

Dancing Taught by Radio--Fading Report--Guidance for Beginners--Alaska Hears 2YA.

THE RADIO RECORD

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Star Trio Engaged for 2YA

As announced in last week's "Radio Record," Mr. W. J. Bellingham, Director of Music for the Broadcasting Company, has, in pursuance of his policy to provide good music for listeners, secured the services of the Symons-Ellwood-Short Trio for 2YA. This is one of the most brilliant combinations of instrumentalists in the Dominion, and the engagement will prove a boon to listeners.

In the realm of music here, surely, are three names to conjure with—Miss Ava Symons, Mr. George Ellwood, and Mr. Gordon Short—for are they not the names of a trio of New Zealand's most brilliant instrumentalists? The query is superfluous, because the superlative qualifications of these eminent artists are known to and acknowledged by the musical community of the Dominion. Hitherto the enjoyment of their brilliant artistry has been limited to the comparative few, even though, time and again, the lure of their exquisite music has filled our largest concert halls. Now, thanks to the marvel of radio, their melodies are to bring delight to unnumbered thousands not only throughout the length and breadth of this, their homeland, but scattered over the broad continent of the neighbouring Commonwealth and the lonely isles of the wide Pacific. To the utmost limits of the far-flung circle swept by the magic waves of 2YA, Wellington, will penetrate, through the instrumentation of the Symons-Ellwood-Short Trio, the inspiring music of the Great Masters. What an audience! Yet the fare to be provided by these talented musicians shall be worthy of its glad acceptance. In proof of the validity of this assurance, let "The Radio Record" introduce them individually:

MR. GORDON SHORT.

Gordon Short was born and educated in South Australia, and it would seem that he must have been born with music in his soul, for, at the age of eleven years, he made his first public appearance before an audience of one thousand concert patrons. Thus was marked the beginning of what was destined to be a distinguished musical career. His next achievement was to win a scholarship open to pianoforte students throughout the State, entitling him to four years' training at the Elder Conservatorium, which is affiliated with the University. So well did he use this great opportunity that he became the youngest holder of the diploma of Associate in Music of the Adelaide University. Thereafter, Mr. Short became one of South Australia's busiest pianists, being called upon to fill innumerable engagements in all parts of the State, including a number of appearances with orchestras of high standing.

But the young musician was not satisfied with his attainments. Hence, several years before the war, he went to Europe to continue his studies. His star was in the ascendant, for he had the good fortune to become a pupil of Teresa Carreno, then acknowledged by Continental critics as the greatest living woman pianiste. Many music lovers still remember Carreno's triumphant tours through New Zealand, though 'tis many years since she gave her farewell recital in this Dominion. Mr. Short was also privileged to attend the artists' class held twice a week by the great Hungarian pianist, Ernst Dohnanyi, by special permission of the director of the world-famous Berlin Hochschule. It may be noted here that Mischa Levitzki, whose superb playing stirred New Zealand's musicians to the depth a few years ago, graduated from this class.

After the death of Teresa Carreno Mr. Short continued his studies with Josef Weiss, the greatest of present-day Hungarian pianists, and a favourite pupil of the great Liszt. Josef

Weiss was the first pianist in Europe to give complete programmes of compositions by Brahms, and Mr. Short seized the opportunity to make a special study of the works by this composer.

Always in the promotion of his art, Mr. Short has resided at various times in London, Berlin, Paris, Vienna, and New York, frequently in close association with many of the world's most eminent artists. Before the war he became in Berlin a busy teacher of the Carreno system of muscular relaxation. He has played with marked success in different European countries, while throughout the Dominion he will be remembered as pianist to the Notariello Concert Company which toured New Zealand about six years ago under the management of Messrs. J. and N. Tait.

Mr. Tait's concert work has everywhere earned the highest praise of the critics. In the arena of public service Mr. Gordon Short has given lecture recitals at many of the leading schools and colleges in the North Island, while in Wellington his name

ponent of the Auer School, Mr. Spencer Dyke. Owing to the war and unforeseen circumstances, in 1914 Miss Symons returned to New Zealand, and since has made several successful tours throughout the Dominion. In 1919 Miss Symons went to England again, and in London was fortunate enough to receive tuition from the famous French violiniste, Mlle. Rene Chemet. It was this great artist who was responsible for Miss Symons securing the beautiful "Grand Nicola Amati" violin which she now possesses. Since her return to the Dominion, Miss Symons has been heard at many concerts and has given recitals with Mr. Frank Hutchens, Miss Constance Leatham, and, in Wellington, a series of most successful sonata recitals. At these recitals no less than fourteen different sonatas were performed, many for the first time in New Zealand.

