BREAK-IN

A Magazine Issued by the New Zealand Association of Radio Transmitters

Registered for transmission through Post as a Newspaper.
Affiliated with I.A.R.U.

Edited by
H. P. V. BROWN, ZL3CG
N. W. LAUGESEN, ZL3AS

VOL. V., No. 4. CHRISTCHURCH, N.Z. APRIL 1, 1932.

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N.Z.A.R.T. IS THE GREATEST RADIO ORGANISATION IN NEW ZEALAND. ARE YOU A MEMBER?

BREAK-IN

Official Organ of the New Zealand Association of Radio Transmitters.

Headquarters:
BOX 617, CHRISTCHURCH.

President:
MR. D. WILKINSON, ZL2AB.

General Secretary:
MR E. G. SHIPLEY, ZL3CK.

Assistant Editor-Treasurer:
MR N. W. LAUGESEN, ZL3AS.

O/i.c. QSL Bureau:
MR G. CLARKSON, ZL3CD.

Editor:
MR H. P. V. BROWN, ZL3CG.

QRA'S and Distribution Manager.
MR R. K. VENABLES, ZL3BZ.

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MR R. T. STANTON, ZL3AZ.

Communications Supervisor:
MR W. ASHBRIDGE, ZL2GP.

VOL. V., No. 4. CHRISTCHURCH, N.Z. APRIL 1, 1932.

Editorial

It has been suggested to us that we take up different subjects, as editorials, covering the various activities of the N.Z.A.R.T. This is an excellent idea and is the line we had thought of adopting. To attract all amateurs and prospective amateurs to our Association is our constant aim; but mere numbers, though very gratifying, is not sufficient. We must have something more than a name or a badge to offer; features of interest that will not only draw members but will keep their enthusiasm centred on our organisation so that they will take a pride in belonging to the N.Z.A.R.T. Take the "QRP" Club recently started. Here is an excellent opportunity for one and all. There is a far greater scope for usefulness than would appear at first thought. What a pride is taken in consistent QSO's with QRP. How are the successes obtained? Both the operator and station must be efficient. A sensitive receiver, properly handled is the first essential, and a carefully designed and constructed transmitting and radiating system is next. Experiments with different circuits, valves, etc., and antennae and methods of coupling are indicated. There is a host of details to be taken separately and studied, and when improvements are made the results should be checked off by QSO's. If an efficient station can combine lightness and compactness, the owner is assisting the newly constituted R.E.C. A portable station cannot be too light, provided it meets the other requirements when in the field of action. The QRP member can therefore be assured that he is working along useful lines, lines that are most valuable to both the individual and the Association. QRO is needed for a number of occasions, but make yourself at home with real QRP.

CORRESPONDENCE.

To the Editor,

Surely the efforts of the N.Z.A.R.T. are bearing fruit. I think you will agree with me that the amateur bands are showing marked signs of improvement. This I think is largely the result of the efficiency and example of our leading members. More can be done by example than by talk. In this connection I ask the members of the newly formed R.E.C. to bear in mind, that with the honour bestowed on you go many responsibilities, not the least of these being the added responsibility of your personal conduct. This honour is the respect and confidence of your fellow amateurs.

Without that respect the R.E.C. is a failure; that respect depends entirely on your personal conduct. Set your standard to the times and keep up to it, and though you might never be called upon in an emergency you will have justified your existence on the corps.

Good luck to you.

ZL1GC.

The Editors, "Break-In,"

Following is a report on a few sigs heard by me last Sunday morning, the "R.E.C." day.

10.42. 1GL working 1BN, 1GL PDC QSA 4 R3; 10.43, 1AN calling CQ, PDC QSA 4, R3; 10.44, 1BN calling 1GL, 1BN DC, QSA 5, R4-5; 10.47, 2AC working 2GD, 2AC D.C., QSA 3, R3; 10.51, 2AC working 2GD, 2AC DC., QSA 5, R4.

I also heard 1AN later working 1AO and IAN was then QSA 5, R5. These signals were heard on a portable receiver but using a good aerial. Hoping these will be of some use and wishing the "R.E.C." every success.

Yours fraternally,

H. D. SANDFORD,
ZL2AI.

GREETINGS TO AJAX.
(Mr J. V. Kyle, ZL2AX)

Members throughout New Zealand will be pleased to learn that our old friend, Mr J. V. Kyle, ZL2AX (well known as "Ajax") is again a member of the N.Z.A.R.T. In greeting this old timer we desire that all matters that contributed to misunderstandings in the past shall be forgotten. The gesture of good sportmanship shown by Mr Kyle in acceeding to the wishes of the Hqrs executive that he should re-join is commendable, and will be long remembered.

Here's luck to you, "Ajax" old boy, eight hundred N.Z.A.R.T. members greet you!

LOG BOOKS! LOG BOOKS!

Members will be pleased to learn that an official N.Z.A.R.T. Log Book has been published by the Association and is now on sale at Headquarters.

The book comprises 40 leaves (80 pages) of the finest writing paper, bound in a very attractive cover, The pages are ruled into columns which are titled according to the N.Z.A.R.T. official form of log sheet. In addition to the logging pages, a wealth of useful station data has been included and should prove of exceptional value to both transmitters and listeners alike.

Every operator should keep a log book for the purpose of making a permanent and accurate record of the stations' activities, or the activities of stations heard, so be up-to-date and send your order to HQ right away.

Price: 1/6 post free.

FROM THE PRESIDENT.

May I make an appeal this month against the heavily modulated signals and also the off-frequency operation still heard regularly from some of our members on both the 7 and 3.5mc bands.

It is hard to believe that as yet many of our stations are not equipped with monitors or frequency meters and prefer to operate on the chance that all is well. Very often it seems all is far from well and we continue to hear a few stations calling or testing well outside our allotted frequencies—or a good evening's DX or ragchew, perhaps an important guard schedule, is completely blotted out by some selfish individual pumping out brute-force RAC sigs covering a good 100kc of the band. This is certainly not much of a credit to the operator responsible and a very poor advertisement of the N.Z.A.R.T. in the eyes of all concerned.

It is rather gratifying to notice that many stations have changed over to xtal control this year and that many more intend doing so. Up to the present we have been seriously handicapped in this direction because of the necessity of importing the xtals, but now that they are to be obtained locally, no finer investment could be made. Without doubt the CC outfit is the ideal and not beyond the means of the average amateur as has often been said. Its advantages over the old self-excited job are numerous and a very efficient layout, capable of excellent DX results, can be constructed wholly from receiving parts and utilising but a type 210 power amplifier. Above all it is the only outfit that will produce that most desirable signal of constant frequency, and one of which its owner may feel justly proud.

D. WILKINSON, President.

THANKS.

Headquarters takes this opportunity to thank the hundreds of members who so willingly responded to the appeals featured in recent issues for payments of dues. When remitting subscriptions members undoubtedly registered their confidence in the Headquarters executive, while at the same time assisting the operations of the Association.

However, the appeal still goes out because there are many members still who have not visited their local post office where the five shilling postal notes are sold. We earnestly advise those members who have not done this to do so as soon as possible because IT IS IN YOUR OWN INTERESTS to become financial.—Headquarters.

GUARD SYSTEM.

Alterations.

Second District control station—ZL2AB.

Second District assistant control station—ZL2BY.

Mondays—Add ZL2HI, erase ZL2BY.

Wednesdays—Add ZL2JY, ZL2AI, ZL4AU; erase ZL2DG.

Thursdays—Add ZL1GK, ZL4BY, ZL2JG; erase ZL2GK.

Fridays—Erase ZL2CX, add ZL2LB.

A change in the guard system will appear in next month's "Break In." Owing to pressure of business in connection with the R.E.C. it was found impossible to cause the necessary change this month.

NOTICE.

Guard stations wanted in the country districts, particularly Auckland, Nelson and Otago.

NOTICE TO CONTRIBUTORS.

In future do not radio your notes as it causes confusion. Contributors must also strictly observe the Editor's rule of having their notes in before 20th of the month. Failure to observe this has resulted in a lot of matter not being published in this issue.—Eds.

WHAT IS A DX RECEIVER?

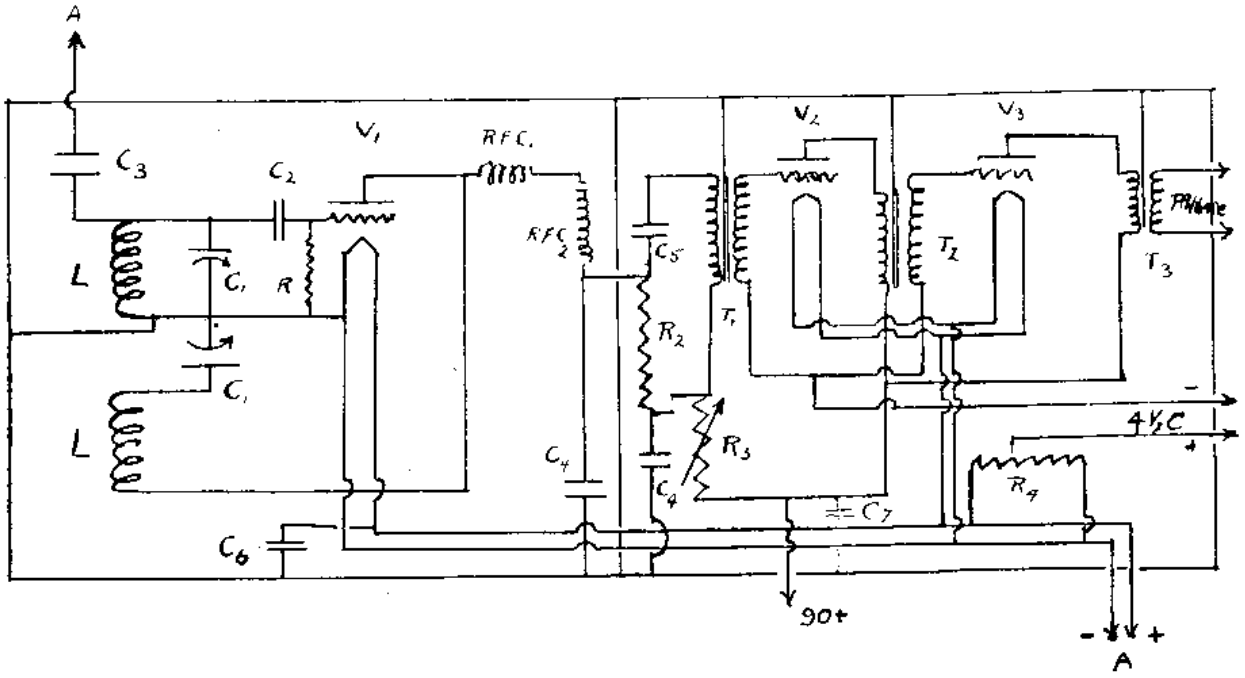
Part I.

