

# SKYWIRE

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THE CANADIAN RADIO AMATEURS' JOURNAL



APRIL 1950

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*Toronto, Ontario, Canada.*

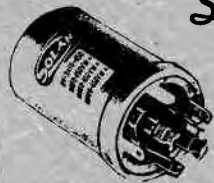
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10-10		350-25
10-10-10		350-25-25
15-10-15		350-300-25
20-20-10-15		300-30-30-50
20-20-10-15		300-300-300-50
30		400
10-10-10		400-400-25
10-10-10		400-50-50
20-15-10		400-350-25
4		450
8		450
32		450
60		450
6-6		450-450
8-8-20-20		450-450-25-25
10-10-10-20		450-450-450-25
8-8-8-16		450-450-450-25
1000		12v
300		60v
50		25v
50		50v
25		50v
15		100v
25-25		25-25v

Cap. Mfd.	TYPE	Mkg. V.
10	DY THIS	150
8-8	COLUMN	150-150
10-10		150-150
10-20		150-150
30-30		150-150
35-35-35		150-150-150
30-10-10		150-150-150
30-40		150-150
30-30		150-25
8-8-8		150-150-25
10-10-20		150-150-25
15-15-15		150-150-25
20-10-10		150-150-25
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# SKYWIRE

VOL. 3

NO. 2

Published monthly as

THE CANADIAN RADIO AMATEURS JOURNAL !!

Edited by - Fenwick Job, VE3WO

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VE3WO - 435 Parkside Drive, Toronto

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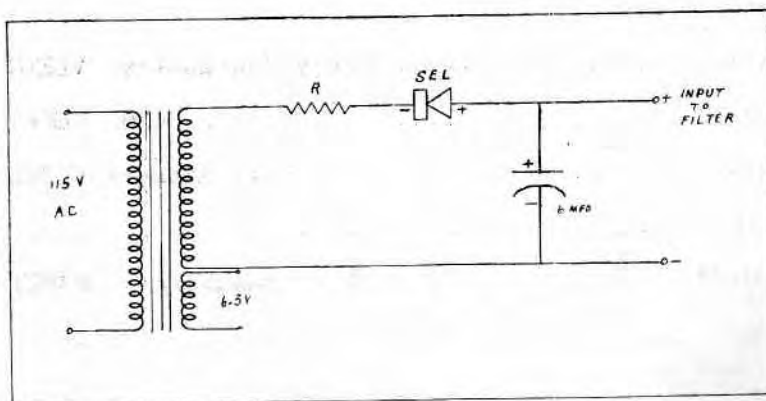
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# SIDEBANDS

Quite a flood of mail has come in during the past couple of months, asking what had happened to Skywire. Now that things are nearly back to normal, the story can be told.

You'll find the answer on the front cover, on the Contents Page, and in this column. *We've moved!* Instead of being located in Montreal, the *QTH* has been changed to Toronto permanently, and in the involved process of moving and settling in a new home in this city, it was necessary to suspend publication for a short period. Such a suspension was very undesirable from our point of view, but entirely unavoidable while going through the stages of finding accomodation in a city where none was supposed to be available - and in converting equipment to operate again in this 25 cycle area.

New sources of supply for the actual material used in production of Skywire, such as paper, cover stocks, envelopes had to be found, and the physical side of preparing for production took time. Now that it has all been accomplished, there should be no further hitches in always getting Skywire into subscribers' hands monthly as regularly as *CQ* and *QST* and about the same time of the month before long.

For the many who have asked about the Super-Modulation circuit, you'll find a start in this direction on page 10 of this issue which will answer some of the questions you have on the subject. Luke Bernier, *VE2LP* is the man responsible for this article, and prior to our leaving Montreal had written half the thing for Skywire. The other half was to be

sent along to the new address here. As press deadline came along, no script had been received and a phone call to Montreal revealed that although it had been mailed, it had not arrived here, so the assumption is that it was lost. Luke had no carbon copy ( a good idea for those of you who contribute to Skywire ) and a promise was made by Luke that we'd have, in time for the May issue, the rest of his material. How about it, Luke ????

Luke - as the man responsible for this very usable data to our knowledge, spent a good many hours developing this final. He worked with a scope and signal generator, day after day, for many weeks, until he got the right answers. Not satisfied with building and testing just a single unit, he built several, installing them at other ham shacks for test purposes, and now feels he has the final answer to the *QRM* on any band. Listening to the punchy signal that a Super-M job puts out, will convince even the skeptic that here is something well worth considering when building a new rig. The fine points of adjustment will be completely covered, and Luke has said he will try to answer any further items which may give you trouble.

Also in this issue is the first of what we hope will be a continuing series of good technical articles from England, which will be fully applicable to Canadian amateur radio. Short Wave Magazine, the leading ham publication in the British Isles has been kind enough to grant reproduction rights in Canada. Perhaps the majority of *VE*'s have not yet seen this fine magazine, but for those hams who pride themselves on keeping abreast

of what is going on ham-wise, it would be an excellent addition to the shack. Subscriptions may be obtained by writing direct to the publishers at 53 Victoria Street, London, SW1, England. While some of the circuits use British tubes, there is almost invariably an American counter part which may be substituted - and you will find most of the technical material, both very worthwhile and most advanced.

While speaking of British Amateur activity, let's compare our two countries. In the British Isles at the present time, a total of about five thousand hams are licensed. Population total of the Isles is approximately four times as great as it is in Canada. And yet Canada has more than 6500 hams licensed, with most of them active. *In other words, there are proportionately more than four times as many hams in this country as there are today in British ham circles.*

Perhaps the G's take their hamming more seriously than we do. But the point we'd like to make is that Short Wave Magazine is an old and established friend of the G ham, to which he contributes regularly. As yet, Canada has had no completely VE publication in the past years which has been fully supported by the VE, and the chore of getting good material is not an easy one today. It could be a cinch for us to put Canadian hams on the map again but it's going to take some work by YOU!

*At the risk of repeating what has been said in this column previously, Skywire needs a constant flow of technical material from every ham in Canada who ever built an original piece of equipment, and not just duplicated what Joe Doakes has done in Podunk City across the line. Such a backlog of material must be available, because it's quite certain that the VE ham has as much developmental ability in*

original thinking as any W or G put on earth. It's just a case of getting down work, drawing circuit diagrams, listing parts, and giving an explanation of what has been done, so another ham can follow!

Because this is going to take time - and time is worth money - accepted articles all pay a very substantial publishing fee which many times will completely defray component costs. You can earn some extra money for the rig just as easily as that, and at the same time, give Canadian ham radio another boost. Not *all* articles are acceptable of course, but in most cases, anything with a novel twist of interest generally will bring a check rolling in, as your compensation for taking the time to produce an article.

Similarly, make use of the various columns in Skywire, devoted to your particular interest. If you're a traffic man, and active on the nets, keep 2GM posted, and report regularly for Traffic Lights. If DX is your hottest item, then send in a monthly listing of who you've heard and worked, and where on what band they were, and help the other man along in his DXing too. Club reports on activities will be interesting to hams and space is at no premium. It is offered to *all* VE clubs for this purpose. To encourage reports from clubs in every section of the Dominion, *complimentary subscriptions to this magazine will be provided to every club reporting regularly. Make a motion on the floor, at your next meeting that the club secretary be detailed to send along a monthly letter (as many are now doing) and we'll see that multiple copies of Skywire reach the club mailing address, monthly. Publicize special undertakings of your group. Progressive clubs are looking for ideas, and your club may have one the others can now usefully apply.*

*Jenswick JB*

VE3WO

# OSCILLOSCOPE CHECKS

## In DSB and SSB Transmission

By H. C. WOODHEAD (G2NX)

THE cathode-ray tube is one of the most useful tools in the hands of the radio engineer to-day and, once its operation has been understood, it can be used for a variety of tests which cannot be carried out in any other way. The interpretation of the patterns obtained requires a certain amount of familiarity with the resultant forms of harmonic motion in two different planes, known to generations of sixth-form schoolboys as "Lissajou's Figures"—but it is not at all difficult.

For checking SSB transmissions oscilloscopically, one must also have a clear conception of the various conditions involved in order to be able to interpret the figures observed. It is therefore proposed to review the difference between SSB and DSB. Taking once again a carrier of 50 kc modulated normally (DSB) by an audio frequency of 1,000 cycles, the resultant will be the original carrier plus two side frequencies separated from it by 1,000 cycles on either side. For lower frequencies of modulation the side frequencies would be closer to the carrier and for higher ones correspondingly farther away. The spaces occupied by these frequencies are called sidebands.

If we represent the carrier as a vector rotating counter-clockwise 50,000 times a second, then the lower sideband will be represented by another vector rotating somewhat slower, in fact 49,000 times a second, and the upper sideband by a third vector rotating at 51,000 times a second. Now all this may sound very complicated, but there is just one thing about the picture that is invariable and that is the carrier vector which is rotating 50,000 times a second.

*Though this article explains the use of the CRO for checking an SSB transmission, for comparison purposes it deals also with the oscillograms obtained on DSB 'phone. Hence, it will be of interest to all who would want to know more about the use of the cathode-ray tube for general telephony testing.—Editor.*

### First Principles

It will greatly simplify things, therefore, if we can imagine ourselves to be rotating counter-clockwise at 50,000 times a second also, for then the carrier vector will appear to us to be stationary and the two sideband vectors to be rotating in opposite directions 1,000 times a second, as shown in Fig. 1. The carrier, in this form of transmission, is constant in frequency and level and does not therefore serve any useful purpose as far as the conveyance of intelligence is concerned. But it does serve as a "standard" against which the frequency of the sidebands is compared in the receiver, thus producing the difference frequency, which is the same thing as the original modulating audio frequency. Since the carrier takes up half the power of the signal and each sideband a quarter (for 100 per cent. modulation) it is obviously an economic proposition to dispense with the carrier if possible and transmit only one of the latter.

