast enlargement had excellent definition and detail. This extremely short time interval makes it apparent that the film process could be a formidable contender in the showing of special events while the news is being made. A baseball game, for ex--

is being made. A baseball game, for ex-ample, could be shown in its entirety, just a couple of minutes behind the actual plays on the field. Famous Players Canada have a mobile truck for this work,

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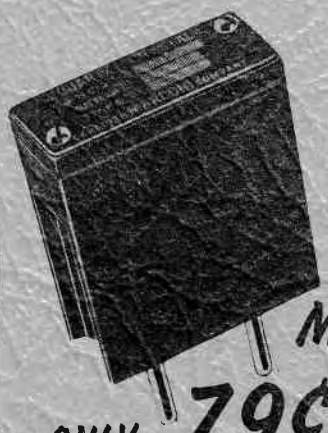

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