(By R. A. McLennan, B.E., M.I.R.E., A.M.I.E.E., etc.)

Most amateurs would answer this question without hesitation but the average answer would be something like this, "A very sensitive receiver for long distance reception." Now that is true in that it says what it **does** but does not tell us **what it is.** The writer asked himself that question about two years ago and has been all this time getting the answer! The results are interesting being the result of "theory" and practice and are well worth the trouble and time to get them. Perhaps the apparent unorthodox methods will provoke snorts of disapproval—well, let it, the results are still there! The usual requirements of sensitivity and smoothness of control are taken as all that are necessary for successful DX reception. However these experiments have shown that another property is just as important or even more so. No matter how sensitive the set may be, no matter how many stages of H.F. amplification are used, etc., the limiting factor as to the weakest signal that may be received and read is the one we shall discuss now. In all but a very few favoured locations there is a general background of noise heard between the stations. Part of this is static (both kinds!) and the remainder is a mixture that is fairly constant for each location. And because this is constant one does not realise the full effect. It is not uncommon to come across locations where this background noise will cause the output valve to give its maximum output, and the average city location will give peak values of that standard with an average of about 20 per cent. Think what that means, that any signal to be heard cannot be any weaker than the noise or it will be lost. And what a loud signal it must be to be heard!

Now it has been shewn for a long time that if the noise to signal ratio is unity or less than we have good conditions for reception, that is the noise is equal to or less than the signal. This series of experiments and measurements shews that to be true **but for low levels of each!** And **that** the lower these two in reason the better the signal **seems** to be, due to the ear differentiating between noise and musical notes better the lower the level of each. Now the background noise can be divided into two parts, that due to causes **inside** the set, and that due to those outside. The inside causes are more or less in our own control while those outside are not. Assuming for the time being that we have reduced the first part we will discuss the outside noise. We **can** minimise the **effects** of the outside noise and that only so that we are not altogether at the mercy of Dame Nature, etc. Suppose that we reduce the level of the output of the receiver to a very low degree at the same time without altering the sensitivity of the set. What happens? We come to a point where the signal alone would use up the total output and when the noise and signal are there together they can produce equal effects only if the noise is less than the signal, of course. That is we can increase the signal to noise ratio in effect! Can this be done in practice? Yes, and easily and cheaply too. By the choice of suitable valves one can obtain a high sensitivity and at the same time have a low output from the audio end. In

practice the writer has found the old detector and two audio ample for all except the fiend who **must** keep the neighbours awake with a speaker!! After many experiments and measurements he also definitely dropped screen grid valves either as H.F. stage or detector. As detector these are too microphonic (battery type) and in



any case full advantage of the high amplification factor cannot be realised in practice in either the detector stage or audio stages. Many trials of valves resulted in an Osram HL 210 type being selected, not only as especially suited for the audio but also as being the best detector operating up to 40 megacycles without any fuss. This type falls in the class of valves whose amplification factor is round about 20 and whose impedance is 20,000, that is mutual conductance 1.00. This impedance should not be exceeded, as will be explained in the next part of this discussion, but if the amplification factor can be increased then the valve is worth trying. Such a valve works very well in the use to which it is put in the audio stages. Here we drop the maximum output by intentionally over biasing (still as an A class amplifier **not** as a B class half pie one) till the plate current is down to about 20 to 50 **micro** amps! With the plate potential of 90 volts applied the amplification factor is still high. Now we find that the maximum output is about 15 microwatts instead of the customary 50 to 100 milliwatts!! The last volt of bias is the most effective portion of the working range, just before the current is brought to zero in the plate circuit. Hence the use of the potentiometer as seen in the diagram of the complete receiver to be described in the next part. The only noticeable difference is that the loud signals are reduced in volume while the weak ones appear louder! while the potentiometer is turned from minimum bias to maximum.

Now with such low outputs one is surprised at the strength of the sig-

nals in the phones and an R8 signal for instance needs only a small part of a milliwatt in the phones. If a speaker **must** be used hitch it on after this amplifier. All this improvement will be lost if the internal noises are now allowed to increase. In fact the limit to the weakness of the signal that can now be received is that **due to these internal noises.** Thus with a smooth regeneration control and efficient coil system, etc., there is no case really for the use of any more than a detector and the two stage audio.

PART II.

In the last part we discussed the requirements of the receiver and promised particulars of a receiver incorporating these improvements.

In the figure we have the detector stage in its own metal screen coupled to a two stage audio by a parallel feed all of which is in a second metal screen box. Taking the detector first. The circuit is quite conventional and is by the way the best all round circuit that the writer has tried out. The aerial coupling condenser is composed of two pieces of insulated wire, Glazite for instance, one half inch long, parallel with each other and cemented together. The inductances are as usual, tube base doing excellently. The two condensers C1 should be not more than 0.0001 mfd, as also C2 which could be 0.0002 if desired. R is a grid leak 5 meg and should be a really good one as here is one source of the internal noise. The best type are the flashed metal ones that are enclosed in an evacuated tube. Condenser C4 is 1.0 mfd non-inductive preferably, also good make. C6 about 0.006 but is not critical although without any condenser the detector is liable to be erratic on certain bands depending on the general lay out. R.F.C. 1 is one suitable for short wave working wound on a piece of ebonite rod and waxed over carefully. This was found to be a source of noise unless the insulation was above suspicion, hence the wax. R.F.C. 2 is a conventional B.C. choke also boiled in wax to dry out and keep dry; it accounting for most of the noise. C2 by the way should be mica and above suspicion. Now let's move into the audio compartment. R2 is first in order and should be either wire wound (and small in size) or similar to the grid leak and of a resistance of 50,000 ohms. If one increased this value one would get a higher amplification in the coupling link. But the extra gain in practice here is not worth the extra battery voltage necessary to obtain the **actual** working

plate voltage. C5 is not critical, anything from 0.1 to 0.5 mfd being suitable, but see that its insulation resistance is high. R3 is a good compression type resistance 100,000 or 200,000 ohms, and C4 is its reservoir condenser of 1 to 2 mfd. The transformers T1 and T2 can be either Mullard, Phillips or Standard, all of which have permalloy cores and work best here. The higher ratio should be used in T1. T3 is in the nature of a refinement but is very desirable from the smoothness of working as at some portions of the frequency range the feed back through the phones and body capacity combine to set up oscillation in the audio part just where the ordinary threshold howl would occur. It is often mistaken for that too when insufficient experience of an efficient set has been obtained. The cores of these transformers **must** be earthed to the screen for safety: sometimes one gets away with it without earthing, but it's best to play safe. R4 is the potentiometer which for economy should be about 2000 ohms. C7 is optional being 1 mfd if used and is to bypass the whole battery.

The use of the parallel feed to the first stage transformer is to take away the **cause** of threshold howl. Ordinary resistance capacity coupling could be used but the gain for that coupling would be about 15 (with the HL210) as against 15 x ratio of the transformer T1 when the parallel feed is used. This figure is an actual measurement so that one can rest assured there! The use of two R.F. chokes is to make sure for more efficiency if a large range in frequencies is used. The set used by the writer goes from 600kc to approx. 40,000kcs! and with no funny tricks. To operate this set the resistance R3 is screwed up and C1 turned in till a faint plop shows oscillation. Then R3 is used for regeneration control and will be found to give a smooth control that no other method will give. The change of the regeneration condenser for a given coil is not much. If coils are used to cover the range as in the writer's set then it will be found that if C3 is too large there will be spots in the tuning range where this C1 will have to be moved too much. The trouble is easily fixed by making C3 smaller. Contrary to the general belief reducing C3 does **not** reduce signal strength.

The valves actually used at the finish by the writer were an improved HL210 type with amplification factor of 27 and impedance of 18.000 They are also beautifully non-microphonic, another advantage as the set is portable—being only 17 x 9 x 4½ inches and including a dyatron frequency meter reading to 0.1 per cent, all batteries being self-contained.

The writer is quite well aware that someone may want further information or may find trouble. Give it a trial **first** then perhaps the Editors may let us have some space to argue it out! But get the set going as usual first and without howls, etc.—**then** try out the higher bias and start chasing the inside noises **with the aerial off!**

[Editorial Note.—Mr McLennan has had a unique experience in experimental work and possesses a wealth of theoretical knowledge, hence his articles are well worth careful study.]

BADGES AND STICKERS.

Stocks of N.Z.A.R.T. Badges and Stickers are kept at Headquarters. Identify yourself and your organisation by wearing a badge or using stickers. Badges 2/6. Stickers 1/6 per 100.

THE VOICE OF THE NORTH: Station ZL2AX—2ZO, Palmerston North.

STATION PROCEDURE.

By ZL2GP.

Before commencing these brief notes on station procedure, the attention of readers is directed to "Break In" for November-December, 1930, page 4, which gives a ruling from the P. & T. Dept. regarding the nature of messages which may be handled by amateur transmitting stations.

These notes should be read in conjunction with the chapter on "Procedure" as outlined in the amateurs' handbook. This procedure should certainly be adopted by guard and R.E.C. stations.

Calling. Notwithstanding the various articles which from time to time have appeared in these columns and other radio publications, we still have stations who clutter up the air with long drawn-out "CQ" calls. The "three-times-three" advocated years ago by ZL1FQ and ZL2AB is a most efficient method and gives the best results. This method is to call "CQ" three times, "de" once followed by your own "station call" three times. Repeat this procedure for three minutes, then listen for three minutes. The new message form which Headquarters will make available shortly is very simple and operators will not experience any difficulty in signalling the components in their correct orders.

The most efficient method is to commence like this:—

Hr msg No. 1 ZL8UP Waipukurau 27 May—

To Headquarters N.Z.A.R.T.—

It is requested that Headquarters will endorse my application for permission to use radio-telephony on 56mc—

Sig Gilligan i.i. QRU-AR.