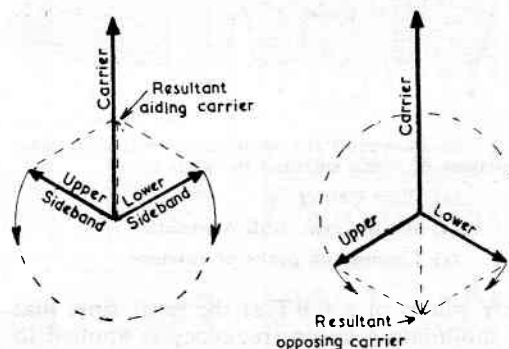
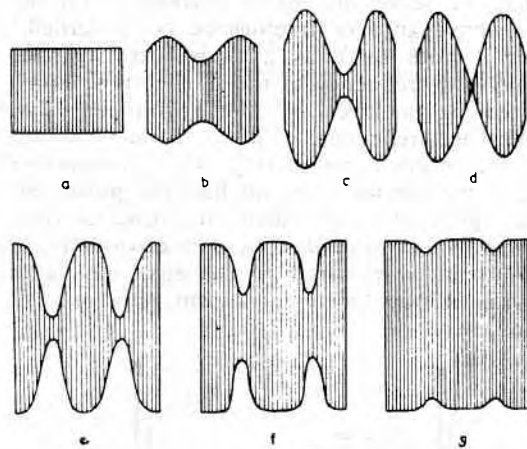


Fig. 1. Vector Diagram of a Double Sideband, 100 per cent. modulated carrier

In this form of single-sideband transmission, the frequency radiated is equal to the sum (or difference) of the unmodulated carrier and the modulating frequency. In speech it will consist of a band of frequencies to one side of the unmodulated carrier, corresponding to the width of the audio band being transmitted, as has been explained earlier (*Short Wave Magazine*, July, 1949).

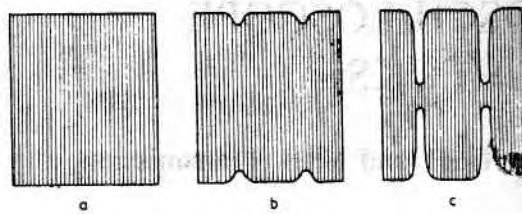
Once the idea of the "frozen" carrier is grasped, so that the sidebands rotate in opposite directions, the vector diagrams shown with this article will be understood. They show the various conditions of vectors existing throughout one half-cycle of audio modulating frequency at intervals of  $30^\circ$ ; the carrier (if any) and sidebands are shown in thick lines and the resultant in thin lines. In the next column is given the appropriate figure obtained when the radio signal is applied to



**Fig. 2.** Oscilloscope Patterns of carrier with increasing proportions of single sideband from (a) to (g)

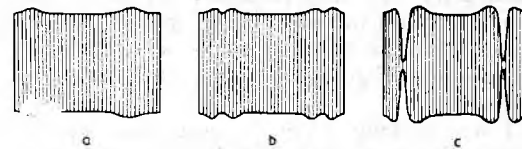
- (a) Plain Carrier
- (d) 100 per cent. SSB Modulation
- (g) Limiting on peaks of envelope

the Y plates of a CRT at the same time that the modulating audio frequency is applied to the X plates. For DSB this produces the familiar trapezium of modulation and two conditions of this are shown with a slight



**Fig. 3.** Effects of limiting on a carrier and one sideband with modulation increasing in level from (a) to (c)

difference in the phase of the audio tone. The second is often encountered and may cause confusion unless it is recognised as being similar to the first with slight audio rotation. It will simplify the interpretation considerably



**Fig. 4.** Instability and overloading on SSB with carrier

if the figures shown in this column can be visualised as transparent cylinders rotating about a vertical axis with change of audio phase. Thus the DSB case becomes a cylinder cut obliquely at either end, and the SSB ideal case is a cylinder which always presents the same shape no matter what the phase of the audio frequency.

In the last column is shown the figure obtained against a linear time base. A careful study of these figures will show how the proportion of unwanted sideband can be measured and some idea obtained of the form of the final signal and the effectiveness of the SSB filter by varying the audio frequency and noting the change in the oscilloscope figure.

#### SSB Condition

After the initial SSB line-up there may be some difficulty in adjusting the reinserted carrier level so as to produce a satisfactory signal for normal reception. This may, for



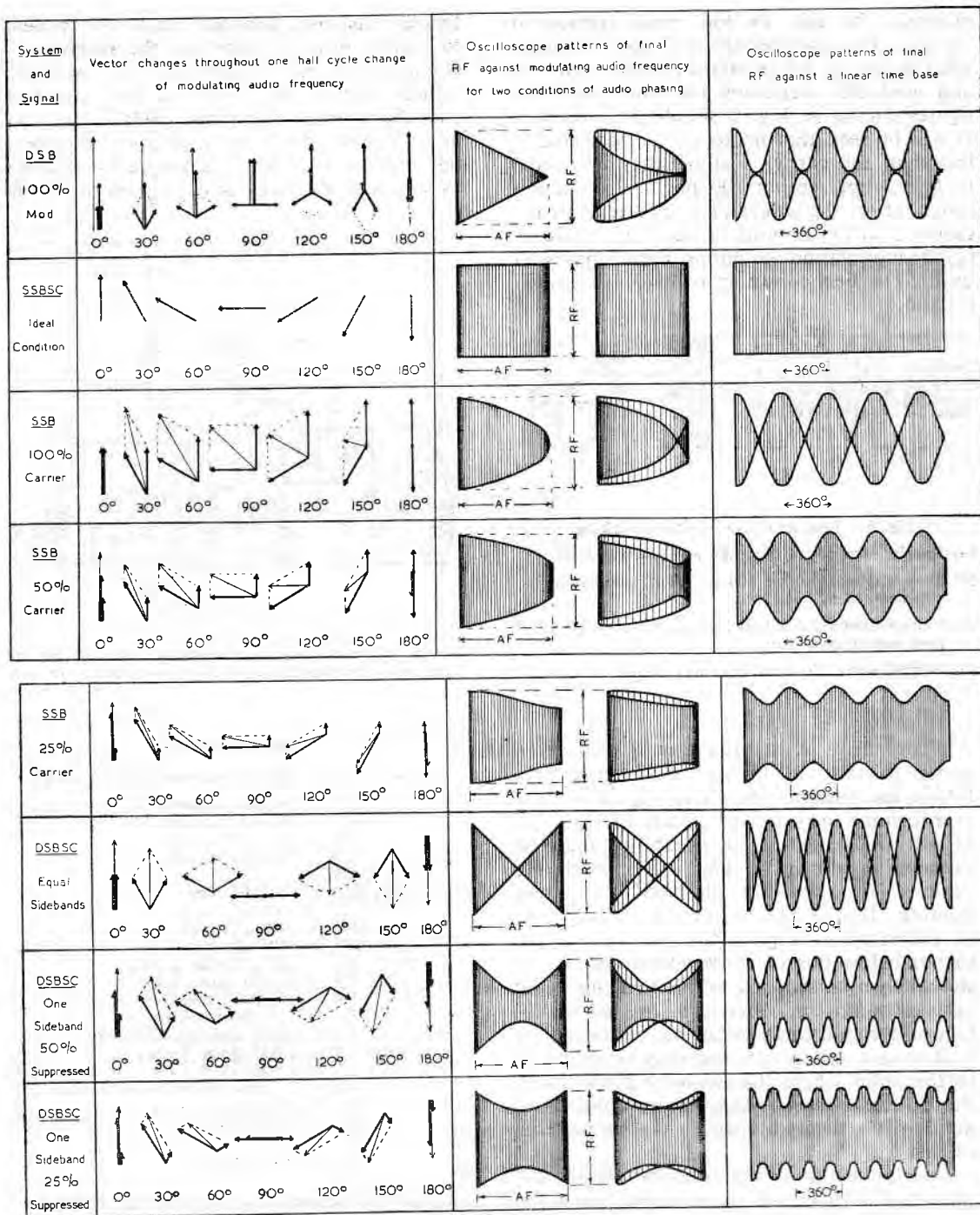


Table of Vector Diagrams and Oscilloscope Patterns illustrating various forms of modulation from Full Double Sideband to full Single Sideband, with partial carrier and with partial sideband suppression. (For details see text)

example, be due to too much reinserted carrier. The oscilloscope will soon indicate what is wrong, for in starting with carrier on and gradually increasing the audio level the figures shown in Fig. 2 should be obtained. It will be seen that up to (c) the sideband is less than the carrier; at (d) they are equal in level, representing 100 per cent. modulation; at (e) the sideband is greater than the carrier; at (f) limiting is reached; while at (g) the modulation has almost been suppressed by it. The best condition to work is between (a) and (d).