In 1922 Miss Symons played in Auckland with the Bohemian Orchestra, the "Symphonic Espagnole," Lalo, for violin and orchestra, and of this performance the "New Zealand Herald" said: "Playing entirely from memory,

and Mr. George Ellwood, giving the series of trio evenings which have been eulogised by all who have heard them.

Miss Symons's playing is characterised by sound methods, and her simple, unaffected style, fine technical capacity, natural artistry and charming personality make her appearance a pleasure and an education.

MR. GEORGE ELLWOOD.

Mr. George Ellwood was born in Yorkshire, England, but he came to New Zealand at such a very early age that he may well be regarded as a New Zealander. As a musician, a New Zealander he most certainly is, for it was here, when only seven years old, that he commenced the study of the cello.

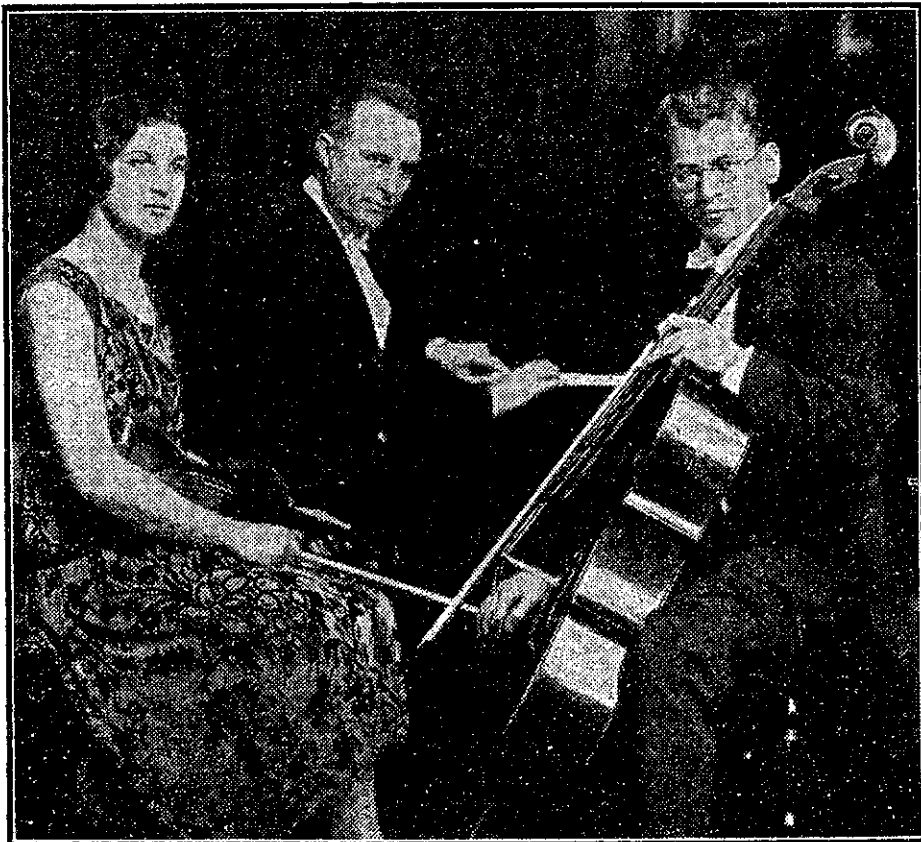
One morning, however, Mr. Hugo Gorlitz, the well-known impresario and manager of Gerardy, Kubelik, and other distinguished notabilities, heard the youthful trio (the sister as pianiste), and immediately arranged a New Zealand tour. The trio toured with remarkable success, young George being termed by the Press "a pocket edition of Gerardy." After this tour the trio proceeded to Europe to study. London held them for a few weeks, and then, armed with a letter of introduction to Jean Gerardy, they proceeded to Brussels. Gerardy, after hearing the lad of eleven play, sprang from his chair, exclaiming "I will teach him for nothing!"—a very great privilege, as Gerardy's fee was £4 4s. an hour.