The check "CK" and time are not always necessary, and should only be used by experienced operators.

It is quite wrong to insert the "long break" signal instead of a "full stop" in the middle of the text. The long break signal is sent after the preambles, address and text. After the signature, send the short break or separative signal "dit-dit dit-dit" followed by "QRU" AR (or any other Q signal or remark to the receiving station).

A great deal of confusion arises over requests for "repetitions" or "fills." Suppose, for instance, in the example above, a fill between "requested and endorse" is required, the procedure is as follows:—

KA (commencing signal) ZL8UP de ZL3YZ i.i.

IMI requested to endorse.

AR (note—IMI is a convenient way to write .. — — ..). The abbreviations—WA (word after), WB (word before), AB (all before), AA (all after), should be used more than they are.

Example—ZL8UP de ZL3YZ i.i.

IMI WB requested etc.

Signing Off. Here stations also waste valuable time.—**Guards, please note.**

I have often heard stations take as long as five minutes to say "goodbye." This may be intended to let the other man know that you hate to part company, but it is bad operating. Say all you have to and finish up with VA (the Americans say SK).

Example:—ZL4AP de ZL4CA R No. 80 i.i. QRU 73 VA. Seventy-three meaning "kind regards," has expressed all you wish to say. Cheerio, good luck, 73, CUL, etc., is only wasting the other man's time; and in nine cases out of ten it is not appreciated. On the Guard and R.E.C. systems it should not even be tolerated.

This short article, however, may help those doubtful stations out. The majority of guards have a good idea of procedure and should be used as an example.

ANTENNA SYSTEMS.

By ZL3CP.

As a good many amateurs appear to be very hazy on the design and radiating properties of transmitting antenna systems, the writer has endeavoured to contract into a small space the information on the subject that has appeared from time to time in "QST" and the "T. and R. Bulletin." References are given at the end so that those interested may go into the subject more fully as, naturally it is hard to explain some things without the aid of diagrams and graphs.

There are two kinds of antennas, the Marconi and the Hertz. The Marconi type uses the earth as part of the system, and is little used by amateurs, owing to the difficulty of getting an efficient earth connection. The Hertz system is ungrounded. While there appear to be many kinds of Hertz antennas, really only the methods of feeding energy to the antenna differ.

The electrical properties of an antenna are affected by the proximity of other objects, and radiated energy is absorbed by these, so that for best efficiency it is advisable to hang the antenna well clear of surrounding objects, and feed it by a non-radiating system. The method of feeding does not matter, but some methods are more flexible than others, allowing a greater change of frequency, or the use of the antenna for several bands.

A Hertz antenna must be a definite length, so that it has upon it one or more half waves. A small decrepancy in length does not affect the efficiency greatly, but for maximum results the antenna should be operated on its fundamental frequency, or on a harmonic of that frequency.

The point about antennas which is practically never considered by amateurs is the angle of radiation. That is, the angle at which most of the radiation leaves the antenna. This angle is dependent on the angle which the antenna makes with the ground, the height above the ground, the length of the wire, and to some extent on the surrounding objects. This angle of radiation is important, as high angle radiation gives good local results, but poor long distance results, while low angle radiation is good for DX, but poor for local work. "Local" of course, means within a radius of several hundred miles, depending on the frequency used.

A vertical half wave antenna, which radiates equally in all directions, may be made to radiate at almost any angle by raising it to different heights above the earth. These may be roughly tabulated as follows:—

(1) Bottom of antenna near earth, but ungrounded. Radiation is all confined to the sector between the horizontal and about 30 degrees above.

(2) Bottom an eighth wave above earth. Almost all the radiation is below 30 degrees above horizontal, but a little is radiated at an angle of 60 degrees.

(3) Bottom a quarter wave above earth. Most of the radiation is in the sector horizontal to 20 degrees above, but some is radiated at an angle of 50 degrees.

(4) Bottom three-eighths of a wavelength above earth. Most of the radiation is below 20 degrees, but some is radiated at an agle of 45 degrees.

(5) Bottom one half wavelength above earth. The low angle radiation is all below 10 degrees, but a fair

proportion goes off at an angle of 40 degrees.

(6) Bottom five-eighths wavelength above earth. The low angle radiation is all below 10 degrees, but there is strong radiation at an angle of 35 degrees. This is obviously a good general purpose antenna, good for both DX and medium distance. As very few amateurs can put up vertical antennas except for the higher frequencies, they will now be left, and horizontal antennas considered.

With horizontal antennas a new complication sets in. Radiation is not equal in all directions, but most of the energy is radiated at right angles to the length of the antenna. This directional effect explains why one amateur will get good reports from one continent and poor ones from another, while a neighbouring amateur will get the opposite results.

A horizontal antenna will not give low angle radiation, so that for DX the free end should be raised as much as possible, as of course a sloping antenna will give results between those of a vertical and a horizontal. The results of raising a horizontal half-wave antenna to different heights above earth are as follows:—

(1) A quarter wave above earth. The strongest radiation is vertical, and there is none below about 30 degrees above horizontal. More power is radiated at right angles to the wire than is radiated in the direction of the length of the wire.

(2) Three-eighths wave above earth. The angle has come down down to about 45 degrees, and radiation is very much stronger at right angles than it is in the direction of the wire.

(3) One half wave above earth. The radiation is in a fairly narrow leaf, about 30 degrees above horizontal. Practically all the power is radiated at right angles to the antenna.

(4) Five-eighths wavelength above earth. At right angles there is strong radiation in a narrow leaf at an angle of about 30 degrees, and there is also a vertical leaf. In the direction of the antenna there is very little radiation at 30 degrees, but a fair amount vertically.

(5) Three-quarters wavelength above earth. At right angles there is strong radiation vertically, and also at an angle of about 25 degrees. In the direction of the antenna there is strong vertical radiation, but practically none at 25 degrees. This is a good general purpose aerial, but is strongly directional for the low angle radiation.

It will be seen from the foregoing that the type of antenna most of us use, the half wave horizontal with quarter wave feeders, is poor for DX but good for local work. Those who wish for low angle radiation, but who cannot afford two high poles, should make one pole, the one at the free end of the antenna, as high as posible, so that the antenna will be as near vertical as the pocket book will allow.

A better type is a vertical pipe mast, which is used as the antenna. A sixty-six foot mast of down pipe, or if you can afford it, copper pipe, with the stays well insulated from the mast, and well broken up by insulators, will be ideal. It may be used grounded or with a counterpoise for 3.5mc, as a half wave for 7mc, and as a full wave for 14mc. Radiation

will be at a low angle, and equal in all directions.

The writer will be pleased to hear from any amateurs interested in experimenting with different types on antennas.

References:—"QST" March, 1928, pages 17—30. "T. and R. Bulletin," Sept., 1931, page 88; Oct., 1931, page 117; Nov., 1931, page 149; Dec., 1931, page 184; Jan., 1932, page 222.

In the next issue it is hoped to give some data on methods of feeding antennas.

INTERNATIONAL QRP CLUB.

One of the greatest things in the world today is friendship, and amateur radio has done much to bring this about, so friends let's call the roll and see who's in the QRP Club:—ZL1BL, 10 watts to split Colpitts; 2FB, 8 watts to TNT; VK3NQ, 1½ watts to Hartley WAC; ZL2KC, 2¼ watts to TPTG; 2GD, 7½ watts to Hartley; 2JC, 3 watts to Hartley; 2GQ, 1 watt to Hartley; 2KN, 3 watts to Hartley; 3BC, 2 watts to Hartley, and has clicked 13 countries, 5 continents; and 2FE, 7½ watts to TNT.

Definite experiments are taking place amongst members, and it is too early to draw conclusions yet, both fone and CW stations are busy, especially the Wellington gang, 2DL and 2CD, who have organised definite experiments, lasting over a period of twelve months. They are to be complimented on the FB work they are doing, and all club members are requested to look out for them when going over their dials; co-operation is needed.

Commencing on Sunday morning, 10th April, at 10 a.m., NZT, ZL2FE will put over the latest QRP club news and dope on CW in the bottom half of the 7mc band. The procedure is as follows:—QRP sent three times and the station will sign three times, repeating this twice. At the conclusion any QRP stations wishing to qualify or club members signing QRP will be worked till midday.

For the benefit of non-members wishing to qualify, all you have to do is to work a club member, ask him for his number, send your QSL card with dope about your circuit and power input which must not exceed ten watts, quote the number of the station you worked, and enclose 6d. in stamps. We do the rest, and you will be proud of the FB certificate we shoot you back. Now, who's next to join forces?

The Secretary's QRA, Box 26 Gisborne. Go to it, gang.

—ZL2FE.

HAM ADS.

FOR SALE—Power transformer 100 volts, secondary centre tapped at 550 volts. Two 8v filament windings tapped conveniently, 50/-. Write **ZL3BD.**

* * * *

WANTED—A 50 or 75 watt modulator tube. Will buy or exchange for a Philips TB 1/50 in good condition. Write **ZL2BJ.**

* * * * *

FOR SALE—Complete transmitter, push-pull TPTG. Uses 245 tubes and one type 80 rectifier. Oversize power supply built in. Price complete with tubes, £16. For fotos and specifications, write ZL2FY, 106 Southampton Street, Hastings.

