

# Our Short Wave Corner

MR. F. W. Sellens (Northlands) writes:—

Information has been received during the week from PCJJ that they are again increasing their hours of transmission. The amended times are as follows, all New Zealand mean time:—

Wednesday—3.30 a.m. to 7.30 a.m.; 10.30 a.m. to 1.30 p.m.

Friday—3.30 a.m. to 7.30 a.m.

Saturday—3.30 p.m. to 6.30 p.m.

Sunday—1.30 a.m. to 4.30 a.m.

The Saturday afternoons transmission is special for New Zealand and Australian listeners. The wave-length remains at 31.4 metres.

I HAD a letter since last writing from Mr. Gerald Marceuse, of 2NML, Catenham, Surrey. He states that his regular times of transmission are now (New Zealand mean time): Sunday, from 5.30 p.m.; Monday, from 4.30 a.m.; Thursday, 10.30 a.m. till 12.30 p.m.; and Saturday, 10.30 a.m. till 12.30 p.m. He does not state his wave-length, but I suppose it is the same as before, 31.4 metres.

Saturday, June 2.

5SW was very weak at 6.30 a.m., but rapidly improved, and was fair 'phone strength at 7.25 a.m., when I closed down.

PCJJ was first tuned in at 1.15 p.m., and was held till they signed off.

2XAF signed off at 2.30 p.m., but was not received very well.

2GA, Wellington, was working 3AT, Christchurch. 2ME, on 28.5 metres, was testing from 6.30 p.m. till 7.30 p.m., and was very good strength, but went off the air several times for a moment or two.

RFM was on the air during the evening.

Sunday, June 3.

2BO and 2BU, both of Wellington, were testing in the morning, and 2BE, Hastings and 2BA, Wellington in the afternoon.

2XAF, on 31.4 metres, were relaying dance music and vocal items from the Arcadia Ballroom, Buffalo, New York, and closed down at 3.30 p.m.

RFM was the only station heard during the evening.

Monday, June 4.

3LO was the best I have ever heard him on 32 metres, being good loud-speaker strength from 6 a.m. till I closed down at 7.25 a.m.

2ME were also testing, but signed off as soon as I tuned them in.

2XAD were first heard at 12 a.m., but were very weak then. Volume increased till 2.5 p.m., when they signed off. The last half-hour was fair strength, but howling valves spoilt reception.

Tuesday, June 5.

An orchestra was coming through faintly from 5SW at 6.35 a.m., and was much better an hour later.

Wednesday, June 6.

PCJJ at 5.20 a.m. were good 'phone, but short, jerky fading was bad. Volume increased, but continued unsteady

all through. They signed off at 6.39 a.m., after singing the Dutch National Anthem.

5SW were also very unsteady, so much so, that announcements were not intelligible except for odd words.

2BO and 2BU, Wellington were testing in the evening.

Thursday, June 7.

5SW was very fair 'phone at 6.20 a.m., when an orchestral item was heard quite well. An hour later reception was good 'phone strength. RFM was strong in the evening, but static was very bad.

Friday, June 8.

PCJJ was tuned in at 5.45 a.m., and a number of organ selections were enjoyed. Volume, although weak at first, reached fair speaker strength at 7 a.m.

At 6.30 a.m. "Drink to Me Only" was heard very well from 5SW. At 7 a.m. a playlet was being transmitted, and, except for unsteadiness, was well received.

RFM was the only telephony station heard during the evening, but morse spoilt reception.

Most of the evening was spent listening to KHAB (Southern Cross). Static and unsteadiness marred reception, but it proved very interesting.

## SHORT-WAVE TROUBLES

### THE "DEAD SPOT" DIFFICULTY

#### A QUESTION OF CHOKE.

THOSE who are investigating the interesting possibilities of short waves for the first time will find a number of things to contend with that are of only slight importance in the broadcast band.

The question of "dead spots" due to aerial characteristics is probably the most usual trouble. These occur most commonly when the receiver is tuned to a frequency at or near the fundamental frequency of the aerial or one of its harmonics. Another reason for the dead spots arises from the difficulty in securing a radio-frequency choke which will have a uniformly high impedance to the enormous frequency range used in short-wave receivers.