In addition to taking these private lessons, George Ellwood entered the Liege Conservatoire, and was admitted into Gerardy's "master class." On the conclusion of nine months' study he entered for the scholarship and gained the "Premier Prix." This, we believe, is the only time in the history of the Conservatoire that this great honour has been gained by a boy of twelve. The Liege Conservatoire has long been famous for its string players, and such famous men as Gerardy, Eugene Page, Ovide Musin, Joseph Jongen, Charles de Beriot, and others, too numerous to mention, had received their training within its walls.

The "concours"—examinations—of the conservatoires in Belgium are considered of national importance, and, though held in the halls of the conservatoire, are open to public attendance. After George Ellwood's performance the whole audience of two thousand people gave spontaneous vent to a great demonstration of approval, which was only eclipsed by the splendid ovation accorded the youthful artist when he was acclaimed the winner of the coveted honour. Following this memorable event George Ellwood was known throughout the city of Liege as "the little foreigner who had gained the Premier Prix."

Leaving Liege, the Ellwood Trio followed Gerardy to Brussels, where, living but two or three doors away, they became virtually members of his household. It was during this time that the Ellwoods studied chamber music with zealous intensity, devoting themselves to it every night from 8 o'clock, often until nearly 1 a.m. Trios and quartets were played. Sometimes Pauline Ellwood, sometimes Madame Gerardy—a very accomplished pianiste—would take the piano, with George on the cello, his brother on the violin, and, in quart-

(Continued on page 5.)



—S. P. Andrew, photo.
The Symons-Short-Ellwood Trio. From left: Ava Symons (Mrs. Prouse), Mr. Gordon Short, and Mr. George Ellwood.

has been associated with quite a number of brilliantly successful recitals.

MISS AVA SYMONS.

Miss Ava Symons, the unusually gifted violinist, is the violinist of the trio, and her work adds grace and distinction to any concert programme. Miss Symons is a New Zealander. She showed exceptional talent during her early studies with Max Hoppe, when she won first prize at the Napier competitions, and also attained a similar distinction at the Auckland competitions in the open class in the same year (1911). To pursue her studies she journeyed to England, entered the Royal Academy, and studied there under the well-known violinist and ex-

the clever violinist entered fully into the spirit of the music, playing not only with success of technique in the many intricate passages, but exhibiting charms and expression in the more delicate movements of the composition. The andante gave frequent opportunities for a beautiful tone quality, while the final "Rondo" showed the refined rhythmic sense of the artist." Miss Symons had the privilege of studying this work with Toschia Seidel, the eminent violinist.

On her return from another trip abroad in 1924, when she received special tuition from Maestro Poltronieri, principal violin master of the Milan Conservatoire of Music, the Tolcan String Quartet was formed, and later she joined Mr. Gordon Short

There are many people to-day contemplating the purchase of a radio set, and there are also many already in possession of sets who have the problem ahead of them of getting the most for their money. Getting the most out of radio represents for them the most economical method of turning the energy sent out by the various broadcasting stations into benefit to themselves. It should not be overlooked, however, that prompt payment of their license fees, and constructive criticisms and suggestions forwarded to the Broadcasting Company will materially aid in improving the quality of the material available "in the air."

It is the object of these articles to assist the potential and actual owners of sets to make a wise choice when purchasing, and when having purchased, to get the maximum amount of use and entertainment out of their apparatus with a minimum of expense. If these discussions will inspire the necessary enthusiasm and confidence into others to join the radio audience of the world, now estimated at 80,000,000 of people, then the writer will be well satisfied.

It is necessary to point out that these articles will all be of a non-technical nature, and as popular as it is possible to make them, but a certain amount of technical jargon will be bound to creep in, but only where the meaning of such expressions will be transparently plain. Since the opening of the Wellington station, 2YA, there has been a very satisfactory number of receiving licenses taken out. It is interesting to speculate as to the numbers of different types of receivers represented by these figures, and then to divide the number of licenses into groups headed by these different types. Naturally the good old homely crystal would head the list by a long way, but there would be a surprising showing of multi-valve receivers as well.