* * * * *

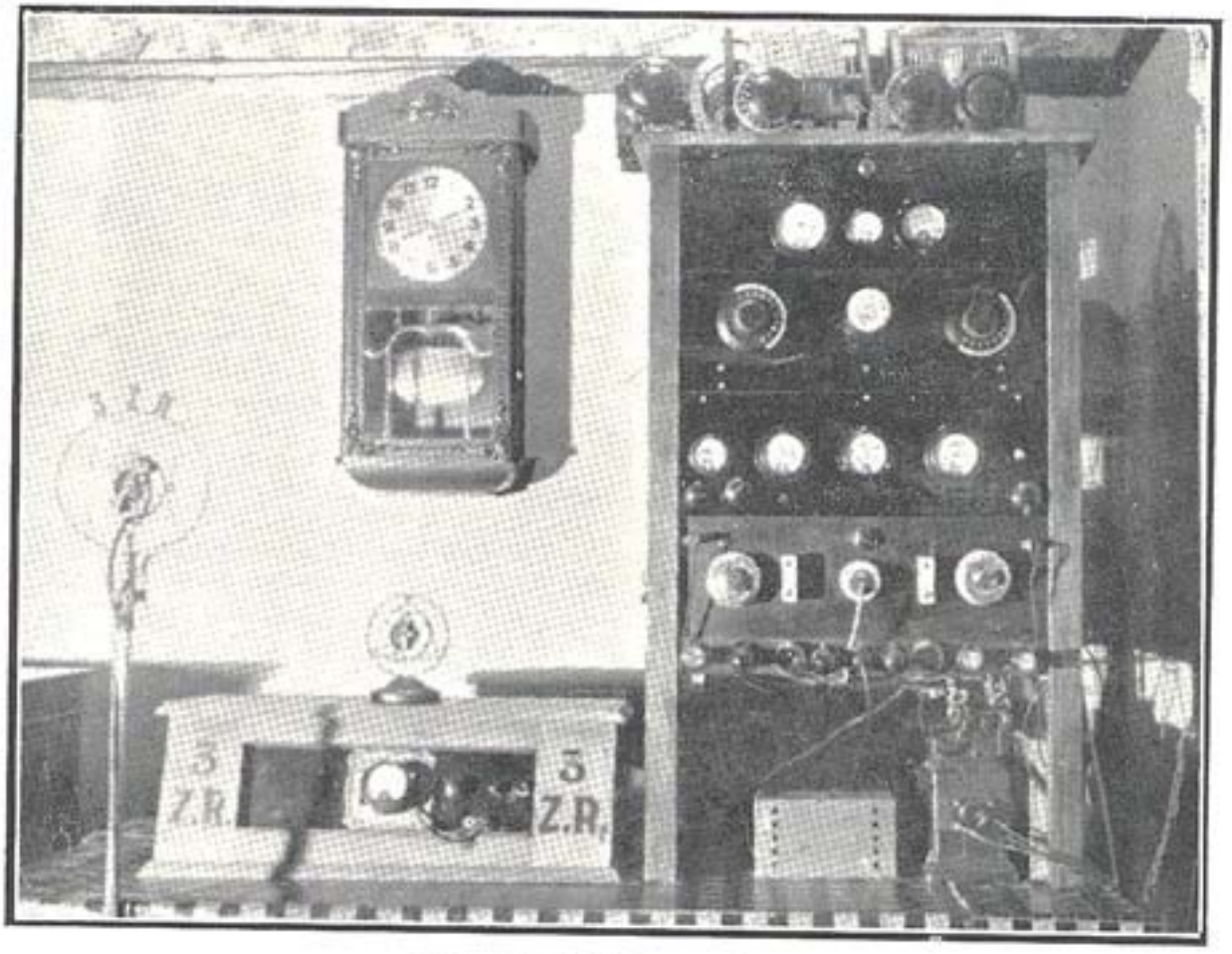
WRITE TO ZL2FY, Hastings, for quotations for all power equipment, modulation chokes, transmitting and receiving coils. Quotes for complete transmitters and receivers on receipt of specifications.

* * * *

FADA ABC ELIMINATOR, slightly used, delivers 180 volts. First in gets it at £5. Electric and General Import Co., Christchurch.

* * * *

NEW GECOPHONE 6 and 12 OHM Panel mounting plunger Rheostats suitable C.T. Filament resisters. Clearance Price, 1/6 each. Electric and General Import Co., Christchurch.



3ZR—ZL3CW Greymouth.

We have received a complaint relative to the system used by some amateurs who give a "CQ" just after some other station signs off and follow with a call to this station if the operator does not happen to hear the "CQ." This is unfair to those who answer the "CQ" and the idea should be dropped at once, otherwise your calls might not be answered half as frequently as is desired. Listen for other stations as well as the one you hoped to QSO, when you "CQ." If no one else answers then call him if you wish.—Eds.

LOST SOULS.

Will any reader knowing the full postal address of the following members please forward same to Headquarters at once?

E. C. Burford.
Russell Carter.
B. Cusack.
A. S. Hayward.
J. Lethbridge.

RE STICKERS.

Members who have forwarded money for stickers are advised that their orders will be filled as soon as stocks arrive from England, which will not be long now.—HQ.

NO OUTSIDE INTERESTS RUN N.Z.A.R.T.

THE FIELD DAY.

By the N.Z. Supervisor.

I congratulate all sections of the R.E.C. on the splendid success they made of their first field day. The spirit of the movement was entered into with zest and thought for detail. Personal supervision from my own station enabled me to keep track of the various stations as they communicated with each other, and the success of our first "field day" was assured after the first half-hour.

I am particularly pleased with the manner in which sections assumed their duties. With the exception of Wellington, all centres appear to have encountered bad weather, and the "outpost" stations deserve great praise for carrying on. The R.E.C. Movement was not formed for the purpose of receiving bouquets, so I will bring out a few of the most glaring faults; those which I consider "minor faults" will be ironed out as the operators gain experience.

The amateurs' hand book contains a chapter on "Station Discipline." Notwithstanding this, the general station operation was poor. Probably the message form issued by Headquarters accounted for this. The design of this message form was not very good, and even an experienced operator would find difficulty with it. There was also too much rag-chewing between certain stations. It is not necessary to congratulate a station each time a message is received correctly. It is hard, I know, to refrain from passing 88 and 73; but field days are designed to train operators for emergencies, and if you waste "battery power" on these days, you will certainly do the same during emergencies. **Bad habits are hard to break.**

Not one section reported a state of emergency to the supervisor; watch this point, section leaders! I am certain you would not overlook this if an emergency did occur, but it is necessary to watch every detail during practices.

The only weak link during the day was at Gisborne. The "base operator" was not quite experienced enough for such an important role. All base operators should be first-class telegraphists, experienced in the traffic procedure and operating. The Gisborne operator was a trier, however, and did not require "fills" when sent to steadily.

The "logs" and "diaries" submitted were very good; particularly those of the Auckland and Otago sections.

Judging by the varied forms of logs submitted, it is evident that we should adopt a standard log. A log is intended to show date, time, calls made, frequency, and remarks regarding signals, etc. In the case of the R.E.C. the log should be extended to show the traffic in and out. A few stations were late on schedule. A standing rule should be that all watches are set to Post Office time.

Considering all the circumstances, the last field day was undoubtedly a success, and with that experience gained, I am quite sure sections will make an even better showing at the next field day.

W. G. ASHBRIDGE, ZL2GP,
Communications Supervisor,
N.Z.A.R.T.

AUCKLAND SECTION.

In all respects the Auckland section R.E.C. had a very good time on March 6. The weather, though overcast, was very good to us. The zone and outpost gangs left for rather uncertain destinations in the Waitakere

Ranges at 10 a.m. The zone gang, 1AN, 1BC and 1BE, came to roost at the head of Henderson Valley, commandeered a convenient bach and proceeded to dig themselves in. The co-operation was marvellous; at least no black eyes were in evidence when next seen later in the day, though I don't doubt their style was rather crimped by the presence of the fair sex. A strange mascot in the form of a flat tyre was much in evidence, though I think they were a little pessimistic, as, strange to say, their efforts were quite successful.

The outpost gang proceeded on their way and 1GC's old bus began to wonder if the road was made by man or just happened. After passing a sign which read "For God's sake turn back," the gang came to the conclusion that the artist knew his onions. However, a vy fine spot, as near heaven as 1AO will ever be, was selected. 1CR proved Darwin's theory though his remarks when his first cast fouled the outer branches led one to believe that his tongue had developed better than his tail. Within 15 mins contact was established with the zone station in spite of the fact that the xmtr was of 1AO's own construction. Two xmtrs at the guard station facilitated operation which was just as well as 1AA and 1AR sure had the heavy end of the stick at this end. Looking over the beautiful panorama spread before us, one felt a little sorry for Norm and Les though I don't doubt their ability of seeing that they had a good time.

In every way the day was voted a huge success and though future R.E.C. activities may not always be as pleasant and enjoyable I am sure that with the co-operation and efficiency evinced on March 6, including that of all the boys who observed silent hours, success will crown all efforts.

—ZL1GC.

WELLINGTON SECTION FIELD DAY, 6/3/32.

Weather:—Fine and calm but dull.

Stations active:—Guard 2GP, zone 2CI, outpost 2CA.

Description of Stations.—The portable station, ZL2CA, was erected at the top of the Moonshine Hill, about seventeen miles north-west from Wellington. The station transmitter was a split-colpitts with an input of 3.6 watts. The receiver was the usual O-V-1. The aerial was a ten foot high Marconi.

The zone station, ZL2CI was situated in Belmont about 10 miles north of the City. The transmitter was a 210 in a TPTG circuit with 30 watts input. The receiver was a screen grid and one audio. The aerial was a voltage fed hertz.

The guard station, ZL2GP, used 300 watts and TPTG circuit feeding the usual voltage fed hertz. This station is situated in the heart of Wellington, and was operated by 2GP assisted by 2DL and 2CD.

The outpost station maintained contact with the zone station continuously after contact had been made. His signals were reported as QSA5 R5 throughout the day. The operator, 2CA, reported a very successful day all round, receiving and sending his full quota of messages.

The zone station, 2CI, also had a successful day, marred only towards the finish by severe QRM from a local amateur. He reported signals from ZL2GP as very strong.

The guard station, ZL2GP, maintained contact with 2CI, 2GO Gisborne and 3CM Christchurch. All were very audible in Wellington, but QRM from a non-announcing phone station blotted out 2CI until he moved his wave. Over 100 messages passed through the guard. Full details of actual schedules, etc., will appear in the N.Z. Supervisor's report to Headquarters.—K. Slade, Section Leader, Wellington Section Radio Emergency Corps, per J.R.H.

DUNEDIN SECTION.

Enthusiasm! That's the thing that one senses as soon as he enters the club room when there is an R.E.C meeting in progress. That's what helped make the field day such a success; and a great day it was, too! Although the weather was not the best, our spirits were, and at about 9 45 a.m. on March 6 we set off. First to drop off were the zone gang, Messrs Harris, Cameron, Booth and Morrison, at Broad Bay, where a PP transmitter

with 24 watts to two TC04/10's was established. At Cape Saunders ZL4CN's portable station was used, 12 x 12 x 4 inches in size. It contained a Hartley transmitter and two tube receiver! A 171A was giving R7 in broad daylight in Dunedin and only 70 volts on the plate. Those at the camp were Messrs Stroud, Collett, Winefield, Petersen, McConnell and Sparrow.