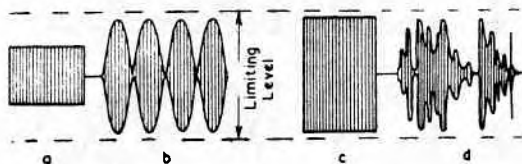


Fig. 5. Line-up figures for SSB working

- (a) Carrier level set to less than half limiting value
- (b) Tone applied to give 100 per cent. modulation for carrier working
- (c) Carrier removed and tone increased to give the same peak signal as at (b)
- (d) SSB speech to give the same peak signal as in (c)

If the drive is saturated with reinserted carrier to start with the successive figures may follow the patterns shown in Fig. 3 without ever forming the standard pattern of Fig. 2 (d) at all. A tendency to instability may be revealed as shown in Fig. 4, in which the position is somewhat obscured by severe limiting. It is as well to find the limiting level as indicated at Fig. 2 (g) and reduce the carrier below this to allow ample margin. It should then be reduced to one-half this value (as shown on the tube) to allow for modulation. When the carrier has been removed for SSB proper, the speech level may be increased to the point where the sideband peaks reach the double-carrier level. The relative levels are clearly indicated in the successive patterns of Fig. 5.

The application of the ordinary CRO to the testing of SSB is not very simple, but if the

former has been adapted (or a unit added) to enable it to be used on the receiver IF channel for the examination of incoming signals, it can be employed also in conjunction with the receiver to test the signals in the drive unit. The author favours such an arrangement but used with a separate frequency changer as shown in the schematic diagram of Fig. 6.

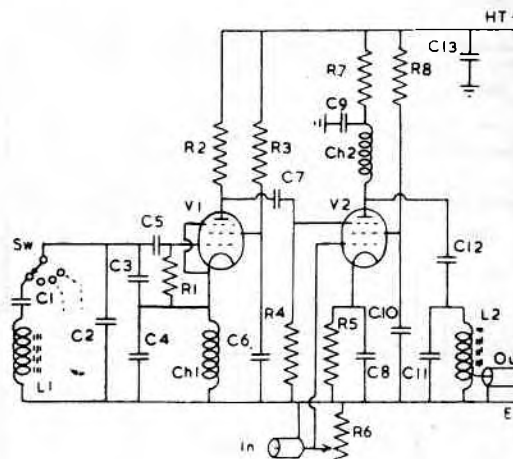


Fig. 6. Circuit diagram of frequency changer for use with an oscilloscope for checking transmitted wave-form

#### Table of Values

Fig. 6. The FC test circuit described by G2NX

- C1 = 10  $\mu$ F, ceramic
- C2, C3 = 50  $\mu$ F, ceramic
- C4 = 100  $\mu$ F, ceramic
- C5 = 15  $\mu$ F, ceramic
- C6, C8, C9
- C10, C13 = .01  $\mu$ F, mica
- C7 = .001  $\mu$ F, mica
- C11 = 500  $\mu$ F, mica
- C12 = .005  $\mu$ F, mica
- R1 = 50,000 ohms,  $\frac{1}{2}$ -watt
- R2, R3 = 20,000 ohms,  $\frac{1}{2}$ -watt
- R4 = 100,000 ohms,  $\frac{1}{2}$ -watt
- R5 = 220 ohms,  $\frac{1}{2}$ -watt
- R6 = 1,000 ohm potentiometer
- R7, R8 = 1,000 ohms,  $\frac{1}{2}$ -watt
- L1 = To tune 3.5 mc
- L2 = To tune, with C11, to 465 kc
- Ch1 = Choke for 3.5 mc
- Ch2 = Choke for 465 kc
- V1, V2 = 6X4, 6X5
- Sw = Range switch

The oscilloscope itself is provided with an

internal amplifier, giving deflection on the Y-plates, and is fed from a co-axial input. All the circuits are fixed tuned to 465 kc. The arrangement is very convenient for plugging into a 75-ohm output from the final IF stage of the receiver for examining wave-form of incoming signals. The frequency-changer unit of Fig. 6 is quite simple, consisting of two 6SJ7's. The first is an oscillator which is switched to cover the bands required, including one for 5.65 mc which is used in an

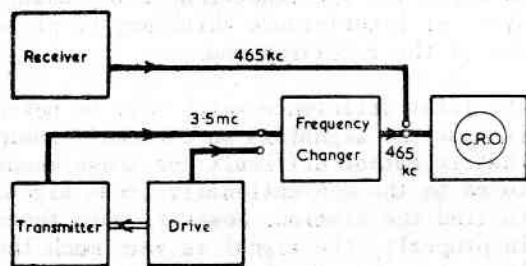


Fig. 7. Block schematic of set-up for checking wave-form of transmitted or received signals on an oscilloscope provided with a 465 kc input

early part of the drive. The second is the frequency changer, having signals applied to the control grid and the oscillator (differing by 465 kc) to the suppressor grid.

The signal is taken to the co-axial input from a pick-up loop in the transmitter and a level control is included. The anode of the second valve is tuned to 465 kc and provided with an output at 75 ohms impedance for connecting to the oscillograph. The arrangement of the test set-up is shown in Fig. 7.

It will, in general, be found advisable to have this equipment in operation during transmission until experience is gained in the adjustment of the respective carrier and speech levels. In any case, a speech-level meter is almost essential to prevent overloading (especially when carrier is being transmitted for calling purposes) for it is very easy to degrade the quality of the transmission by over-modulation in this condition. When using completely suppressed carrier, however, it will be found that there is much more latitude and that the speech level can be much higher before appreciable distortion becomes apparent due to overloading, and in practice the level in this condition may be such that peaks go beyond the limiting point. They will, of course, be cut, but, provided ample carrier is reinserted at the receiver, the result is not such as greatly to impair the quality. If the conditions shown in Fig. 5 are adopted for general line-up in the first place, the speech level may subsequently be increased beyond that shown in Fig. 5 (d) in accordance with experience and reports of reception.

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Next month in Skywire -- don't miss it!!!

## 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)

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# SUPER-MODULATION

by  
Luke Bernier, VE2LP!

*Economy and extended power for your rig with the Super Modulation final!*

After several years delay in presenting a new method of generating R.F., the Super-M circuit comes at a time when improvements are badly needed in amateur experimental, and communications service. Several transmitters have already been constructed in this area using Super Modulation and many hams have watched with a critical eye the performance delivered by the circuit.

By circumventing previous sideband power-restrictions and applying heretofore dormant principles, unknown to most amateurs it has been possible in Super Modulation, to obtain emphasized sidebands and a semi-compressed carrier. Transmission by these means provides a far greater signalling efficiency than was ever previously considered to be possible.

With more than four times the true sideband power, at full modulation, and only one half or less the usual bandwidth required in conventional practice, Super-M transmission efficiency is about equal to that claimed by some for single sideband operations. In several respects, Super-M seems to be much superior.

Effectively speaking conventional systems are limited to a side band increase, with no increase in power input to the power-producing equipment - the carrier. Using semi-suppression, or compression of your carrier power under full modulation, when the sideband is driven upward to a higher level of output, the carrier is reduced - at the same time - to allow room for this additional side-band power.

Naturally, it follows that this will also allow for the reduction of any heterodyne, or interference which may be present at the receiving end.

The first difference which will be noted is that the signal is so extremely sharp that it rather difficult for those accustomed to the conventionally broad signal to find the station. However, when tuned in properly, the signal is very much the loudest one on the band. In many cases, a heterodyne present on a normal carrier is not audible at all.

The Super Modulation system has these advantages, which you can add up to being, to the writers thinking, the considerations which should be given to any rig!! The number one advantage in crowded city areas is the very considerable reduction in *BCI* because of the complete lack of buckshot and splatter. You'll also learn that you have more than double the overall efficiency of conventional systems, with far less complicated tuning and apparatus - and expense - when you study a costing of these items. Also as the power amplifier and positive modulator tube coupling is used for audio pulse work on modulation only, it is possible to use a much greater input power, with a resultant increase in *output power*, too. There is more talk power, when measured in *Ib*, for the size and weight of this rig, and you'll find that there is a substantial, enjoyable effect in reducing the noise-level of the conventional receiver, when used in conjunction with Super-Modulated rigs.

Sideband power alone, irrespective of how it is generated, is that part of a transmitted radio telephone carrier wave that conveys the intelligence to the receiver at a distant point. The undesirable carrier is one of the great contributors to the noise and interference which are not iceable in most receivers, even of advanced design. And, if the side band power is the true reproduction of the modulation, then the bandwidth required is just about one half that which is necessary, with the usual high-modulation percentages.

#### BASIC FUNCTIONING OF THIS SYSTEM

A conventional power amplifier adjusted for maximum power output, proper tuning, matching and loading is assumed, and the correct values of bias, screen and DC to the final amplifier section are to be on the tube used, in order to obtain maximum efficiency. The R.F. drive is to be taken from a buffer stage through a capacity, which in next months diagram will be marked as  $C_p$ .

When modulation or intelligence is applied to this R.F. carrier output, the side band product, measured in volts, is just double for positive or upward modulation and this same R.F. carrier is reduced to almost zero for the negative one half modulation cycle. The commonest practice - and the one still in use - has been then to increase or decrease the carrier which has been controlled and timed, so that as it follows the waveform of the speech, or intelligence applied, there is an upwards increase of equal amplitude and duration, to that of the negative modulation.

Arrangements have been made for a second tube of the same power input capacity to be known in the schematic as the P.M. tube and a second tank condenser is added for separate flywheel action. The output of this second tube, PM is connected about a

half of the way up the output tank inductor, at a point where the second tank capacitor mentioned earlier, is connected too.

Tuning of the new final is the same as it was before, with the dual tank condenser adjusted for the minimum dip of the Power Amplifier Tube. When the plate current is at its lowest point, the final has been resonated properly. The second tube although attached to the output tank circuit, contributes almost no carrier under no modulation condition. This low output is due to the high biasing and the low drive from a coupling condenser which is connected to the RF reservoir being used as the driver stage of the rig.