In a broadcast receiver the frequency ratio between the maximum and the minimum is roughly 3 to 1. This is the same ratio that exists between say 30 and 10 metres, although the whole "band" in this case is only twenty metres wide. From this it may be seen that it is a difficult problem to make a choke satisfactory from 200 to 10 metres, or over a 20 to 1 frequency range.

#### CHOKE COIL OPERATION.

If a choke is to have general utility so it may be used in all classes of circuits it must be operated above its

natural period. For example, if a choke is to be used at 1000 kilocycles (300 metres) it must be designed so its natural period or frequency is lower than this. For all frequencies above the natural period the choke acts as a condenser, that is, it has capacitative reactance. This is necessary since if it were not inductive it would be equivalent to introducing a coil in the plate circuit of a tube. If a shunt or parallel plate feed circuit is used this would result in regeneration and an unstable circuit.

If, then, the choke is made so it acts as a condenser at 1500 kilocycles, which is the lowest frequency to which a short-wave receiver ordinarily tunes, it will necessarily have a very low impedance at 30,000 kilocycles (10 metres).

The best chokes that are available have an equivalent capacity of about three micromicrofarads at this frequency, and although this is an extremely small capacity the frequency is so high that the reactance is only approximately 1755 ohms. This capacity is so low that if it is introduced across the output of the tube it virtually short-circuits it.

#### RESISTOR IN SERIES.

FOR this season it is advisable to use about a 10,000 ohm resistor in series with the choke for very high frequencies. This resistance is low enough so the voltage drop through it is not excessive, and yet it very materially increases the total impedance at the high frequencies.

At the lower frequencies the impedance of the choke increases and this makes it possible to use a small regeneration condenser. In the commercial short-wave receivers on the market it is often difficult to secure good regeneration due to the difficulty mentioned above. In many cases an attempt to overcome this is made by increasing the capacity of the regeneration condenser to 250 or more micromicrofarads, which is double that of the tuning condenser.

By using the suggested combination it is possible to secure good regeneration with less than 100 micromicrofarads, so a midget condenser of this capacity may be used with a saving in initial expense.

#### COMPENSATING PLATE VOLTAGE

TO compensate for the drop in the 10,000 ohm resistor it may be advisable to increase the detector plate voltage to 67.5 volts. Where the short-wave set is one of the "converters" designed to plug into the detector socket the voltage may be increased by connecting a 22.5 volt battery of the "C" type in series with the plate circuit. If the converter is used with a set having a B eliminator this is usually unnecessary, as the regulation of the eliminator is high enough on this tap to automatically increase the voltage quite a bit and compensate for most of the drop.

#### HONOUR FOR EDISON

##### A UNIQUE RECOGNITION.

EDISON'S name is inseparable from radio, for after all, it was his discovery of the "Edison effect," as it was called, in the common electric light bulb, which was the germ idea in the invention of the radio valve by Professor Fleming. News now comes to hand that the New York Society of Arts and Sciences has awarded to Thomas Alva Edison the 1928 gold medal.

This is the first time any living scientist has been recognised by the society, which has hitherto confined its activities closely to the liberal arts.

As soon as arrangements are completed, the medal will be presented to Mr. Edison as a testimonial, international in scope. Ambassadors, ministers, and representatives of foreign governments, Cabinet members, heads of leading scientific societies, universities, and industries have pledged participation.

"Mr. Edison in accepting and expressing his appreciation, with characteristic modesty, reiterated his desire that he be known by his work alone and that any recognition be given to things accomplished by him, rather than to himself as a man," said Mr. Russell, president of the society, who has just returned from a trip to Florida to tell Mr. Edison of the action.

"To a stand so fine, the society cannot help but defer," he continued. "At the same time it would be wrong, both to Mr. Edison and to the millions who venerate him, to allow his own modesty to stand in the way of his full recognition, not only as the greatest but also the most loved of American scientists."

"The society feels that in making the award it is putting into effect the desire of all people to pay tangible tribute to the genius and character of Mr. Edison."

Mr. Edison, after receiving Mr. Russell, consented to sit for a bas-relief head to be used in connection with the presentation. Among those who are sponsoring this occasion are:

Andrew W. Mellon, Herbert Hoover, Harry S. New, William M. Jardine, Otto H. Kahn, Dr. James H. Angell, Julian S. Mason, Roy W. Howard, Arthur Brisbane, Ralph Pulitzer, Dr. Simon Flexner, Paul D. Cravath, Clarence H. Mackay, Cardinal Hayes, Bishop Manning.