Now we have meetings weekly and the latest development being the purchase of parts for the station. A split Collpits circuit is being used for the transmitter with 171A as oscillator, while the receiver is to be a two tube affair with type 230 tubes. The size of the outfit has yet to be decided on, but believe us it will be like the proverbial stud—always running under the jolly old carpet, what?

—ZL4CY.

INVERCARGILL SECTION.

The southernmost section of the R.E.C. held its end up quite well in the National Field Day on the 6th inst. The portable combined xmitter and receiver which had been built for R.E.C. work functioned very well indeed. The set finally adopted was a Hartley with two A609's in parallel, while the receiver was a Hartley and one AF using similar valves. Power supply—four No. 6 dry cells for filaments and an input to the xmitter of 10 mils from 90 volts of Bs. This gave us an input of .9. watts. The whole outfit was built into a weatherproof case which can be carried easily by two. The aerial decided on was a 66ft Marconi for 80 metres. The 6th dawned bright and 4DZ collected 4CH under whose call the station operated, and set off for Forest Hill, eighteen miles distant. We arrived at our destination with three minutes to spare, which time was profitably spent in putting the station on the air. On the tick of 10 a.m. we clicked with 4AD and QRX'd till 10.30 a.m., when we handed him our first msg. By 10.48 we had the hook clear and 4AD's OK. The interval till 1.35 p.m. was spent in getting sunburnt. Even the mitter case felt the heat to such an extent that the lid warped badly. (Northern papers please copy). Hi! At 1.35 p.m. 4AD gave us our first inward msg No. KG 349 and No. 247 from J section. Incidentally J section's msg saying, "arranging supplies whisky" was rather appropriate as we were working under the lee of the far-famed Hokonuis and possibly close to a still. At 4.25 our msgs were very weak at 4AD but his were still audible and we took msg AOP 148 and gave him our OK. 4AD reported hook clear, 4BD being QRU.

Thanks are due to two budding hams, Ted Woods and Nick Nichol for assistance in putting up the Ant.

Shortly we left for home, pleased to know that we had kept up our end in the first R.E.C. day.

QSL LAMENT.

"Oh, Mister Amateur, whose CQ's I have heard, I beg of u to QSL, Oh! pse send me a card. For if u do not answer, you'll need to hire a nurse; I'll call the wrath of Jupiter upon u in my curse. As Nelson said at Waterloo in 1962, 'Up then Guards and Atom'—so shall I say of u—'Up sturbs and electrons" and by the seven spheres, may the heavens belch wid QRN fit for Thor's own ears; may the sky be rent with lightnings, and the earth be rent with quakes, and ur aerial mast be stricken so that every guy wire breaks. May ur radiation wither, and ur amps refuse to amp. May ur bottles all disintegrate, and ur lo-loss coils get cramp. May ur generator sizzle, and ur metres all go fut, ur condensers stop condensing and ur tuning ne'er stay put. And so because u didn't write things all turn out so bad, when this malediction comes to pass, perhaps u'll wish u had. However, if u QSL or send a word or two it's cheerio and 73—and I raise my hat to u."

FOR THE STUDENT.

Before passing on to the various functions of a valve a short description of the electron theory is necessary to enable a clear picture of how a valve functions to be visualised. Now all matter consists of atoms and if similar atoms are united the substance represents a simple element, but if dissimilar atoms are combined chemically, then the matter is a compound. An atom has a central portion, or nucleus which is probably complex in nature and is generally called a proton. Bound up in the proton are a number of particles termed electrons and these are actually negatively electricity. Besides these bound electrons there are others separated from the proton and revolving around it in definite orbits just as the moon rotates around our earth. Hydrogen has one of these "planetary" electrons and other atoms a larger number in an ascending scale, but always the same number for the atom of any particular element. These planetary atoms exactly balance the positive charge of the proton and so an atom is electrically neutral in its normal condition. If an electron is removed from or added to an atom, this balance is upset. the first condition leaving the atom positive and the second making it negative. Broadly speaking, this is the basis for all electrical conditions, whether a current is flowing or a static charge is present. Friction, chemical action (as in a battery) or conductors cutting a magnetic field, as in a generator, are different methods of disturbing the normal state of atoms. Rub a fountain pen briskly against a coat sleeve and touch a small fragment of tissue paper and the latter will be picked up. Friction has resulted in electrons being removed from either the vulcanite of the pen or the coat sleeve. Try the same experiment with a brass rod and nothing happens unless an insulating handle, such as glass or ebonite, is used. The reason is that in metals the electrons are readily moved and can pass freely from atom to atom and so they are called good conductors whilst other substances such as glass, etc., part with their electrons (or have extra electrons forced upon them) only with difficulty and are therefore poor conductors. When a metal is rubbed, as fast as electrons are removed, or added, the balance is restored via the hand and the earth.

In a battery, the chemical action causes a surplus of electrons to appear upon one plate whilst there is a corresponding deficiency upon the other and if the circuit is completed, say through a lamp, there will be a stream of electrons flowing around from the negative plate of the cel lto the positive, being repelled from the former and drawn in at the latter. This stream does not flow in an altogether simple manner, for we must remember that the atoms of the metal conductors and the filament itself contain electrons and there are numerous collisions between the moving electrons from the battery

and the atoms of the conductors. This sets up heat and if there is a sufficient stream of electrons being forced through a small conductor, as in the filament itself, the latter will even become red or white hot. In this last condition so severely are the electrons jostled as they collide with protons and other electrons that some are thrown right out of the filament, but at ordinary air pressure the collisions with the atoms of the latter prevent them from going more than about one two-hundredth of an inch and they go back to the filament. If the air is rarefied, these emitted electrons travel further and if the glowing filament is inside a highly exhausted bulb there is soon a dense cloud of electrons, mutually repelling each other, for like repels like. Those most remote from the filament are pushed ahead and if there is a second element sealed into the bulb and having a positive terminal of a battery connected to it, the electrons will be attracted and will flow around if the circuit is completed from the negative end of the battery to the filament circuit. This is the form that the first valve had as invented by Dr. Fleming, the added element or electrode, to give the correct name, being called the anode or plate whilst the filament is named the cathode. Usually a high voltage is necessary to cause a large current to flow in the plate circuit, but as this concerns the space charge, as the cloud of electrons thrown off the filament is called, it will be reserved for another article.

If an exam question asks for a brief description of the "electron theory" it is sufficient to explain the construction of an atom, to state that they are normally electrically neutral, mention how this neutrality may be upset and that electrical phenomenae result. It would be important to dilate a little on how a filament throws off electrons. Edison, by the way, was one day experimenting with an ordinary bunsen burner and noted that something he happened to hold in the flame was electrically charged and he then discovered, after a short series of experiments, that if a battery was connected so that the positive terminal joined a conductor held in the flame and the negative end went to the metal of the burner, a small but measurable current passed through the circuit. Fleming developed the valve from this and de Forest brilliantly thought of adding the grid. Electrons are therefore thrown off any sufficiently hot substance, even a naked flame, though we can hardly refer to the flame itself as being a substance, though it contains many unburnt particles of carbon, etc.—3CG.

FIRST DISTRICT.

March 2—7MC: ZL2GN, 3AW, 3CC, 3BC, 4CM and 2FI all calling CQ. 2FI very FB R6 without aerial. Shortly afterwards VK2LW heard calling VK2FQ. March 6 on 3.5mc ZL2GW working 2KO; 2JO calling 3CS. Plenty of ZL's heard calling "W" but the latter not much in evidence. March 7: 3CX calling 2GO; 2KM calling CQ with a FB note. 1GW heard testing on phone with good modulation. 2FI heard calling W1MK in W tests at 6.18 p.m. 1FN heard on phone working 1GW. 2JC heard with good phone working 2LB. March 10, 3.5mc: 1GC heard testing with records with good modulation.

From 5.30 p.m. on March 11 the following stations were heard in the 7mc tests: W3CCF, W6WX, W6DOU, W2DM, W2BST, W2VH, W6AM, W6VQ, X1AX, X1DX, W6AHP,

J1CT, W6BC, W6CYV, W6EGH, W6DDE, W6CHA, W6EQE, TI5FI, VK2ZC, VK3VP, ZL3DW, VK2OC, ZL3AQ, W6CXW, W9GHO, W8CSS, ZL3CC, W5DE, W6BY, W6DEP, W5UX, VK3ZX.

—H. B. Harrison, ZL107.

URGENT NOTICE.

Re QSL Bureau.

Perhaps you have never fully considered the advantages of the N.Z.A.R.T. QSL Bureau to you as an active ham. When you receive an envelope from the Bureau packed with long waited foreign cards, do you realise what is being done for you, and the expense that is incurred in providing that facility gratis? Every real ham organisation throughout the world has a QSL Bureau and each Bureau has undertaken to distribute cards for the other. It is all done for the sole benefit of amateurs, and if amateurs do not support it the system will fail! At the N.Z.A.R.T. Bureau thousands of cards arrive for New Zealand distribution, **and they are distributed to members and non-members alike free of charge.** If you appreciate this service and would like to see it survive, give it your support by sending all your cards through it. You will **SAVE YOUR N.Z.A.R.T. SUB. IN POSTAGES ALONE!**

Next batch of cards you have to send, just bundle them up and enclose 1d. stamp for each foreign one (outside N.Z.) and ½d. each for others. The Bureau will do the rest.

The address is N.Z.A.R.T. QSL Bureau, Box 25, Ashburton.

KGQS.

On the evening of Feb. 16, a party of about 15 of the local transmitters, at the invitation of Mr L. Fuller, W6BPG, went out to inspect the American yacht "Vileehi," of which he is radio operator.

6BPG made three trips in the little "outboard" belonging to the boat, and in a very short time all the boys were aboard and peering into every nook and cranny.

The "Vileehi" is about 80 feet in length, and displaces some 31 tons, and was built in San Deigo for its owner, Mr Hiram T. Horton, who, with his wife and daughter, is wandering around the world in the yacht. The "Vileehi" is the last word in comfort for a boat of her type. She is equipped with a 110 volt lighting plant, the power being supplied by Edison nickel-iron cells which are charged from a motor generator set when necessary. There is a frigidaire, gas stoves, 110 volt DC broadcast receiver, and cold shower. The cabin table and the stoves are all counterbalanced so that they will remain vertical in the roughest sea. The yacht has a powerful auxiliary engine, but this is scarcely ever needed; most of the time sails alone are employed.