With the positive one half cycle of modulation, the number two tube conducts. Thus, operation is at a high degree of efficient and effective transmission, and with very small angle of plate current flow. Triggering control and amplitude of the RF driver pulse as well as its wave form is effected by the positive one half cycle of audio, as generated by the audio stage and separated from the negative one half cycle of audio, at the secondary of a transformer. The positive one half cycle of audio opens biasing gate from the R.F. drive, during the time required. During this period, positive modulation of the carrier is developed by power from the second tube. This is applied to and is additive with the carrier power already present in the output tank. There is no increase in plate current to number one tube, and by allowing operation of the second tube only during the positive half cycle, a considerable saving in over all input is achieved. In normal plate modulated rigs, this same hi-power modulation energy is used to develop the negative modulation of the carrier, at considerable waste.

In Part Two, next month, we'll give you a list of other advantages, the diagram and a parts list to be used in conjunction with a readily available hi-power beam tube.

# SALUTE!

Another mile-stone was just recently—in March—passed in Canadian amateur radio when a group of sixty five Montreal hams gathered in the Blue Room of the famous Ritz Carlton Hotel in Montreal. The date was March the fourteenth and the guest-of-honour was the Canadian General Manager of the American Radio Relay League!!

Genial Alex Reid, VE2BE was being given a testimonial dinner upon the completion of twenty years of fine service to Canadian amateur radio. During that time, our CGM has become the warm and personal ham friend of 'fraternity members' all over the Dominion of Canada.

There to participate in the dinner proceedings was A.L. Budlong, Managing Secretary of A.R.R.L. who had made the trip from Hartford to be there. Alex Lariviere, VE2AB, representative of Canadas French speaking amateurs. George Desrochers, VE2ZZ, of the Department of Transport were on hand, with proceedings under the chairmanship of Lin Morris, 2CO.

Mr. Budlong in his address to the gathering paid tribute to Alex' wise counsel at A.R.R.L. Board Meetings. He reminded the group, at the same time, that Alex, serving as he had for this exceptional time, was, as a result, the Senior Director of the League today - an enviable record.

Chairman Morris who has known Alex person for most of the time he has been C.G.M. - stated that amateur radio, as we know it today, owed its very existence to such a man as BE, who had given much of his time and effort, voluntarily, to the necessary administrative work of our hobby.

Mr. Lariviere then recalled the excellent work which had been done for so many past years by Alex in his position as Canadian General Manager, and George Desrochers, 2ZZ stressed the good relations which exist today between the Radio Division of D.O.T. and the amateurs, and the great contribution which had been made by the guest-of-honor to this happy state of affairs.

As a memento of the occasion, and as a sincere token of appreciation, on behalf of Canadian amateurs everywhere, Alex was presented with an engraved electric clock which is now firmly ensconced in his ham-shack.

Among the many others attending this most memorable gathering were Maurice Drolet, 2OF, President of the Quebec City Club, - Father E.C. Robert, 2EC, Secretary of the St. Maurice Valley Club, Romeo Leonard, 2HZ, President of Les Amateurs Canadian-Francais de la T.S.F., Herman L. Eberts, 2XP, President of the Montreal Amateur Radio Club, and Wing Commander H.C. Ashdown who is the Director of Radio Warfare for the Royal Canadian Airforce.

During the evening, a good many messages, from all parts of the Dominion, arrived to congratulate Alex. There were radio messages and telegrams from S.C.M.'s and Clubs, letters and even a recording by the Maritime gang, which was played over the .1A. The evening was concluded with a program of entertainment provided by Gordon Waugh, 2SA, Dick Wanless, 2AKM and Larry Roach, 2BT. Committee assistants were John Pavey, 2KH, G. Desrochers, 2ZZ and C. Dumbrille, 2BK.

Alex Reid, VE2BE, we congratulate you!!

# LADIES PRESENT!

If all kinds of sounds were audible to humans, this would be a very noisy world. Some scientist said not long ago that it was a fortunate thing, at least for the state of our nerves, that some of the potentially loudest noises can't be heard by us at all - and whether any other living thing can hear them either, we have not yet been able to determine.

There is evidence that dogs, and possibly many other animals can hear sounds which don't register on our ears at all. There are noiseless dog whistles as you know, which operate on such a high frequency they are inaudible to us at all. However, science considers it very likely that all forms of life are protected against these most powerful sound waves. For example, a demonstration was made at an engineering show in New York in which a development company showed a glass tub which was partially filled with water. And in the center was a shallow bowl just four inches in diameter and with the top just a few inches below water level. Suddenly, onlookers saw the water begin to boil and a stream of water, as if from a fountain, shot up over the bowl itself. This was done by subjecting the water to soundless sound waves travelling at one half million cycles per second. It would have been terrifying had those sound waves been at all audible, but it was so quiet while the demonstration was made, except for the splash of water, that you could have heard a pin dropping there.

This was only a trick demonstration, of course, but there are plenty of implications. It was carried out because researchers had discovered special properties of a material called barium titanate. The bowl was made of this material and when a

high frequency sound wave was sent through this - it looked much like an ordinary porcelain bowl - all the molecules in this thing started vibrating, sending out many beams of completely noiseless sound waves which made the water bubble up because they were focussed on one point of the surface through the shape of the bowl. In other words, the bowl acted much as a lens would in a camera. Now - this barium compound can be formed into any shape or any size and it will, under the stimulus of an electric current, produce noiseless sound waves which can be focussed on any one spot. Already, in experiments, these sound waves have accomplished seemingly impossible things such as the mixing of oil and water. They've even mixed water with mercury. It stands to reason that a great many uses for these sound waves are still to be found. In case you're wondering, today's application has been mostly in the fast homogenizing of milk, or for that matter, any blending of liquids or juices. And the same noiseless supersound can speed up the laundering of clothes. Their use may even spread to the field of medicine with doctors using supersounds instead of a surgical knife. Already, they have been experimenting with such work. The sound waves have been focussed on the skin in such a way as to destroy some of the tissues underneath.

Speaking of noise, or the lack of it, G.E. has said that they're selling American-made U.S. electric clocks by the thousands to Swiss watchmakers. The clocks are the kind that get you up in the mornings by turning on your radio automatically. This all adds up to a somewhat odd cycle when you stop to think about it for a moment. Swiss watchmakers are being awa-

kened by American made clocks, so they can get an early start each morning, making Swiss watches, which when finished, will be sold to American workers in order that the Swiss workers can earn more money to buy U. S. clocks to give to more Swiss watchmakers. That could also add up to quite an earful.

A new tool has been made available for the sterilizing of food which is one of the most powerful instruments yet devised, to do this job. In the past, the accepted way of sterilizing food was to cook it, but this new machine called a Capacitron, will do it not only at room temperatures but even at three hundred degrees below zero as well. This instrument generate three millio c volts and takes a fraction of a second to kill bacteria. The foods flavor remains completely unchanged. The theory behind the machine is still not completely understood by the men who were responsible for designing it.

However, scientists are inclined to believe that the electronic blast is effective because it drastically affects one of the nucleic acids. If you wonder what use there would be for such a machine, remember that more and more foods are now being packed in frozen form, and there must be a sterilizing of these goods at a low temperature, if it is to be done at all. Thus the scientist has again caught up with the frozen food industry, and as a direct result, you'll be getting foods which are tastier and fresher. Perhaps the OM could be induced to build such a unit for the home preserving chore each season ---- a big help to you!

The science of atomics eventually may be harnessed to do a job which has frustrated some of the leading citizens of our community for many years - that of finding a golf ball, lost in the long grass of the rough. In all the long years that the

game of golf has been played, nobody has been able to simplify this problem. You can go out on any course and see players wandering about in the tall grasses heads bent, looking for that elusive pill. Some are lucky enough to find it, but as often as not, it lies hidden for weeks, until someone else stumbles across it there. Now it has been seriously suggested to US golf associations that something be added to golf balls - a dash of any radioactive substance which could then be traced in a flash by a caddy who would carry a weeny, pocket sized Geiger counter. With this development, the atomic age could really come to duffer land and the idea is quite seriously being discussed and considered.

By the way - the United States Navy, so close to us, has been experimenting with what appears to be an airplane version of radar ships used for the spotting of the approach of enemy aircraft or ships. A Navy announcement in Washington gave a brief description of a transport type of plane equipped with elaborate and complex electronic gear. A Constellation was to be tested in Burbank, California, which was loaded with airborne electronic units of many new and unknown types. The fact that there was sleeping accomodation on board the aircraft, specially built, indicate that this plane was going to be used on long flights, and probably as a patrol search plane. It was equipped with at least three domes, making possible a radar sweep in all directions.

The other day, a towing truck stopped at the scene of an accident and when the driver found a man critically injured, he reached for the two way radio-phone on his dashboard and flashed a call to the Brooklyn Telephone Answering Service. Sam Schiller, who runs this, quickly notified police and in no time at all an ambulance and a police car arrived on the scene.

Sam started his service fourteen years



ago and now has nearly three thousand clients including some fifteen hundred of the medical profession. He was the first man to persuade many of them to install two way radio phone in their cars. It is so inevitable that emergencies will occur in a city of this size and sam handles about twelve thousand calls a day. Not so long ago an oxygen service despatched a tank of this gas to a cardiac patient. The oxygen unit failed and the attendant radioed Sammy. Sam radioed another oxygen truck on the same street .. it rushed out and saved a life.