Those who are in a position to judge tell us that there are undoubtedly more different types of receivers and more multi-valve receivers in New Zealand to-day per head of listening population than in any other place in the world. The reasons are not hard to find. New

For Prospects and Recruits

By M.I.R.E.

Zealand is very nearly the last place of consequence in the civilised world to go in for a really live broadcasting service. Broadcasting has been in operation in the United States and Canada since 1921, and the British Broadcasting Company has been in operation in Great Britain since the end of 1922. France had a station in operation in Paris early in 1922, and other Continental countries of consequence were all on the air with groups of stations by 1924. As a consequence, large manufacturing and distributing organisations have been in evidence in the older countries of the world for a sufficient number of years to have built up big businesses.

When broadcasting commenced in Australia in 1924, and in South Africa and South America in 1925, manufacturers in the Northern Hemisphere quickly discovered these countries and found in them a very handy market in which to not only market their good lines, but also their season's left-overs. Summer is invariably an off-season in those countries where the days are long and the evenings short. As winter commences in the Southern Hemisphere in just nice time to consume surplus stock, the Southern Hemisphere has found itself during the last year or two just six months behind the fashions of Europe and North America.

That this has advantages as well as disadvantages is a fact which will be dealt with at a later stage. The point it is desired to bring out at this juncture is that the reason there are so many different types of sets on the New Zealand market is because large numbers of overseas manufacturers have now got representation here.

To the layman it is somewhat bewildering to consider the vast assortment of sets of sizes and shapes he is invited to direct his attention to when he gets interested in radio and commences a

tour of the radio shops or looks over the advertisements appearing in the daily and weekly Press. Each one is the best because of every reason under the sun, if notice is taken of sales arguments. Of course it is the same with a piano, a gramophone, a motor-car, a house, and even a shirt and a pair of pants have their good points. However, the average citizen can pick defects in all these articles of human necessity because all these have been in vogue long enough for John Citizen to have become familiar with the defects to be watched out for, as well as the good points to be appreciated. A radio set is in the same category as a horse or a second-hand motor-car to the average man, at present, however, because he is, happily or unhappily (whichever you will) ignorant of even the salient points concerning them.

It was stated above that New Zealand showed a greater proportion of multi-valve sets per head of listeners than any other country. For this we have to thank the presence of our big brother across the Tasman, with a group of relatively high-power transmitters, which were in operation long before any broadcast programmes worth listening to were being transmitted in New Zealand. New Zealand listeners learned to run before they attempted to crawl, and went in for four and five-valve sets right off in order to get "Aussie" programmes. The habit thus began has become somewhat fixed, and to day the first question Mr. Buyer asks is, "Will it get Australia?" and if the answer is in the affirmative, he next asks the price. Once upon a time, and not so very long ago, either, the Aussie who visited New Zealand discovered a sort of chilliness which was the despair of the broader-minded folk of

our country. A Sydney-sider was chaffed about his "arbour," and a Melbourneite about his "Yarra." To-day the visiting Aussie is surprised to find that the "arbour" topic is forgotten, and he is invited to discourse on Uncle George, of 2BL, the "Ambassadors," from whence comes beautiful dance music, and so on. One touch of radio, and the whole world is kin!

Owing to these circumstances it is almost possible to grade the styles of receivers in use in New Zealand to-day into those which will receive Australian stations and those that won't. This requires qualification, however, because signal strengths are different in summer and winter, being more favourable in the latter months. Another severe qualification is the geographical position in which receiving is carried out. Those unfortunates who live right in Wellington, for instance, which is a bad distance receiver's area, require a set to get Australia reliably which would achieve very much better results installed even across the harbour at Day's Bay. However, under average conditions five valves, at least, are required to get good reception all the year round.