The operating room was a popular place and was, most of the evening, giving a creditable imitation of a sardine tin. A vibroplex is used ex-

clusively, and each one had a try at it while the remainder criticised their efforts. Those who had never handled a bug before found it rather uncontrollable, but some of the gang, especially ZL1AR, seem to know how to use it. The transmitter, operating under the call KGQS can put about a quarter kilowatt into the antenna, and, together with the receiver, is a real fine looking job, being built throughout by the R.C.A. The receiver uses a type '10 tube as detector and many were the covetous glances towards it. Hi!

Down in the cabin the rag was chewed in the thorough manner peculiar to the genus ham. The skipper and Mr Fuller were the central figures and most of us soon found what a lot we had to learn about the States. After a really enjoyable evening we said our farewells and departed. It was then rather late: I know, because I walked home!

—ZL1CR.

BADGES.

Members will be pleased to learn that badges are now on sale at HQ at 2/6 each instead of 3/6 as formerly. GET ONE NOW!—HQ.

"BREAK-IN."

All matters dealing with this Journal must be addressed to the "Editors." Articles intended for publication must be in the Editors' hands by the 20th of the month preceding publication. Articles must be written legibly in ink or typewritten and must be double spaced.

SEND YOUR CARDS THROUGH QSL BUREAU.

AUCKLAND NOTES.
By ZL1CR.

Well fellows, it's great the way the "hams" and "almost hams" are turning up to our local meetings, the last meeting being quite a success due to a good number turning up.

Also there is some great news this month! ZL2FR is shifting to Auckland; and although it is a loss to Wellington I'm sure it will be Auckland's gain. Mrs Souper hopes to have her high-power phone station on the air shortly, and the Auckland can boast its first YL operator.

ZL2AJ, Vic Parminter, one of Wellington's oldest hams, was also up in Auckland lately and attended our last meeting, where all the gang were very pleased to meet him.

Now, you short wave listeners, try coming along to our local meetings and getting to know the local hams—not to mention the knowledge you can gain from the technical lectures which are now a feature of every meeting. the local subscription has been reduced to 2/6 per annum and is well worth it.

ZL1BC, Mr F. W. Mickleborough, has started his Question Box again for the benefit of both transmitters and listeners who are local members. All questions handed in will be answered by 1BC or by someone else in a position to answer the questions asked.

And now for the bedtime story: ZL1AA was admired for his snappy operating from the base station during the R.E.C. test and has perfected a new transmitter. ZL1AC was seen among the crowd at last meeting. ZL1AE is the call a pirate has been using, I'm told. ZL1AI is turning into a commercial operator fast. ZL1AO, when riding his mo'bike had an argument with a cow—the cow won! ZL1AR has a very fine outfit now and worked a K6 on 3.5mc lately, who gave him R7-8! ZL1BA made his new AC receiver perfect and recently worked England. ZL1BC is building a dinkum new transmitter and is going to give CW another try. Hi! ZL1BE soon made friends with the YL's at Sharp's Bush on R.E.C. test day. Hi! ZL1BQ carries much weight in the local R.E.C. ZL1BR has his short wave receiver working OK now, and will soon be on 3.5mc again. ZL1CD is working everything on 3.5mc. ZL1CH—c'mon now, Harold, get that new transmitter going but—PDC please! ZL1CK is making a really fine secretary and is a popular man. ZL1CM has gone down to the sea in ships, so QRT for a while. ZL1CC is at present working a temporary transmitter at temporary

camp and says 14mc is dead and 7mc too full of QRM. ZL1CO does wonders with phone and CU, using rundown B batteries and a minute input. ZL1CR has discovered, at least, the secret of working Yanks with only 15 watts input to a UX245 tube. ZL1CS still puts out a loud QRP signal. ZL1FZ will soon be on the air again. ZL1GQ is working DX on 7mc. ZL1GW is still the phone expert. ZL1GZ worked VK on phone and inspired by his success, is calling W on phone now. ZL1HB has had some trouble with his transmitter but now it is going OK and he has his cards printed now, too. ZL1GC has a new power transformer and rumour has it that the power pole outside lacks one. Hi! ZL1HC is on the air, they say.

I wish to thank the hams who have not been able to hand me the news personally, for the ready response to my appeal for news of their doings—ZL1CC was the only one! Now chaps, play the game or no news!

Our next meeting, on 7th April, will be a great success and ZL1AO will lecture on "A.C. Receivers." 73.

—ZL1CR.

PAPAKURA.

Old ZL1BV is at present using a TPTG transmitter, and works on CW only. Our reliable fone and CW station ZL1GJ continues to keep Auckland on the map. Another convert to push-pull. MOPA was tried, cannot compare with p.p. as regards power output from a given HT supply. ZL1FV prides himself now that he answers his skeds on time. Wait till you have to look after the junior YL OP OM, then we shall see. EX OZ1FR—Ron Gillies now resides at Putaruru, at which place he is a registered plumber. Come OB, start up again, and be Putaruru's first ham. Another keen SW listener there is Mr R. Finnigan, railway clerk, who can receive morse as fast as it can be sent on a straight key. (Listening 4AO?) Hi! Papakura will (or might) have another ham soon. The morse seems to be the trouble in most cases.—73.

G. EVANS.

WAIKATO.

1BW and 1CU have been having hi-speed break in—very energetic lads. 1FE has been on holidays so has been QRT. The Te Awamutu gang is not making itself heard much on 80m at present—is DX too good OM's? 1BL has added a few grey hairs to his top knot lately through trouble, but all OK now. His second op is sitting for a ticket very shortly and we wish him luck.—ZL1BL.

RAETIHI.

Colin, 2DY, been off the air for a couple of months but starting to brush the cobwebs off again. He has a good speech amplifier this time so he is hoping that it is humless.

2AI has about one QSO a night to keep the key contacts clean and is building a separate transmitter for 40 and 20. WAC soon? Perhaps. We are bringing out a new ham to join the ranks very shortly. 73 to the gang.—ZL2AI.

GISBORNE NOTES.

Radio seems to be looking up in Gisborne; things are quite brisk, in fact. Of course the main topic of interest is the R.E.C. national field day held on Sunday, March 6. The outpost station, comprising ZL2GQ, ZL2GD and L. Patterson, J. Smellie and T. King, went in 2GD's car to the mountainous country about three miles from Morere and set up the portable xmitter and receiver in a paddock under some trees. The zone station, manned by ZL2AC, ZL2AE and ZL2DM went in 2AC's car to the top of the Whareratas and had 2AE's portable installed in a disused whare and on the air in jig time. The guard station was at ZL2GQ's residence, his transmitter being used, but ZL2DX and ZL2FE were the men behind the key. All messages were cleared in schedule time, but the guard stn had a good bit of trouble from a local transmitter and a power leak. The lads are so keen on this field day business that a Gisborne field day has been arranged for Easter Monday, when the boys will go to different parts of the country with the portables for the day. Quite a number are leaving on the Sunday night and making a fair dinkum holiday out of it.

ZL2AC has almost given up QRO for QRP now, using a PP-TPTG outfit with about 4½ watts input, and with Heising modulation puts out some real FB fone. His "portable" receiver is a Grebe CR-18, two tubes and built in 1926, and you should just hear it drag in the sigs—it can beat anything modern of the same type.

ZL2AE, Bob Patty, is also using PP-TPTG with Heising, and his fone is heard all over ZL. It is certainly great to see an old timer like Bob back on the air again, filled to the brim with renewed enthusiasm. We all knew you would be back, Bob; that Radio Bug is a devil to dodge HW!

ZL2GD, Basil Adair, is another 80 meter PP-TPTG fiend these days. He's absolutely deserted 40, and can be heard putting out Heising modulated fone. This is what he says in our local gang mag QTC: "After very consistent working on the 40 meter band, I have at last forsaken that happy hunting ground for the more or less local vicinity of 80 meters. Every time I go in the shack the poor old crystal looks at me reproachfully and calls out in a QSA2 R3 voice, When am I going on the air again?' Poor old xtal; he hasn't had a decent feed off HT for close on three months. Hi! hi!

ZL2GQ, Frank Hunt, has been on 40 a few times, working a few Yanks, and the other night worked G5ML for half an hour. When the G signed off, his signal strength was the same as when he started, which is rather unusual as Europeans generally fade as the time gets later. His 8 a.m. skeds with 2GP are non est now as the latter has lown his tranny.

ZL2DM, Clem Smith, has a note like a buzz-saw! He is back from his beach residence and plans installing a bigger and better outfit. We are wondering if it will ever get

finished, Clem. You better buy a new note first. Hi!

ZL2DW, Trevor Hughes, has completed a new AC receiver utilising a Philips power pack and an AC penthode in the last stage—so when you get a rMAX strength from him, don't be surprised.

ZL2DX, Norm Fitzgerald, is planning a come-back, and it's going to be a 100 per cent super outfit (maybe). Well, anyway, get to it, Norm, not so much gab. Hi!

ZL2FA, George Butler, has been very QRL with the talkies—he is the WE service engineer, and what he doesn't know about toobs and things wouldn't cover a postage stamp. They tell it that the postman has to bring his DX QSL cards in a special hand cart. Hi!

ZL2FB, Bill Bullivant, is now our loop modulation king, and according to his various experiments his motto seems to be "I'll try anything once." Hi! He has a new home-made mike coming up in the lift, so we are expecting some FB fone from FB. Mr Bradfield, father of the late Jack Bradfield, exZL2FB, still takes a very active interest in amateur radio, and often visits Bill and the other hams. It was his wish that the call sign ZL2FB, be re-allotted to Mr Bullivant, as he was one of Jack's closest friends.

ZL2FC Wairoa, is under the careful and capable care of Anold Perry. He puts out really wonderful fone when he thinks to give 80 meters a go; but most of his time is taken up with 2ZP, his broadcast station. The latter is very FB to listen to, and the breakfast session is good in helping the porridge on its way. Hi! How's the golf, Arnold, and that Donald the Dub caddy?