One doctor who didn't answer his radio- phone was located in a restaurant he gets around to visiting only once a month. He was rushed away to a patient in hospital who needed an emergency appendectomy. Sam has a careful file on all their hide outs and habits, and when Sam couldn't reach another doctor away at a seashore for a vacation, Sam radioed the local police at that point and the medico was found very quickly. And, Sam says - we do get the doctors wife who asks us to radio him a reminder to have his supper: or the doctor who radios us to phone his maid to shut the windows because it's raining.

When Sam first started to call on doctors they were sure he was a prize fighter. He carefully and patiently explained his broken nose was acquired from his Brooklyn boyhood. He was born in Hoboken and has been a Brooklynite since the tender age of four months. He's so avid about this point that all his seventy five operators never use the word Roger, but substitute the Brooklyners favorite - Dodger instead. The station call letters at the moment - W2TXJ with Sam working hard to have a change made to WBUMS..

During the Depression, he ran the switchboard of a hospital where he had spent a year with a bad case of pneumonia. Sam says the hospital was memorable for two

reasons - it gave him his present idea, and he met his wife there. She was a nurse and was making about three times as much as he did. Sam says that a good time for them both in those days was a five cent bus ride.

He borrowed all the money needed to start, and began the service with a single doctor as a client, plus a hundred other promises. He had so much energy and enthusiasm, he just had to thrive and before long his clients included fuel companies, plumbers, and the Society for the Prevention of -- Cruelty to Children. And - he knew how a doctor liked some very personal services.

When the maids called their boyfriends to tie up the phone, he'd get behind the switchboard, flip a relay, break into the conversation and tell them that the line was needed, as a patient was calling.

Sam prefers married operators. All of the current staff with one or two exceptions, have children. About twenty of them are in the grandmother category. He says these married girls understand the feelings and the worries of other people much better, and are good in the pinch when decisions are needed in a hurry. They don't panic as easily as single girls.

For instance, when a dignified, handsome man of 38 walked in wanting to subscribe to the service, one operator remembered she had seen his picture in the paper, and sent for police while she kept him talking for 20 minutes about a radiophone for his car. It seems that the man was wanted in 25 cities on passing bogus checks, and he frequently used Dr. as an alias. The crook got twenty years and the girl who spotted him is now the chief operator.

Sam says if you like fires, he hears about them as soon as the fire department, and if you subscribe to his service, you can get to fires as soon as the firemen do!

Name ..... Call .....

Address ..... City .....

The two dollars is enclosed in Money Order ( ) , Postal Note ( ) , Cheque ( ) ( Exchange )

There's plenty of activity around the country to report on this month, although the VE6 and VE7 call areas are among the missing still. If some of you club secretaries out that way can find the time, how about sending along news - regularly each month, to the Skywire Editors' new location in Toronto ????

Let's start East and go West, with VE1!!!!

THE Loyalist City Club Bulletin has a new Editor now. Murray Doull, who did a most thorough job for such a long time has now been able to get back to more active hamming with Malcolm Redding, VE1IZ replacing him. XN is said to be experimenting a bit with Super Modulation. Ask DA what he thinks about it. EA is still getting lots of DX on 160 meters. AYL is using a 20 m-antenna for her 75 meter phone contacts. Quite a trick! AAW is latest YL in this area. EE has mobile-emergency power at the house. TS is using NFM on 75 and finds it okay. LM likes 80 for DX. You should see what he's worked there. DR has new position in RADIO of all things. DW's XYL has presented the OM with a son. BK is on 80cw most of the time. IE claims WAC on a tough band - 75. Are there any others who have done this job? VJ is traffic bug at the 40 meter nets. AA's half gallon sound ing good on the bands. LH figures the new Harmoniker deal would be good for BCI too and is working on it. ( See inside front cover of this issue - Ed ). GQ is new President of the LCRC. RQ is Veepee. FN, who is ex2AEN is the Secretary and MR handles the funds. ZS has a tough time with AC/DC and is going wild cleaning them up. GJ, BI and BM are strictly brass pounders. TE is just going through a rebuild to 812's for the final. JG wants a dynamotor for mobile work. Anyone giving oie away? YU handles tlc on Bluenose net, although he claims a name like this wasn't his doing! TZ built a new scope and is now trying to de-bug the thing. EG is looking for small lathe for machine work. LG is Secretary of the Maritime Net.

AND - from the second district - VE2!!!!

The Saguenay gang is keeping all bands active. Reports from there show DV busy on 10 meters, trying new ground plane antenna with fine results. ACC has TBS-50 working around the clock chasing DX - and yl's. WV had 813 final - and we mean - had because he put 20v on filaments accidentally. TV is operating a little on CW, pedning completion of modulator. RA left fone for CW recently and found a real treat in it. ALH has new HQ-29 and now is waiting for that Collins 32V. ALG got her big thrill in first qso, and as first YL operator here gets a big congrat!! ACI, due to other interests has let hamming activity go. YH rebuilt in a new cabinet and now will be spending time operating. YM soon will have a mobilerig on.

In Montreal - RD had a shorted filter in his recvr which burned part of it out. WY is now portable mobile. ADV is now on with a PM rig which seemingly works fine. AKM is now on 40 and enjoying his new hobby immensely. Dick's rig was helped along by other locals, as he is Montreals most recent sightless licensee. HG had severe bout with pneumonia, but is now on the mend and on 10. ZZ, local R.I. getting some fine QSL's from countries he's never to this date worked. Pirating an RI's call is a little unusual. QQ was supposed to transfer to Toronto, but it was a false alarm. TH made the switch and is now VE3WO. KG building meteorological set-up at shack. Call him any time for the weather. YP has moved to Valleyfield. AGA is newest ham on from this Valleyfield location. QRM is getting more noticeable! FX, rebuilding for months, is just finishing up a 150 watter now. Annual meeting of the Montreal Amateur Radio Club gave new executive to club. Herman Eberts, XP, G.R. Montgomery, KG, John Pavey, Arthur Ashton, Harold Coram, Harold Harries, Harold Ward, Tom Lott, Gerry Hudon and Ethel Pick are the directors. How do they iron out who has been spoken to, when the name Hal is mentioned at a meeting ??

Speaking of meetings, the YMCA in Westmount on Sherbrooke St. West, is the monthly site. MARC will be using now. Meetings are the last Wednesday of each month, with good attendance and membership prizes. Starting time is 8.00 p.m.

From Toronto and the rest of the VE3 boys -

IL is now port-mob on 75 fone with Command transmitter and RAIB. TC is putting one of the little units on 75 too. AIB still pulling a first out of the hat now and then. Les made contact with Waterloo on 2 and ANT. DAN, BQN, AQQ, BOW and BEC followed it shortly after. AHV had DXCC three months before anyone was told about it. During the Big Blow early in the year VO, AIB, AQQ, AZX and BQN all lost their beams. Two has been plenty hot in the city with many hams using Cascode Converters which help plenty. DAN has been heard testing on 400 mcs with W2ORI and W2RPO, but no across lake record yet. The boys in Niagara Falls and Buffalo are quite active on 400 and Toronto hams are just getting under way on this band. Good luck.

Oshawa hams held a get-together on April 15 at Hotel Gehosha, under North Shore Radios' auspices. Eating, entertainment, dancing on the agenda made it a successful evening. Hart House amateur radio club has a new executive too - Frank Ford, AKO as Secretary, Bob Andrews, RA, Engineer, Doug Piper, BKK, Assistant Engineer, Phil Byrne, AXX and BYJ. Pete Waddington members at large. Three additional posts remain unfilled until Fall. DH in Trenton is back on in the Nets again. YP had quite a time converting a surplus rcvr. AIL has found two meters exciting. ASD QRT, due to rebuilding of exciter. RR can give a nice bit of dope on souping up BC-454's. ABC and BUX compete for QSO's. OJ in Ottawa now and then on two meters, looking for contact with stations in Toronto area. Could be GO in Kingston, setting up skeds with Antarctic area. BDA and ATL worked together ironing kings out of ATL's rig. CBA ran into a little VFO trouble recently. Up around city of London, the boys have a terrific club. It meets the second Thursday of each month and at Maguire Motors, opposite the Post Office if you happen to be in town. Hamilton boys, according to the grapevine, haven't slowed down at all. ABP has 102 countries now. BQL was back in town on sick leave, after being flown out from Whitehorse. JU snagged his 82nd country on a CQ. DEF, in first year on the air now has 35 States confirmed for WAS. The Hamilton A.R.C. now has more than sixty paid up members for 1950. In Windsor, Ralph Dierlam reports little activity. AKS, BHE, and himself are the only boys on and active. Ralph is on two, but nearly all his contact is with Detroit. He heard AIB last summer.

The VE4's have sent in a couple of reports too.

The Brandon Amateur Radio Club elected new officers for the year, in February - the President being 4AO, V.P. is IF, Secretary Treasurer, KN, Program, IF, Publicity EY and CS, Property, AV, and Social Director, GE. There are several new calls in the Brandon district, among them CS, HQ, HT and FS. IF has a new rig with a 304TL final. MW also has a new rig on 28 mc, with 812's tank circuit warmer-uppers. AO now has the kinks out of his rebuild to 813, while KN is just getting started on the job. KN is looking at bigger jug for the last stage of his rig, so between these boys, Brandon should be well on the map hamwise before long. QD was on the sick list, and while mentioning doctors, credit should be given, with congratulations too, to AP and xyl on their new Jr. Op. MW, while on vacation visited 6KN, and 6KX. VE1PF, ex4LM has been heard in Brandon on 7mc, from Fredericton. RIVERS Manitoba has very active hams on the station and they should be in new quarters by this time. Club uses AT-1, AR88 and JV, WN, TN and BN keep the filaments hot. The other members operate own rigs at home. Active on 75 fone nets are FA and AX, while BO and NR keep 10 going. HY is finally getting some reply to his CQ's on 80 and 40 now (Nice to be able to speak to Ed again). CS now operates 4CS/VE8, at Kittigazuit and beats the mail on 10 with tfo for his xyl.