With a five-valve receiver the Australian stations can be tuned in quite readily after darkness has set in over the Tasman Sea. With a four-valve receiver very careful adjustment of the receiver will be necessary to get much in the way of a programme on "off" nights, and during the summer. Recourse will probably have to be made to head telephones and the loudspeaker discarded. Where it is a case of strict economy in purchasing, a four-valve set of good design, using "accumulator" type valves, will give satisfaction, but the extra valve makes a big difference

A three-valve set will give loud-speaker signals only in very good receiving areas, but will give reliable head telephone results in most places. Less than three valves is definitely only useful for head telephones, and anybody who can put an Australian station on the speaker with such a set is either in an extremely sensitive receiving spot or is merely getting "signals" and not a "programme." (There is quite a distinction between these two terms.) Such an individual is almost certainly a nuisance to his neighbours as well as his set must be made to howl every time a fresh station is tuned in.

Now, regarding reception of New Zealand stations. Any standard of reception can only be laid down by basing it on 2YA, Wellington, which is rated at ten times the power of the other three stations.

The five-valve receiver recommended as a minimum necessary to get good reception from Australia will bring in 2YA good loudspeaker strength anywhere from North Cape to the Bluff, with the exception of North Taranaki, where, for technical reasons, 2YA does not give reliable signals, and Auckland and Christchurch have to be relied on. The two latter stations, of course, come in well on this type of set.

The four-valve set will practically repeat the performance of the five, but, naturally people in Southland should not expect Auckland to be always "on tap," like a gramophone.

The three-valve set should be treated purely as a "local" receiver for speaker results, to be opened out on the silent night of the local station in question—but "opening out" does not mean that it is to be done to the annoyance of the neighbours by making the set "howl." In congested areas silent nights are nightmares enough now, without every listener with a modest set attempting distant reception to the detriment of everyone else.

The next article of this series will deal with the practical side of purchasing and operating certain standard styles of receivers.

PART VI.

Low frequency amplification can produce a large increase in the strength of the signals, and if it is required to operate a loudspeaker is almost essential.

No tuning is necessary, and therefore we can have as many stages as we desire without any extra controls.

The arrangement is shown in fig. 1, from which it will be seen that the general principle is unaltered. The most drastic alteration is the addition of the low frequency transformer. This transformer was suggested in a previous article, when it was stated that a current flowing in a coil produced magnetism which if made to flow through a second coil, would produce a similar current in it. The low frequency transformer merely consists of two coils of wire placed one over the other on a common core of iron—the iron being used to magnify the magnetism passing through the coils. If the number of turns in the second coil or secondary is, say, five times that of the primary, the pressure will be also five times that of the primary. Again, the reader must be warned against thinking that he is getting something for nothing, because he will find that, although the pressure of the secondary is five times that of the primary, its current cannot be more than one-fifth. This reduction in current is no disadvantage for our present purpose, since, as was mentioned last week, the grid is "pressure operated" and does not require any current but merely the pressure of the secondary. This therefore shows the advantage of low frequency amplification because, besides the multiplying power of the valve itself, we can increase it another five-fold by means of this transformer.

If we wanted to carry out still further amplification we would place the primary of another transformer where the phones are and repeat the connections, placing the phones or loudspeaker in the plate circuit of the last valve.

POWER VALVES.

Each valve causes the signals to increase in strength, so that we must be certain that the valves themselves are not being overloaded. If small valves are being used it is quite possible that the plate current will reach its saturation value, especially during loud passages. This will mean that the plate current will not be proportional to the grid voltage, and therefore the signals will be distorted and of bad quality. For this reason if loud signals are required for a large loudspeaker it will be advisable to use one of the so-called power valves, which are specially constructed to have a large plate current without becoming saturated. Because of the large variations in grid voltage these large valves should have a high plate voltage (about 100 volts) and a large negative grid bias (from 5 to 7 volts). The actual values will be given with the tubes themselves.

The second last valve should, however, not be a power valve because the heavy current in its plate circuit might (and frequently does) cause the trans-

former primary to be damaged by excessive heat.

Sometimes this heavy current will damage the loudspeaker windings, and this can be safeguarded in two ways, (1) by having plenty of negative bias. Negative bias reduces the plate current, as well as improving the quality of the reception. (2) The second method of relieving the loudspeaker windings from the steady plate current is to use a combination of a condenser and choke coil. In an earlier article it was stated that a coil of many turns would let a steady direct current flow through it, but would effectually prevent an alternating current to traverse it, while on the other hand a condenser will allow the alternating current to flow through it easily, but will prevent a direct current from flowing. The arrangement is shown in fig. 2.