ZL2FE, John Vautier, our worthy QRP merchant, is at it as keen as ever. He is also keen on loop modulation with various percentages of howl. Hi! Sometimes he gets the mike to work OK, but sometimes—! John is putting in a lot of time with the QRP Club, and the membership is increasing nightly. Wait till you start getting in the W, G, ON, J, etc., fellers, John.

ZL2FF, Cliff Hands, has been too busy with BCL station 2ZJ, and pushing his radio business, to come on the amateur bands much, but business before pleasure, Cliff. His new creation is a new development in condenser mikes—having a dead silent background and a wide frequency range. He has also completed a new screen grid, resistance coupled amplifier, and it works 100 per cent. FB Cliff.—ZL2DX.

LEVIN.

ZL2GN is now crystal controlled and doing well on 40 metres and getting FB reports. Is using one 210 in the last stage at present.

ZL2GW is on consistently on 40 metres and wrks W and VE. Uses 60 watts input.—ZL2GW.

MARLBOROUGH.

2GZ gets great results from his QRP station; recently he was heard trying TPTG which had a better tone than Elsie Hartley—good luck, Mac! 2HZ heard now and then with a DC note which is weak through skips. 2KS is a newcomer and gets fine results from a Hartley with about 4 watts. He is QRT pending the erection of a shack. 2CC has not been heard for months. **(We saw him at the Convention, so he is still alive.—Eds.).** 2GB is another who is seldom heard; guess his OW is having a spring clean. Hi! 2DO comes on occasionally with about 2 watts input to a TPTG using a 609. He also has a TPTG PP using 201A's with 3 watts input. He has been heard calling Yanks on 40 and 80 but nothing doing.—2DO.

RANGIORA.

ZL3DW QSO'ing VK's and getting lots of new cards. Tried to QSO W, but ND; QRL collecting fotos. ZL3DY finding out the hows and whys of Heising modulation. Sits up most of the night after the elusive VK. Had trouble with his xtal but now FB. ZL3DT. Welcome to the ham ranks, Jim. FB. Has a nice Hartley rig, using 245 with 300 volts from a 280 rectifier. First QSO with ZL3DW. Hi! ZL3AI. QRL with lectures since his return from the East. Hopes to make up for lost time soon. Hope so, OM. ZL3AL—Seems to get out well judging by the DX cards he receives. ZL3AJ. Still wants Africa for WAC. Hi!—ZL3AJ.

THIRD DISTRICT NOTES.

By ZL3CP.

Will all Christchurch hams please let 3CP know of their doings, as he is not a mind reader.

3AD is busy making 80m wave traps for neighbouring B.C.L.'s Better move your QRA, John. 3AS is experimenting with a crystal-controlled oscillator coupled to an oscillating TPTG amplifier. This is a notoriously tricky circuit. Good luck, Norm. 3AV, it is said, is using a 245 that draws 110ma at 300v. This sounds like a Wills yarn. 3AW is to be heard continuously on 7mc with a much improved note. 3AZ fell from his pedestal (Constant Bob). Let us whisper it. He missed the South Mail. We understand that a Royal Commission is to inquire into the matter. 3BG has increased power to 36 watts, and is trying phone. 3BH spends his time copying long wave commercials to improve his code. Some others might follow his example with advantage. Yes, OM, I'm one! 3BJ is having one of his periodical rebuilds. Four 245's this time. 3BM and 3FI both had RAC notes, so they swopped transmitters to see if that would cure them. Hi! 3BR is QRP. With 0.9 watt input he got R9 from the West Coast. 3BW spent some time on 7mc and worked eight Yanks

with 7 watts input. FB Frank. He is now using increased power on 3.5mc. 3BZ has been ill, so not much doing recently. We are glad to see him about again. 3CA is suffering from QRM from 3DX and 3AW. One of his tubes is very bashful, from the way it blushes. 3CC must have power to spare, judging from the amount emitted on 3.5mc when he is operating on 7mc. 3CE is still threatening to go on the air again; but we reckon we are safe for a few years yet. Hi! 3CF, using 15 watts, is getting great reports from VK. Every time he touches the key an Aussie comes back. 3CG seems to prefer DX in golf to DX in radio. Doesn't that W on 3.5mc give you nobler ambitions, OM? 3CK is hoping to have his 852 going after Easter. He is still waiting for the three Mullard 75 watters. 3CM's latest is to keep his skeds dressed in a shirt only. Luckily television has not arrived yet. Are your tubes warming up the shack too much, Bill? 3CN does all his operating away from home. One xmtr is at 3XC, and the other is a portable for R.E.C. work. 3CP would like to buy a cheap bullet-proof waistcoat. Writing district notes it be classed among the dangerous sports. 3CT, after a little rest in hospital, is back on the air again with a much improved note. (3CK adds "TNX to me"). Hi! 3CZ, whom we usually couple with 3BS, now seems to prefer a T to an S. Hi! I owe 3DC an apology for judging his note on one hearing. He has a PDC note equal to any in N.Z. He is running up a list of ZL QSO's, but apparently can't be bothered with the Aussies who call him. 3DK has worked seven countries with 6 watts input. Good work! He is building a new xmtr six feet high. 3DX had his bike pinched. He is thinking of asking Mr Einstein how to ride a kilocycle. Hi! He recently tried to use a 245 as a light bulb in his shack. It only worked for a fraction of a second. 3FC came on the air with a nasty note. It seems to be an infectious disease. Most of the F's are phone mad, and have a Sunday morning phone chain. 3FY uses a Tungar bulb with no filter for plate supply. Another buzz-saw note.

ASHBURTON.

The meetings of Ashburton Branch continue to be well attended and the budding hams are progressing satisfactorily. Rumour says Father O'B. walks the floor early every morning swotting Handy. Eric thinks too much QRM from the young family at present, otherwise would be seeing the R.I. any day. Peter made a good start but haven't seen him since. 3CU still moaning about space in "Break In." Reckons plenty of room for 3AS and his baby (R.E.C.) hi! but N.D. for the late comers. 3AQ still working DX sometimes on 80. Hi! hi! ask 3CX. The relay gang always on deck so of you hear 3CU, 3DN or 3CX for any sake tell the Auckland guards. Hi! 3AO has his 'mitter ready to perk but hasn't got over that honeymoon feeling yet. 3CD wears a worried look these days, and if you want to start something mention postage rates for QSL Bureaus. The space for 3AR's new 60ft stick is all that's there yet.

The R.E.C. field day as far as Ashburton gang were concerned was most enjoyable. Starting off with all sorts of warnings from the guard stn. proprietor 3DN as to what would happen if we didn't click, you can bet we did our best.

Deputy Leader Lovett, 3AQ, took the zone station to Ashburton River mouth and Leader 3CU accompanied by 3AO with Mac's portable (receiver O-V-1 and xmitter in one lump 12lbs) set off for the mouth of the Rangi-

tata in 3AO's Rolls Royce. Seven miles out near a conveniently high tree we had a blow-out. Mac wanted to stay there but 3AO reckoned it would do him good to do some hard work for a change; and so the tyre was mended and we carried on. Arriving at beach, an aerial 132 feet long was soon out and contact made with zone 10 minutes later. Conditions were only fair, and at best zone signals were R5. Contact lost for two hours through 3DN and all Dunedin stations were heard. Finally got all outward messages over but were disappointed to hear zone station tell guard we had packed up with three messages still to come. Frantically called him but ND. Later found he had packed up on signing off with guard.

3AQ had for company 3CX, 3CV and "second op" P. Cooper, who by the way supplied all batteries for the day.

3DN as guard had a very heavy day but as usual with Ashburton everything went OK.

CHATHAM ISLANDS.

2XL—2HE is still gaining very good results from his experimentation with telephony on various QRH between 31 and 38 metres. He is heard in New Zealand QSA 3 R5 at various times between 10 a.m. and 5 p.m. but towards dusk his signals improve greatly and have been heard in Dunedin QSA 5 maximum speaker at 8 p.m. 2HD has returned to the mainland and hopes to soon establish a QRO outfit as a pleasant change after much QRP and medium power outfit work. We trust that wherever he be stationed he can come along to N.Z.A.R.T. meetings and give us the benefit of his three years' experience at Chatham Islands. 2HN, the genial Neill, has acquired the motor generator with which the foregoing ham made most of his fame. Much to the delight of 4AC his signals are now R7 to max, always QSA5 and of a type which makes QRM from locals easily occurred. He has increased power to about 30 watts on a Hartley rig.

A new QRA is ZL2HO, J. McLaughlin, Waitangi, Chatham Islands; a new arrival in the group. According to the island phraseology he has a 7 watt input to Elsie Hartley and gets good reports on his Philips TC03/05 tube. Concentrates on 40 metre band. It is rumoured that he and 2HN are going to try out push-pull TPTG circuits shortly. Well, QRU es c u again shortly.—Via 4CA.

OTAGO.

The fourth district gang have been having quite a nautical time this season. The first episode occurred when a picnic down the harbour to Harrington Point was arranged. The captain of the ferry boat granted us permission to string aerials from the mast, and the wheel-house was bestowed upon us for a "shack." A run down the Otago Harbour on a fine day is well worth while, and we were lucky enough to strike a good day. A big muster turned out, including quite a number of YL's. Second, third and

fourth district stations were worked on the way down the harbour and back. One particular point of interest noticed was that off Ravensbourne, about quarter way down the harbour, signal strength increased very noticeably from all districts from R4 to R6 or 7. "Il dit Caseo buildo Arko," which being interpreted means that our Mr Harris (4CA) was so impressed that he would like to build an ark and take up his "possie" there.

Our next episode took place on New Year's Day. The officials of the Broad Bay Regatta have for many years been depending on a rather undependable row boat to maintain communication between their flagship which anchors about half a mile or so out in the harbour, and the secretary and his staff located in the boatshed, ashore. This year, 4B1, 4BJ, 4CA and 4CJ took matters in hand, with a happy result that continuous communication was established from 11 a.m. till 5 p.m. This allowed the starting of races, handicapping, etc., to be arranged promptly and did away with a lot of the rather annoying delays that are apt to creep in at such functions. The eighty metre band was used. On shore, no trouble was encountered as there was power available and an ordinary everyday station was erected. On the boat, thanks go to 4BI's very fb portable xmitter (Ford coil power supply to a Hartley circuit, worked from a 6-volt accumulator) for keeping excellent contact. At the conclusion of the regatta, the Commodore, Dr. Speight, expressed his appreciation of the work done by the radio ops. This year, the Otago branch benefits by Mr Hugh Speight's consent to become a patron of the branch.