Here's the gen from VE5 - VE5JV seems to be on working DX more than any other VE5, since he is apparently the only one to make DXCC, and was a surprised boy to learn he'd made it first. Up in Saskatoon, GR reports hamfest plans moving well with everything under control. Date is July 1st in HMCS Unicorn with more to follow at the Bessborough Hotel later. FY and UC are fiddling all their spare time with port-mob. gear. UC boasts he was heard 100 yards away. GG is pounding the key on all bands. OB likes 75 best. RL is on 40 and raises canaries as a sideline. YF is trying to keep VE8 sked with no success. JF now is using his 29 tube home built receiver. What can this NOT do? CJ says his SX-25 from 5MQ works like made. DC has new harmonic. DG joined those benedicts and went on Operation Sweetbriar. EW has his family back from Scotland, but no time, as yet to get his antenna up.

VE8 news was very brief - 8AP, BC, BZ, GH, CA, CIT and AR all operate on a 75 meter net. MN should be back on soon with small rig. Recent qso on merits of 5Y4G's is reputed to have lasted from Saturday at 11.00 pm until Sunday with BZ and AO.





# TRAFFIC LIGHTS

by

Bert Altherr, VE2GM.

Now that most of the big annual contests have come off as scheduled, it's time to get down to the business of traffic again. It was very interesting to see some of the traffic men in there knocking off DX on 80 meters recently!! We got a few of these stations, ourselves, in between skeds. But if that subject has to be covered, we'll let it be done in the DX news.

As far as traffic goes, the nets have been on the go, and kept extremely busy right along!! The NIS has been working out very well, as an increasing number of independent trunk lines, operating regularly, have been sending representatives in nightly to pick up some of this load. There are apparently two reasons for it. The first is the amount of traffic being done and the second is the common desire to obtain more outlets in both directions. Everybody is happy about it, seemingly, as the chances are that traffic, if moved at all regularly will, in most cases, or at some time, go through an NIS or NIS affiliated network. That's the way teamwork can help to bring traffic operations to the fore. And remember, it's all to better ham radio in general and better relations with the public too.

This time there has been some real news from the far West of Canada. A great letter arrived from Wes Veale, VE7YI, who has given us a lot of information about what the VE7 gang and BC net have been doing. The BCN (British Columbia Net) was first organized on May 15, 1949 and the frequency regularly used is 3655kcs!! The time of operation is from seven to 10.30, nightly and continuously through that period. Since its inception, some forty stations have reported in at one time or another, and today about a dozen are to be heard nightly. Result of this activity brought the December totals, for messages handled, to 1250. Since that net operation, some eighteen stations have taken to calling in, and the traffic is still being moved in large quantities. We'd like to count on hearing from you people regularly.

To give you an idea of how BCN is operated, a seven night a week schedule is maintained. On each night's operations there is an NCS whose duties are always on the same night of each week, so that everyone is familiar, well in advance, with who will be NCS on any particular night. The Net Manager, VE7YI takes two nights - Saturday and Sunday. BCN has nightly contacts with all Western U.S. nets and Alaska, as well as VE8, Trunk Line 'I' and the Seventh Regional Net. The biggest problem at this time is to maintain contact with TL-I, due to the absence of VE6 and VE5 stations. A majority of the BCN stations have low power, and cannot reach right into VE4 themselves.

The stations active in the first months of this year were - VE7's - TF, XA, OD, UT, AMO, ACZ, AKM, QN, YG, SA and YI. One idea for all readers of this column is that if you find a call identical to your own in another call - area, get on the Nets and work it. Get another traffic section moving near YOU.

We have also received some news from Art Morley, VE4AM, in St. Vital, Manitoba. He gives us the complete gen on the Manitoba ARRL Fone Net, which works at 3760 kcs at 7.00 pm. only. The NCS are VE4's - FA, DN, GB, CE, and AM. A complete start from scratch was made on this net back in October, 1949, and the organization now boasts a membership of twenty seven, with the actual regular attendance averaging sixteen or seventeen operators. Pretty good!!

This Fone Net sends representatives to 10th Regional Net and Trunk Line 'I' - and by the way, VE4AM is Manager of TL 'I' as well. The net has a tie-in with Saskatchewan and Alberta nets also, on phone, at 8.30 p.m. Art says they have the Province pretty well covered on this basis, but that they are still looking for stations in the very far North. Art says he'd like these boys to lend a hand and feed traffic to the excellent Manitoba Net.

As we go to press, a letter from Elsa Camp, in

the Yukon Territories, advises that the VE8 gang has a local 75 meter net in operation, almost any night of the week. Those on this net are VE8's - AO, at Lake LeBerge, BC, at Bear Creek, BZ, at Fort Selkirk, GH, at Snag CA at Aishihik and of course, as 8CI puts a finish to the note, CI and AR also are active on it. It may be that Bob Jordon and YF 75 phone net will give that opening to this territory that some of you boys have looked for in the past. Incidentally, Bob says the 20 meter band is usually not so good, and a major part of operations are conducted with 75 meter rigs.

Another C.W. net that has been operating in the East since September, 1948 is the PQN - In Quebec Province. PQN is on 3570 and 7.00 PM is the meeting time for the first stint of the evening. The boys usually get together again at QP.PP PM nightly, Monday through Friday, inclusively. This organization was started from scratch too, and although some Old Timers are on it, most of the boys are new hands at traffic work. This has meant a lot of time has been spent in their learning net procedures themselves, and teaching it, frequently, to others. Today, all stations, even the newest additions, are thoroughly, and completely, familiar with net procedure and it is interesting to note that all members have increased their code speeds quite appreciably.

PQN covers the southern section of the Province and has a tie-in with the QPN, or the Quebec Phone Net, which covers the remainder of the Province very well. The Manager of QPN is the Reverend E.C. Robert, VE2EC, who is an old hand at traffic handling. VE2AKJ, whose QTH is quite close to EC's, is our QN link - it's most regular one - between ourselves and the QPN. We'll be able to give a little more information about QPN in another issue of Skywire, as soon as it is available.

PQN has about a dozen active stations, which include 3GI and 3BOZ. These two are located up in Ottawa, and because of harmonics, and images from some of the local broadcasting stations, are unable to copy on 3535 kcs, the Beaver Net frequency - Ontario's very active traffic handling organization. The NCS on PQN are 2XR, CD, LO, and VE3's BOZ and GI. These stations take turns in acting as controller. The Province of Quebec Net is very active in NTS and sends a station to the Thirteenth Regional Net regularly. Many more stations can well be accommodated on PQN, so if you're interested in traffic handling and are a VE2, then let's hear from you about it. Contact a Control station - one of the several listed, and have some fun. You can also check in with GM who is Net Manager.

For the newer-at-traffic-hams, the PQNA blueprint was completed some time ago. This is a slow speed net for the training of newcomers and as soon as enough are interested, PQNA is ready to go into operation, with an experienced traffic man to keep things moving. Here's an opportunity for many of you who may listen to the various nets and feel a little self-conscious about a slow code speed. You can do the same job others have been doing if you'll make a start, so get in there and pitch.

An article in the Toronto Daily Star recently gave a complete story about some emergency traffic work done by Tommy Powell, whose call was not given in the story. Tom was in QSO with a local on 20, and made a three way out of it by working in VO4AM. A Quebec station broke in, and asked if a message could be handled to a place called Cape Ray, Newfoundland. There in Northwest River, Quebec, was a sick woman who needed emergency attention fast. A call through Newfie and the RCAF by a roundabout route, got a plane moving to her rescue very quickly. And says Tommy, modestly, that's all there was to it. Tom, by the way, has been an active ham for the past fifteen years, with time out!

*If you've been doing any traffic work, during the past several weeks, will you take a little time to put your activities down on paper and send it along to the Editor of the Traffic Lights Column - VE2GM, Bert Altherr, 268 Guilbault Ave., Longueuil, Quebec. Only through publicizing your own - and your net activities will the rest of the operators in the Dominion know what you are doing. If you're looking around for new additions to the nets you work, ask for help in these pages. Write today!!*

# CLUB ACTIVITIES

Hart House Amateur Radio Club at the University of Toronto held its last meeting of this season on March 14th. Guest of the evening was W.B. ( Buster ) Doubleday of the Department of Transport who reminded the group of the privileges enjoyed by the hams of Canada, and discussed BCI and TVI in some detail. Plans are now under way for installation of the club station, VE3BPD, at a Cawthra Square location this summer. AFARS is assisting with equipment and quarters.

The Annual Meeting of the Montreal Amateur Radio Club was held February 27th in the Breadner Room of the Canadian Legion Building. Election of new directors for the year 1950 took place with H. Eberts, Pres. G.R. Montgomery, John Pavey, Art Ashton, Hal Coram, Tom Lott, Gerry Hudon, Hal Harries, Harold Ward and Miss Ethel Pick elected to the board. Meetings of this club, in future will be held the last Wednesday of each month in the Westmount YMCA, Sherbrooke Street West. Annual Picnic will be held late in June. Watch for the date, and be there.

The Saskatoon Amateur Radio Club entertained Wes Fisher, Sales Engineer for RCA Victor, who gave an unusually interesting talk on TV recently. At the same meeting, it was announced the plans for the summer Hamfest were going right ahead. The date is July 1st, and the place of meeting during the day will be HMCS Unicorn, with banquet and entertainment to follow at the Hotel Bessborough. The clubs Field Day activities, sports and family picnic will take place on Sunday, July 2nd. Should be a wonderful couple of days. Keep those dates in mind.