Recently another method of doing this has been introduced. This method utilises a special transformer whose primary is connected to the "speaker" terminals, and the speaker is connected to the transformer secondary. This

currents.

Another advantage which both these latter methods have is that the speaker can be connected anyhow to the set, as there is now no fear of the heavy plate current demagnetising the magnets.

CRYSTAL VALVE SETS.

The case of control of crystal sets, together with the clearness of reception which they invariably give, has kept a peculiar combination called the crystal valve set. In this arrangement a pure crystal set is used first for rectifying, and the primary of a low-frequency transformer is placed where the phones usually go. The secondary of the transformer is taken to the grid of the valve just as an ordinary low-frequency amplifier. This arrangement, while being much more powerful than a crystal alone, is not equivalent to two valves, because, although the crystal may act like a valve in rectifying, it will not amplify, and since its resistance is always high it will keep the current

that for a loudspeaker. This is a rather curious inversion of the transmitting apparatus, because it consists in principle of an ordinary telephone receiver to the diaphragm, of which is fastened by means of a solid rod the diaphragm of a microphone. Great amplification can be obtained, because the microphone is made to vibrate as it would do if air waves of considerable magnitude were striking it.

A small pressure of about 3 to 6 volts connected to the microphone causes a varying current, as has been explained before. This current is very much larger than the original one in the phone receiver and this magnified current is made to flow through the speaker coil. A special speaker winding of low resistance is required, and several makers make both amplifier and speaker in one unit. This gives a very simple and cheap means of amplifying signals, but for a time the quality was not up to the standard of that given by valves. Prospective customers should, therefore, compare these amplifiers with valve amplifiers to be sure that the quality is sufficiently good.

REACTION.

The methods of using valves described in the preceding articles are what we might call the legitimate or straight methods. There is a device, due to Armstrong, who has been responsible for many radio advances, notably the super-heterodyne, which adds practically the power of another valve to the set very easily.

As has been mentioned several times already, if there is an alternating current flowing in a coil, and that coil is brought up to another coil, the magnetic effect of the current in the first will pass through the second and induce a similar electrical pressure in it.

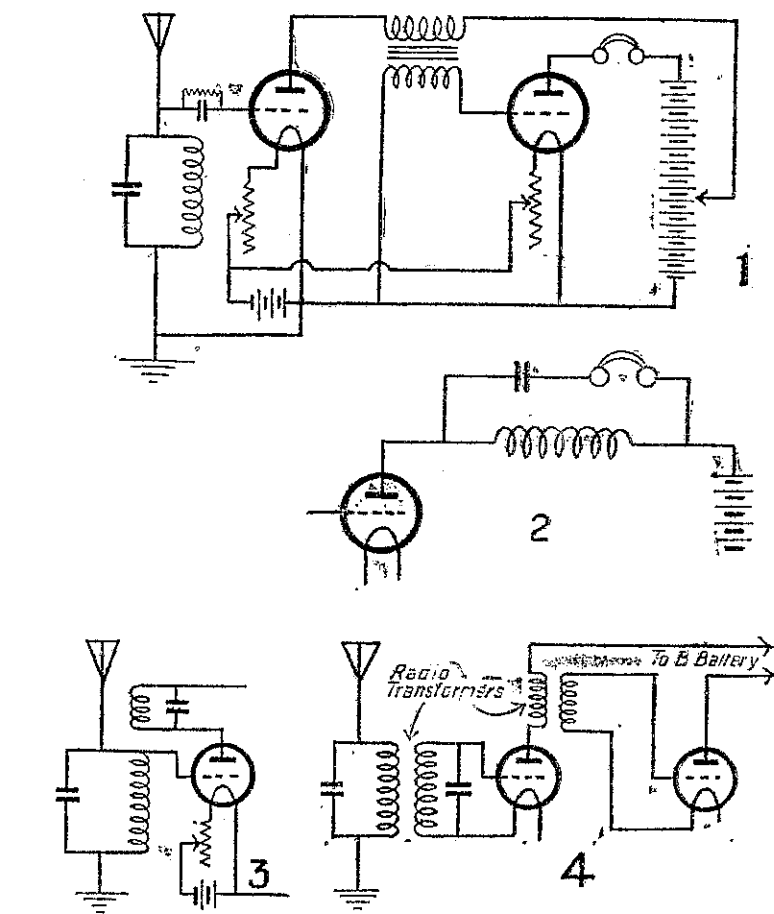
If we, therefore, arrange our set as shown in Fig. 3, the magnetic effect of the plate current will amplify the pressure in the grid, and will therefore still further amplify the plate current.