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## Notes from Auckland

(By Listener.)

OTHER than from orchestras, New Zealand stations have very few chances of conducting theatre relays, but Auckland is fortunate in securing, on one night per week, the star item of any performer who may be appearing at the Majestic Picture Theatre. Thus we have been enabled to hear such delightful entertainers as Jack Lumsdaine, who is ranked as a big item in Australian radioland, and Ernest McKinley. This week Reno is appearing in xylophone items, and the relaying of two of these on Tuesday evening was a revelation to many listeners of the capacity of the instrument as well as of the capability of the player.

AUCKLAND'S winter racing carnival drew its tens of thousands to Ellerslie, and it is safe to say that it drew as many tens of thousands to the loud speaker or to the earphones, for it is surprising how few listeners miss a description of a race meeting. There are hundreds of folk who would never go near a racecourse, and who, from their religious or moral convictions, regard it as a place to be shunned; yet they quite enjoy listening in to the descriptions so well given by Mr. Allardyce. The popular sports announcer has enhanced his reputation here in the north by the splendid manner in which he described every event in the three days of racing.

MADAME IRENE AINSLEY is an indefatigable worker in the cause of radio entertainment, and must spend endless time in the preparation of excerpts from grand operas which she and her capable little party produce weekly. The latest, a selection of gems from "Il Trovatore," though it utilised only three vocalists, will be voted one of the best yet. It was rather astounding to hear only three voices, and two of them female voices, start off the "Anvil Chorus," but the general effect was altogether pleasing.

NOTHING presents a greater difficulty in relay work than the handling of the municipal organ recitals from the Town Hall. The placing of the microphone has been fixed only after long experiment, so that there will not be blasting from the fortissimo passages of the grand organ, and also that delicate pianissimo renderings will not be altogether lost. So great is the range of volume, however, that, if one is to enjoy our city organist to the full, it is necessary to manipulate the dials at times. No true lover of organ music minds doing this; in fact it gives him a feeling of personal control of the instrument.

THE broadcasting company catered to the fullest for sporting listeners on June 2. The relays of racing were interspersed with descriptions of an exciting football struggle at Eden Park.

LISTENERS who have come into touch with members of the musical committee associated with IYA cannot but be struck by the enthusiasm shown by these ladies and gentlemen. It is too early yet to notice the fruits of their labours, for programmes have to be prepared a long way ahead, but the writer is assured that these fruits will soon be ready for the gathering, and that they will tickle the palates of all set owners who tune in the Auckland station.

OUR short-wave enthusiasts have had a great time this week, and all who could read Morse rapidly have followed some portion of the messages sent out by Captain Kingsford-Smith's party. One short-wave lad sat up all through the Sunday night, and appeared at work next morning tired, but triumphant. Incidentally, he was of much assistance in supplying information to the daily press.

## EFFECTIVE RANGE STATIONS

AN interesting table has come to hand from America. It sets out the effective service ranges of broadcasting stations of various powers. The table, which was based on hundreds of observations, was prepared for the Federal Radio Commission, and was accepted by the Commission in determining the spacing of stations on the same channel for the powers indicated.

The table is of interest from the small range, which is considered as the high-grade service area.

Power Watts	High Grade Service Miles Sq. Miles	Rural Service Miles Sq. Miles
5	1 3.11	10 31.1
10	1.5 7.06	15 70.6
50	3 24.3	22.5 159.4
100	4 50.2	27.5 237.5
250	5 78.5	37.5 407.3
500	10 311	65 15,275
1000	12 452	90 25,447
2500	20 1258	130 45,220
5000	30 2527	180 80,425

FARMERS in France have formed a Radio Agricultural Association. Reports of interest exclusively to farmers are transmitted, from Paris every afternoon, and additions have been made to the daily weather report so that it may be of greater value to the farmers. Members pay an annual subscription of 1s. 9d.