SOUTHLAND.

The weather down here has not been favourable from the ham point of view. 4CG specialises in dahlias and 4AD thinks his dandelions are champions. Hi! Not much has been heard of 4DL as he has taken up flying and his poor fifty watter lies covered with cobwebs. 4DZ and 4CH are going to raid his junk heap soon if he does not come to life. 4AW at Awarua puts 30 watts into a 245 and wks W6, 9 and PK wid CC and PDC QSA5 R7-8 sigs. 4AB and 4DY stir up the ther at abt 30 words per min. 4DY has a bug and "sum" modulation. Hi! 4CH has fone outfit to wrk the local boys wid; he wonders why someone does not give him a W.E. mike and a couple of fifty watters. 4AD is often to be seen wandering about wid a soldering bolt in his hand: a sure sign that he is going to rebuild his receiver "someday." Hi! 4CG nw has a PP245 outfit and says that he does not cause QRM to Bcls. He dives into the power supply wid the juice on and we expect to have to haul him out of his junk heap one of these days. Hi! 4CH is the opposite; he has live wire signs all over the place. 4DZ is building 4CH a receiver from the design in December QST.

—4CH.

ZL'S ON OVERTONES.

At Moonta, South Australia.

The undermentioned ZL stations were logged by the "Overtone King" during period February 14th to March 13th, on a waveband of 120-130 meters. It is taken for granted that all of the stations mentioned were using the 40—42 meter band at the time of reception. Now you ZLs, you can see which of you place overtones into South Australia, over a period of a month.

The figures in brackets, following the call-sign, denote the number of different days during the above period the particular station's signals were logged on overtone QRH.

ZL1AR (7)	ZL2CJ (2)	ZL2GN (1)
ZL2GJ (6)	ZL2DU (2)	ZL3AI (1)
ZL3AQ (5)	ZL2GK (2)	ZL3AW (1)
ZL4AI (4)	ZL3DN (2)	ZL3CA (1)
ZL3CC (4)	ZL1AK (1)	ZL3CS (1)
ZL2CI (2)	ZL1CK (1)	

Look for next month's batch.—73.

ERIC W. TREBILCOCK,

("Overtone King.")

1932 DX COMPETITION FOR NON-TRANSMITTING MEMBERS.

Headquarters is pleased to announce that a competition has been prepared for non-transmitting members of the N.Z.A.R.T. This is the first competition of its kind to be conducted by the Association and it is hoped that all eligible members will avail themselves of the opportunity of winning the excellent prize that is offered.

The conditions are:—

(1) **Participants must be financial non-transmitting members of the New Zealand Association of Radio Transmitters.**
(2) **The receiver must be operated by the competitor only.**
(3) **Reception of short wave telephony stations only; no station to be reported more than once.**
(4) **Marks will not be awarded for N.Z. amateur stations received.**
(5) **Points will be given as follows:—Australian stations, 2 points each; all foreign stations, 5 points each; stations in British Dominions other than Australasia, 10 points each; special points for neatness of log.**
(6) **Full particulars regarding the reception of all stations received must be accurately recorded. The log must show the following particulars:—(a) Call sign of station; (b) Wave length or frequency; (c) Location of station; (d) Date; (e) Time received; (f) Strength of signal; (g) Readability; (h) Nature of transmission; (i) If in English the announcements of two items or a sentence of speech must be recorded.**

The competition will commence at noon on April 16, 1932 and conclude at midnight on April 24, 1932. All logs must reach Headquarters, Box 617, Christchurch, on or before 14th May, 1932.

Prizes will be given to the winner and runner-up, while the names of the holders of the ten highest scores will be published in June issue of "Break In."

EMPIRE BROADCASTING STATION.

There have been numerous references in the Press lately to the proposed erection of an Empire Broadcasting Station. Although technical details regarding equipment are not yet available it is known that the power of the station will be such that strength of the signals received in New Zealand will be at a high level. The following interesting cable regarding the station has been received in New Zealand!

"As is generally known, the B.B.C. has for some time past been planning the erection at Daventry of a special transmitting station to be devoted to broadcasts for the British Empire. The realisation of this project has now been brought a stage nearer by the placing of the contract for the necessary transmitting equipment with Standard Telephones and Cable Ltd. The new station has been designed entirely in this country by British engineers and the manufacture of the whole equipment will be undertaken at the contracting firm's London factories at Hendon and New Southgate. The design has been based on the unique knowledge in short wave working that Standard Telephones and Cables Ltd. has acquired as a result of several years experience in long distance trans-oceanic telephony. This firm has exported from England same twelve similar short wave equipments which are in use throughout the world as international radio telephone links. It is expected that the equipment will be completed by the autumn and will be installed and ready for testing by the end of the year."

NEW AND AMENDED QRA's.

ZL1CG	.....	W. H. Potter, C/o. Power Station, Arapuni.
1FG	.....	N. G. Gulde, C/o. J. Murdoch, The Strand, Tauranga.
1FW	.....	E. Whitley, Box 26, Ngaruawahia.
1GX	.....	F. Hawthorne, 10 King Edward Ave., Mt. Albert, Auckland.
1GB	.....	L. G. Wilson, 65 Park Rd., Grafton, Auckland.
1HC	.....	A. Boulton, 257 Campbell Rd., Ellerslie, Auckland.
ZL2AG	.....	S. W. Strong, Box 37, Greymouth.
2AR	.....	A. Rennie, 35 Nelson St., Wanganui.
2BF	.....	C. J. R. Holloway, 2 Allenby Crescent, Wellington.
2BH	.....	W. M. Hall, 115 Hutt Rd., Petone.
2CS	.....	M. J. Larking, 18 Stewart Street, Aramaho, Wanganui.
2CX	.....	G. P. Patchett, 264 Rintoul Street, Wellington.
2DC	now 4DV	
2DY	.....	G. Smithsan, C/o. Borough Council, Raetihi.
2HC	.....	A. Boulton, 257 Campbell Rd., Ellerslie, Auckland.
2HH	.....	N. Greelman, 15 Bombay Street, Ngaio, Wellington.

N.Z.A.R.T. IS YOUR ORGANISATION, HELP RUN IT.

ZL2KD ..... C. J. S. Simpson, 207 Avenue Rd., Hastings.
2KN ..... H. Millward, Box 142, Wanganui.
2KP ..... F. J. Henskie, 15 Hawker St., Wellington.
2KR ..... C. E. Fechney, 239 Thorndon Quay, Wellington.
2KS ..... J. S. Furness, Roger St., Blenheim.
2KU ..... T. Ward, 7 Patrick St., Petone.
2KV ..... T. W. ard, Rugby Rd., Tariki, Taranaki.
2KW ..... B. J. Cocksedge, 48 Lonsdale Crescent, Wellington.
2KX ..... H. L. Brightling, 51 Waipapa Rd., Wellington.
2KY ..... A. Bosher, 34 Queen St., Wellington.
2KZ ..... E. Hedley, 32 Dorking Rd., Brooklyn, Wellington.
2LA ..... C. C. Thompson, 76 Courtenay Place, Wellington.
2LB ..... W. Fouhey, 99 Washington Avenue, Brooklyn, Wellington.
2LE ..... T. Pinhey, 72 Dunday St., Seatoun, Wellington.
2JN ..... A. R. Down, French St., Marton.

ZL3AO ..... G. Hayman, 83 Cox Street, Ashburton.
3AU ..... S. L. Johnson, 21 Brunswick Street, Timaru.
3BN ..... N. Field, 16 Campbell Street, Timaru.
3BS ..... W. C. Rose, 398 Gloucester Street, Christchurch.
3BW ..... F. A. O'Connell, 71 Bealey Avenue, Christchurch.
3CH ..... T. McKnight, 85 Trafalgar Street, Christchurch.
3CI ..... R. M. Kay, 17 Nelson Street, Timaru.
3CZ ..... F. L. Rose, 398 Gloucester Street, Christchurch.
3FB ..... J. F. Freeman, 7 Athelston Street, Spreydon, Christchurch.
3FC ..... A. Murdoch, Croydon House, Armagh Street, Christchurch.
3FD ..... S. V. Willmott, 146 Jubilee Avenue, North Beach, Christchurch.
3FE ..... H. J. Chapman, Omihi.
3FG ..... L. Wickham, 69 Wyon Street, Linwood, Christchurch.
3FK ..... L. D. Hepburn, 247 Fifield Terrace, Opawa, Christchurch.
3FY ..... L. Evans, 64 Ryan Street, Linwood, Christchurch.
3FM ..... K. Knowles, 171 River Rd., Christchurch.

ZL4AB ..... T. B. Pickering, Radio Station, Awarua.
4AW ..... H. Head, Radio Station, Awarua.
4BF ..... G. Borthwick, 62 Cutton Street, Dunedin South.
4BV ..... J. R. McConnell, 34 Prince Albert Road, St. Kilda, Dunedin.
4CB ..... S. L. Johnstone, C/o. Commercial Bank, Timaru.
4CJ ..... H. Jupp, 45 Dundonald Street, Anderson's Bay, Dunedin.
4CR ..... M. O. Johnstone, C/o. Mr Partridge, Upper Moutere, Nelson.
4CS ..... J. V. Pickerill, Ravenbourne, Dunedin.
4CV ..... W. J. Booth, 49 Kaikorai Valley Road, Dunedin.
4DE ..... D. Taylor, 5 Lorne St., Mataura.
4DK ..... W. E. Batchelor, Ravensbourne, Dunedin.
4DQ ..... R. Ellis, 32 Greenock Street, Roslyn, Duendin.
4DR ..... J. Aspinall, Mt. Aspiring.
4DU ..... D. Wilson, 10 Douglas Street, St. Kilda, Dunedin.
4DV ..... H. Wiggans, C/o. J. Nimmo, Windall Road, Airedale, via Oamaru.
4DW ..... A. Wallace, Radio Station, Awarua.
4DY ..... C. G. Langdale, Radio Station, Awarua.

IT IS YOUR DUTY TO GET ONE NEW MEMBER THIS YEAR.

Printed by Simpson & Williams Ltd., 238 High Street, Christchurch.