This device, however, cannot be used beyond a certain point, because if the two coils are brought too close together the set will behave as a transmitter, and this is the cause of all the howling which one hears at night when trying to get distant stations. Perhaps the air will be cleared in more senses than one if a little time is spent investigating this matter.

OSCILLATION.

The receiving set in its normal state is very similar to a clock pendulum, which is set swinging by repeated taps from outside. When the taps hit the pendulum at the same rate as the pendulum swings naturally, then the pendulum is said to be "tuned" to the frequency of the taps. All the devices we have been considering up till now have been similar to sets of levers attached to the pendulum, in order to magnify the movement. Reaction, on the other hand, acts like some form of clock-work to increase the swing of the pendulum itself.

Up to a point this is quite good and harmless, but if a certain amount of this "feed back," as the Americans call it, is exceeded, it will be seen that the pendulum will con-



method is claimed to reproduce low notes better than the choke filter method just described. It has the further advantage of eliminating the danger of shock by touching any electric light fittings which may happen to be defective, as the secondary is insulated from the set and from "earth." This transformer is specially constructed so that its primary can carry a heavy current, and as this heavy current is constant in quantity, it will not be induced into the secondary, which will thus receive only the alternating or audio

down. Still, in spite of this, it is a useful type of set for use near a broadcasting station, especially for those who feel a bit scared to operate a valve set in case they oscillate unwittingly and attract the attention of a passing inspector, because a set of this type can never under any circumstances cause trouble with any other listener.

THE MAGNETIC BAR AMPLIFIER.

Still another method may be used to increase signals of phone strength to

time to swing of its own accord, whether the taps are coming in or not.

A receiving set in this state is said to be oscillating, and when this is the case it is not only distorting the received signals to the point of unintelligibility, but is a menace to all listeners within a large radius, perhaps even a mile or so. Nearly everyone has heard the result of an oscillating receiver—it is anything from a high-pitched whistle to a low grunt, and even when the actual musical note of the oscillator is not heard, the received speech or music will be very badly mutilated. In order to reduce trouble from oscillation, and also to obtain greater magnification, it is customary nowadays to use high-frequency or "radio" frequency transformers for connecting high-frequency valves together. The principles are exactly the same as for the low-frequency transformer, but for various reasons the iron core is not used, so that it consists of two coils wound side by side on a cardboard cylinder. A set of this type is shown in Fig. 4. The reason why the radio-frequency transformer was not used much in the earlier sets was the fact that oscillation was almost always present. With modern sets, however, we can use reaction as well as transformation, and thus get a high degree of amplification in the radio stages.

It should be stated, once again, that these notes are not constructive, and several of the sketches show connections which have been declared illegal in New Zealand. This applies particularly to Figs. 1 and 3 of this article. They show, however, the general progress made, and may be considered historical. A general rule which all constructors should know is that it is illegal to have the grid of a valve connected directly to the aerial, unless the set is unable to oscillate.

GRAMOPHONE COMPANY BROADCASTS

An agreement has been signed between the Columbia Gramophone Company of London and the American Telephone and Telegraph Company, whereby the former assumes control of a chain of sixteen American and Canadian broadcasting stations. It will be the second largest wireless chain in the world, it is announced, stretching from the Rockies to the Atlantic Coast, with stations at New York, Boston, Chicago and all the principal American industrial cities. The British company will broadcast its own musical programmes in direct competition with the National Broadcasting Company, and British soloists, instrumentalists and orchestras are being engaged to tour America for the wireless circuit.

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"In the spring," said Blinks sententiously, "a young man's fancy lightly turns to thoughts of..."

"Damned nonsense," interposed the oldest member fiercely.

"I was going to say physical culture," said Blinks mildly.

"It's one and the same thing," affirmed the oldest member. "In my young day, sir, physical culture was unknown. If we wanted to 'knees bend' we went a twenty-mile walk. What can you flabby young fellows expect when you're all the time running round in these infernal benzine choppers?"