## GOOD CRYSTAL RECEPTION

### LONG AERIAL AND NOVEL EARTH.

A crystal set owner, residing at Mur-roon, 82 miles south-west of Melbourne, obtains remarkably good results by using a long aerial and good "earth." He says: I have a crystal set, and I have carried out experiments with several lengths of aerials. With 70ft. of wire I could get 3LO only, with 90ft. I could get faint signals from 3AR. I then tried 110ft., and this further improved 3AR. I then connected the two aerials to the set—90ft. and 110ft. I could then get 3AR even stronger than 2LO. I have now erected an aerial 200ft. in one length, using 7-strand open wire. I can now get the following stations in the order named: 3LO, 3AR, 2FC, 2BL, 3CL, and 3UZ. I have heard 2FC every night but one for the last 12 days, and on three occasions before 8 p.m. I can only get outside stations when 3LO and 3AR are giving lectures, news service, or announcements. At the same time the interference is too strong to get inter-State stations when local stations have band music going. My set is not super selective, but it gives very good volume. I often have three sets of head phones connected for 3LO and 3AR programmes, reducing the number to one for 3CL, Adelaide, which station I often get late on Sunday night. I find fading bad from Adelaide. I feel sure that a well-made crystal set could be used almost anywhere in Victoria if used in conjunction with a large aerial and a good earth connection. I will describe my earth connection. It is efficient and durable. I obtained a sheet of galvanised flat iron, 26 gauge, 5ft. by 3ft., bent round and soldered, forming a funnel 3ft. by 16in. across, with the earth wire soldered to this, and let it into the ground with the top about level with the surface. I removed all the surface and loamy soil, and replaced with good clay, leaving about 6 inches of the funnel on top filled with water.

## CLEANING CRYSTALS

### AN EFFICIENT METHOD.

Dust, although invisible to the eye, collects on all open crystals, and greatly reduces the volume of reception. What is the best way to clean the crystal of a crystal detector?

Never use water as a cleansing medium for crystals. If a crystal is of the detachable type (that is, one that can be removed from the containing cup after the small set screw is loosened), take it from the cup. It will be wise to provide yourself with a pair of long-nose pliers or some similar tool for handling the crystal after it is cleaned, as the oil from the hands makes a coating on the crystal, which reduces its electrical efficiency. After the crystal is removed, dip a small, clean brush into some alcohol and with this remove as much of the rust on the crystal as possible. Allow this to dry thoroughly and then repeat the operation to insure that the crystal shall be as clean as possible. Then, with the long-nose pliers, replace the crystal in the cup and tighten the set screw.

If your crystal detector is not provided with a glass cylinder, protecting the crystal from dust and dirt, it will be a good idea to clean your crystal every three or four weeks, to insure good reception at all times; for nothing will reduce the efficiency of a crystal detector like dust.

## AMERICAN PORTABLE MAST

### NEW MILITARY DEVELOPMENT.

Engineers of the United States Signal Corps have developed a steel tubular radio mast, eighty feet high, for use with the most powerful mobile sets in the army communication service.

Easier to erect and much stronger than the wood and steel poles now in use, the new mast overcomes serious deficiencies in the old equipment, the engineers believe.

An aerial system which is large in both ground area and height is required for the more powerful portable sets. Heretofore the army has used a sectional mast, made of hollow spruce section 50 inches long, with a steel tube coupling inserted between sections. The method of erection was to lift the mast high enough to slip a section on to the bottom, this process being repeated until the desired height had been attained.

For mast heights up to forty feet this method proved satisfactory, but for the larger aerial it was found to have two serious faults. The weight of the larger mast was such that it was necessary to provide a derrick for lifting, and the eighty-foot mast was susceptible to frequent failure because of weaknesses.

The new steel mast is made in sections eight and a half feet long. It is assembled on the ground and then raised by a short gin pole and block and tackle. The mast is guyed in four directions. During erection the two side guys steady the mast, the front guys are fastened to the gin pole to lift the mast and the rear guys arrest the movement of the mast at the vertical position.

The aerial forms an umbrella pattern with twelve wires. These wires are ninety-eight feet long, with a ball connector fastened into the mast cap. The other end is connected through four insulators in series to 150 feet of sash cord rope. A counterpoise is used instead of an earth.

## N. Z. RADIO LISTENERS' GUIDE

1928-29

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THIS useful compendium is invaluable to listeners and prospective listeners. It covers the fullest possible range of information—lists of stations, operation of sets, servicing of sets, glossary of terms, constructional section, short wave section, etc., etc.

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