The CJATC Amateur Radio Club at Rivers, Manitoba, which has not been too active in the past, is coming ahead rapidly now, as new Spring quarters are being made available for their use. Club members can operate an AT-3 and an AR-88 if they wish to do so, and the rig is generally in use, we're told. VE4NR is the club reporter- keep those reports coming in. Laurie.

The Brandon Amateur Radio Club held its regular monthly meeting late in March with excellent attendance. Among those present - VE4AM, Art Morday of Winnipeg, the District SCM, as their guest speaker. AX, NR and FA of Rivers were also over. The B.A.R.C. will hold its annual F.D. and picnic on June 25th, and if the past efforts are a criterion, this should be a fine day.

The London Amateur Radio Club holds its meetings regularly the second Thursday of each month at Maguire Motors on Fullarton Street, just opposite the London Post Office. The club recently was invited to set up some equipment at a local hobby fair, and also to give a demonstration of Ham Radio at the Sunday evening Fireside meeting of the Blind Institute at Tweedsmuir Hall. The club backs a joint money-raising effort, sponsored by the Ontario Phone Club which meets on 3815 kc every Sunday morning. Funds raised as entirely donated to the Memorial Childrens Hospital for equipment. An effort like this deserves all the support YOU can give it.

The North Shore Radio Club of Oshawa held their annual banquet and dance on April 15th at the Genosha Hotel. Sounded like a hamfest for all the gang from the Oshawa area, which of course would include Toronto. 3AEF, the Club Secretary said registration started at five p.m. and things were in full swing in no time. Everyone had a wonderful time. Again next year ????????



Club Secretaries of every ham group in Canada, are invited to contribute news of club activities to this column. To every club from which regular news comes, will go multiple copies of Skywire each month, without any charge, for distribution to members not now receiving Skywire. Other clubs would like to know what YOUR club is doing - what ideas it may have developed of use to them. Make Skywire a clearing house for such information, and help your brother hams!!

The West Side Radio Club of Toronto has a TVI committee and is doing a wonderful public relations job for Canadian ham radio. Copies of recent A.R.R.L. and FCC releases have been obtained along with mimeo'd letters explaining ham radio in conjunction with TV. This material has been supplied to the local D.O.T. Inspectors, for distribution to television set owners. TVI is becoming a major problem in Toronto, and the club intends doing something constructive on the situation before quiet hours are imposed. Congrats on a fine, fast thinking executive!

The Clinton Amateur Radio Club meeting for January elected a new executive due to the move of VE3BAI to Ottawa. President Bob Kirkby, 3RL, Hal Walsh, 3BFW, Secretary. New members to this club were 3BAG, VE1TC and VE5JD. Thirty nine of the 51 members of the club turned out at the late January meeting, and an ever-increasing number was expected in the months to come. There are, necessarily, numerous changes in personnel at Clinton, but the club is progressing quite steadily, under the able direction of an enthusiastic executive.

Kingston Amateur Radio Club meets regularly on the first and third Wednesday of each month at HMCS Cataragui on Wellington Street. Scheduled starting time is 8.00 p.m. and visitors are at all time welcomed. If you're driving through, make a point of stopping over, if you can.

The Loyalist City Amateur Radio Club of St. John, N.B. meets in the Y.M.C.A. on Hazen Avenue, in that city. Meetings are held on Monday nights, at mid-month, 7.45 p.m. Their attractively printed notice of meeting, sent to all club members gives complete directions to get to their meeting room - a good idea. On the same card is a reminder that QST may be obtained through the club and that dues should be brought up to date. Archie Fleming, VE1FN is the Secretary, and the club publication - The Bulletin, going to most VE1's is excellent. Associate memberships are available, if you'd like to get on the mailing list. Write Archie for more details.

The Radio Club of Quebec is still putting out it's C.A.R. publication, printed entirely in French, which fills a long felt need among our French Canadian amateurs. Victor Livernois, VE2NK is the Editor.

The Collingwood Amateur Radio Club of Vancouver meets at eight o'clock on the second and the fourth Wednesdays of each month at 5755 McKinnon Street. VE7ABP is the Club Secretary, and if you'd like further information, give him a call -- W.J. Summerby. What are you fellows doing, other than meeting. We'd like to hear about your constructive ideas of VE ham radio.

The Quinte QRM - publication of the Belleville Club has been arriving regularly, but usually just at the time when meetings are to be held. If you could give us your tentative meeting schedule for the remainder of the year, in advance, we'll be happy to publicize this information, and you can expect visitors from out of town.

Remember - if regular reports on club meeting dates and activities are sent to the Editor of Skywire monthly, your club will receive additional copies of this magazine for club use.

# NETHERLANDER G-11

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 One of Three installments which will be appearing in Skywire -Ed.*

During the war and the occupation of the Netherlands, I became one of the many hams in the Dutch Underground. I was the operator of an illegal transmitter, the operation of which meant a firing squad for me if I was caught by the Nazis. The following true story is an extract from my diary, of some of the difficult things we went through during this very trying period.

As both an amateur, and a professional radio engineer, it was only natural when the call came for underground operators to outfit and operate a wireless station for communication with the Allies from Holland that I should become involved in it at once.

Headquarters was badly in need of such a communications link, and I soon found myself in charge of one of several secret transmitters - mine being known as G-11. Our task was not an easy one because our instructions and directions in code messages were quite complicated. The transmitter had to be located in or near Alkmaar City and it had to be well hidden against detection by the Gestapo. Electrical power had to be available at our operating point, the aerial had to be invisible, and the transmitter power had to be as low as possible to avoid detection by the direction finder units of the enemy. And yet, our communication work had to be reliable and speedy for traffic between G-11 and Headquarters. This was quite a bill to fill, especially since parts for the building of a

transmitter and receiver were almost unavailable. To add to our difficulties the Gestapo were always on the prowl and it was certain death to be caught in operation. Some of our members were, and what happened to them comes later in the account I'm about to give you now. To get on with the story - the difficulties of getting a rig together were finally overcome, and G-11 was ready to work from the loft of a house in the city of Alkmaar.

I parted from my wife and small daughter and left them to face the tremendous hardships of those days - the immense difficulties of finding enough food on which to subsist. Our rations were then being decreased gradually and everyone was hungry, all over the country. The lowest point of all was the period when we were cut to two pounds of potatoes and one pound of black bread per person per week, and nothing more. Not much to try and live on!

Two months after D-Day when things were still comparatively safe, I sent and received messages to and from the Allied Headquarters via their transmitter which was located someplace in the already liberated areas. The telegrams consisted mainly of military intelligence on the movements of enemy troops, the constant changing in the starting places of the flying bombs which were then being used against London, and the like. My first real shock from what was going on came from a message telling that some

of my colleagues who had been operating from Breda City had been captured by the Nazi's. The operators were shot on the spot and their transmitter - and more important - their codes we were using fell into enemy hands. Fourteen days later, Breda City was liberated! That was a piece of bad luck, hard to take.

It was just at this time that the fast-moving Allied armies got stuck in the heavy mud south of the great rivers!! We operators of the underground were asked to hold on and maintain communications. New codes were dropped for our use from Allied planes, together with carloads of small arms for the underground army. Many of these droppings were arranged through G-11 and it was a real thrill to see our message delivered in this manner! But, we were in for a hard winter! One night, a clash between seven guards which had been set on one such plane load of dropped arms, and an overwhelming number of Gestapo, resulted in the killing of six men and the bad wounding of the seventh man. In the gun fight, thirteen Germans were shot to death and the lorry driver was able to make an escape. But the wounded man, who had been taken prisoner, was bound to be subjected to mal-treatment and since he knew the location of the transmitting station itself, I was forced to consider the possibility of his revealing this information. Therefore, I closed down for the time being until I could find another suitable location. This was going to be difficult, but it is just as well the action was taken, for indeed the wounded man was forced to divulge all he knew.

German terrorism was then at its' peak, and my friend, as a warning to others, was shot in public in the city of Alkmaar in spite of his being wounded, and his body was left on display for twenty-four hours for all to see. This was of course meant to smother all resistance, but it had the effect of increasing the

unity of the underground armies, and the result was that the number of new recruits far outnumbered those who had been lost in our cause. Our losses did continue at a very high rate because reprisals against any resistance were swift and merciless. Political prisoners were shot in public daily. Men between the ages of eighteen and forty were carted off for slave labor in Germany. It was at this time that our food rations were dropped to the point mentioned earlier.

I set to work to get G-11 back on the air from another location as soon as possible. I had my eye on a Catholic institution known as the Willibrordus House, which was about four miles south of Alkmaar. This building seemed ideal as a transmitter site because it had electricity and heat - and good food - and the Prior was known to be a good patriot. He sheltered many fugitives, providing them with meals and clothing and as much help as possible before they moved on, particularly if they were injured or wounded, at real risk to himself. And one winters night with rain pouring down on a pitch black night, I went to see him, avoiding enemy patrols. When I reached the Priors warm study, I was quickly put at ease with a warm pipe full of his own homegrown tobacco. His face was grave as I unfolded my plan and appealed to his patriotism. He asked a few questions - thought for about five minutes after I had finished, and asked my permission to explain the situation to the rector. This was given and after some consultations they informed me that the building was constantly under German scrutiny and that it would be only a matter of hours before they knew I was there. They hated to disappoint me, they went on to say, and so provided me with an introduction to the Mother Superior of an Alkmaar hospital where there were no Germans. As I stood up to go, the Priors sharp ears caught the sound of a German night patrol coming to the door!

*( To be continued next month )*

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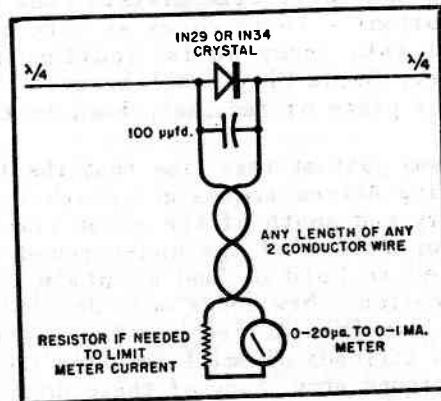
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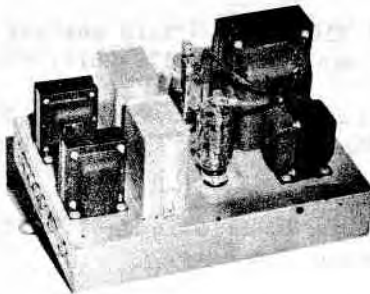
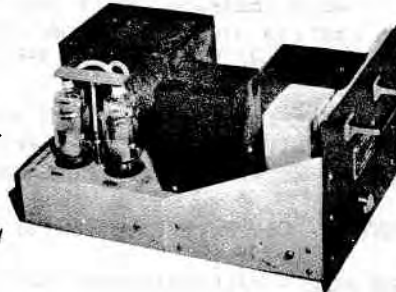
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# TELEVISION

In the Niagara Peninsula cities, in Western Ontario near Detroit, and on the West coast of Canada, TVI is rapidly becoming a serious problem to amateur ops. Daily, with expanding production on TV in every Canadian factory capable of so operating, more and more video receivers are coming into use every day.

Because many of these TV sets will be bought by people who know absolutely nothing about what makes them tick, in the column this month will be a brief list of the more desirable features you must look for, if you expect your looking-in to be satisfactory. You'll be operating for the most part, in fringe areas in which engineers at one time said you'd never get a picture. High gain beams and souped up circuits in the sets today are giving wonderful results, comparable to some of the better reception of TV in American cities primarily serviced by the video transmitters.

First of all, let's say you've read the statements of the *CBC* in the papers as to what may be expected in Canada in TV. Perhaps you wonder if buying a set now is going to result in obsolescence in a short time. Will changes to *UHF* mean the set you bought will be useless? Will the bigger picture tubes now beginning to be seen on this side of the border make a difference to you later? And will color TV be started soon enough to make you regret your purchase later on?

There are many arguments on the above subjects, both pro and con, but it would be easy to draw a comparison with the early days of ordinary AM radio. Twenty years ago, in spite of the fabulous cost of most sets, people bought radios, with

the knowledge that radio broadcasting was in its' infancy and no one could, at that time predict what advances would be made even from day to day. Television is in the same position today, and there's no valid reason why you shouldn't enjoy TV if suitably located near a transmitter. The United States now has more than one hundred licensed video stations on the air, and even the *CBC* is making an effort to get its Toronto video set-up completed as rapidly as possible. Latest estimates give more than four million as the total number of sets in use today, with an audience of seventy five million watchers forecast for within five years.

The front end of today's TV set doesn't worry the average ham, although if anyone had said ten years ago that bandswitching of circuits from 44 to 216 mcs. would be possible, he would have been thought to be a case for the white coated man with a butterfly net. And by this token, if *UHF* from 475 to 900 mcs approximately, is to be used later, converters will deliver a signal to the receiver front end.

Primarily, you're interested today in a good picture, free of snow and similar types of interference, and one of your important considerations should be whether it is going to be possible to erect the hi-gain arrays needed to give a good TV picture without straining to see it!! The higher the antenna, generally speaking, the better results you can expect. In the U.S. reception has been consistent at distances of nearly 175 miles where the elevation is great enough and where antennas are in the clear at a good height.

If the area in which you live is a noisy one, your video may be subject to troubles

which wavetraps can overcome. Similarly, you may find that operating the set near your neighbor (in the same apartments) will give trouble due to oscillator radiations. You'll be happy to know that ham radio accounts for just sixteen percent of all TVI today, and that diathermy, industrial heating appliances, flashers, pads for heating, auto ignition and other type radio transmitters NOT used for communications, lead the parade in that order.

In choosing a television receiver, the buyer should be guided by personal requirements, plus the reputation of the manufacturer. Present day receivers are fairly well standardized in the various price classes, and electronically there seems to be little choice. Today, in the Niagara peninsula Admiral and RCA seem to lead the field, and some technicians feel that the Admiral has the best sync circuit which thus means more freedom from picture tearing and jumping around. It's purely a matter of your own or your wife's preference, where cabinets of one might be more attractive in your home. The writer uses a ten inch Admiral.

Manufacturers have been giving so much attention to the video picture, and to larger areas simplified circuits and a better picture definition, but they have done little about the audio end of their sets. Primarily of course, the set owner is interested in seeing well, and to a lesser extent perhaps, hearing well. The size of speaker today seems to average out at about six inches, and this could be improved to take advantage of much wider frequency ranges being broadcast on the FM side of the carrier.

If you now own a combination radio, the chances are that you'll want just a TV set, without the many embellishments of the more expensive models, equipped to

play all speeds of records and give AM and FM reception to boot. The set (TV) should be placed on a table at the best height, for viewing without neck craning when seated eight or ten feet in front of the screen. One school says not to operate the set with the room in complete darkness, and the other says to turn out all the lights. Try it both ways and see what suits you and your family best.

To go back to this subject of interference mentioned earlier - unwanted signals occur as audible noise or in the TV picture in the form of bars, streaks, or series of peculiar patterns or distortions. These will occur mostly in weaker signal areas where the undesired signals, are relatively strong. Car ignition has quite an effect on the picture, and in spite of what you may have heard to the contrary, is also quite audible in the sound circuits, although that portion of TV is all FM. Also, under present design conditions, if you live close to other families who also operate a video set - it's likely you'll get interference from the other receiver. If your ears are sensitive to the higher frequencies you may find the oscillator circuit quite audible at first, and perhaps annoying, until you get used to it. And aircraft passing overhead can make the signals fade in and out in a fluttery effect sometimes showing as a venetian blind picture. A new gating circuit to prohibit this sort of thing is now being incorporated in all the latest models and is quite effective in almost completely eliminating this source of trouble.

Don't wait for color TV! It's going to be some time coming, although according to one salesman in a Toronto appliance store who was having a wonderful time deluding himself and the public, it was a sure thing that color TV would be here in Canada early next year. That's



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quite something in view of the fact that under present plans, we'll be lucky to get even black and white in this city by that time. Everyone to his own opinion! Color will come, undoubtedly - and also in the foreseeable future, but when it does, in all likelihood your present TV set - or set-to-be - can be converted, and you'll lose nothing.

Now for some of the other happenings in TV during the past few months. .... Televisions spectacular rise as a new service of mass communication is without precedent in the industrial history of the United States, said Frank Folsom, President of RCA. During October, '49, he went on to say, after only three years of production, television achieved a going rate of a billion dollar a year industry, and no other new enterprise of the past has moved ahead so far in such short time as this has done.

He went on to say that the wholesale value of all TV sets purchased by the U.S. public exceeds one billion dollars, also another unequalled record. The automobile industry, operating in a much higher price bracket required more than ten years to achieve a similar status. So great was public demand for television receivers, particularly in the last half of 1949 that some of the major producers were from two to eight weeks behind in deliveries. The total number of sets produced and sold during the year amounted to two and one half million, half a million more than had even been predicted by the experts. In New York City today, there are on million sets in use which means approximately half of all the persons in the city can now look in.

The outlook for 1950 seems to be better still with nearly four million sets the aim of the manufacturer, who expects to sell every one of them. By the beginning

of 1951 the total number of sets in use will be close to the seven million mark with at least twenty-five million people able to look in, from coast to coast. This is quite an achievement in five years. The figures for Canada are just a little different because all viewing here is on border point reception of U.S. TV stations. Even so, the Canadian manufacturer is being hard pressed to keep ahead of current demand, and new models are making their appearance regularly. Prices on sets are dropping as production rises and although not yet as low as the equivalent costs for U.S. models with the same size screens, are coming down appreciably - and will continue to do so. This Fall is forecast as the big season for a whole new series of larger screen model receivers. And the more there are of them and the more competitive is the field, the lower prices are likely to be here, in this country. The grapevine has it, and on excellent authority, that one of the manufacturers is already working on a nineteen inch tube job. RCA has its 16 incher on the market now, giving a picture about two and a half times as large as on a ten inch set.

A big development during 1949 was RCA's introduction of the new sixteen inch metal cone kinescope, or picture tube. The new bottle, more economical to produce than its glass counterpart, enabled substantial reductions in the cost of large screen direct view sets. At no time during the year was RCA able to produce 16 inch sets in sufficient quantity to meet public demand, so popular did this model become. It's interesting to note that the sixteen inch models today now sell at less than half their retail price of one year ago. The prices reflect a buying trend away from the midget size pictures and it means that the manufacturers have been passing on their mass-production savings to the public, as quickly - in every case, as they became possible.

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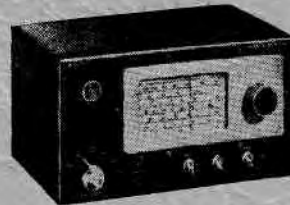
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