"Surely that's the very reason why we should take up physical culture, to make up for the lack of exercise," said Wishart.

Blinks and Wishart had just arrived at the X club, and on retreating to their favourite corner to talk over wireless matters, had been joined by the oldest member. The conversation had just touched on the physical culture question, when Brenton, the great outdoor enthusiast, entered the room.

"You're quite right, Wishie," he said. "If only the old sinner here would take up physical culture, he'd live to be a hundred."

"I've no time for new fangled notions at my time of life, sir," said the oldest member disdainfully, "and even if I had, physical culture's the last I'd tackle."

"You could do a great deal worse," said Brenton decidedly. "At this time of the year physical culture is especially valuable. It doesn't matter whether you're eight, eighteen or eighty, it will benefit you. I heard a stunning address on physical culture from 1YA last week, given by Norman Kerr. It's easily the best he's given so far, and was reasonable."

"Yes—dealt with spring," said Blinks, "and showed us how we ought to treat our bodies during the time the lambs are gambolling in the paddocks, and the veterans refighting their old battles over five gallon bar-

rels."

"He was right," said Brenton. "It's only too true that we shut out the sunshine and air from our bodies, eat the wrong foods at the wrong times, and do not get sufficient sleep or exercise. How can we expect good health? Look what physical culture can do for a man. Why, there's Winston here, only tried it for a couple of months and I'll bet he's lost a stone already."

"Just over," said Thribs, the successful and somewhat corpulent business man who was bent on regaining some of his lost youth, and who was doing it through strenuous exercise daily.

"It is, as he said, easier to get up in the mornings, and the race to the office isn't the hardship it was a month or two ago. We feel we want to be out of doors, whether it's gardening, or walking, and, as Norman Kerr said, if we add physical culture to our other activities, we further improve our general health."

"A cheerful mind's the great thing," said Blinks, "and physical culture will give you that."

"Damn it all," said the oldest member irascibly, "you can get it without that."

"Yes, I know," said Blinks with a twinkle. "Out of a bottle, but it costs more, and isn't as good for you. Try physical culture instead."

"If everyone drank just as much as I do," retorted the oldest member properly roused, "the..."

"Publicans would be able to retire at forty," concluded Blinks.

"I'll be..."

"Happiness is the great thing," interposed Brenton hurriedly, forestalling a further outbreak on the part of the oldest member, "and happiness comes only through a sound digestive system. 'Eliminate' was the advice given by Mr. Kerr in his last address. To do that you have to keep your skin in good order, and then, in order to exercise the abdominal muscles, you should lough."

"But that makes you grow fat," said Thribs in a serious tone.

"Quite a fallacy," said Brenton. "Mr. Kerr's idea is that we should practise artificial laughter. Then there's the lungs. Plenty of deep breathing for them, and plenty of..."

"...ing exercises for the abdominal muscles."

"Diet's another important thing, isn't it?" queried Thribs.

"Yes, especially at this time of the year," agreed Brenton. "Plenty of green vegetables and raw fruit are the things at this time of the year. Tea, meat and white bread in combination are about the worst things you can take, and that's what hundreds of people have day after day. Bad diet nearly always leads to digestive troubles and these in their turn, to nervous diseases. Through properly directed exercise, scientific breathing and physical culture generally, we increase the amount of oxygen taken into the body, and thus make it possible to keep the fires burning brightly. Exercise and deep breathing are the things we need most."

"Well, just to show the old 'un here that we don't entirely disagree with his principles," said Blinks. "Let's have a drop of something."

Glasses filled, the talk drifted round on various topics connected with wireless, all the "wireless bugs" taking a keen interest in the question of getting at the unlicensed sets.

"Only rotters would accept everything, and pay nothing," said Blinks, "and as for saying the programmes aren't worth paying for, that's pure bunk. Many a night I've switched on to one of the Australian stations and then returned to 1YA or 2YA because they had a better programme."

"Funny enough," said Thribs, "it's the fellows who aren't paying who kick up the most fuss. There's a chap I know with an unlicensed set, and he's forever complaining about the type of programme. I told him

the other day that it'd be a pretty poor programme if everyone contributed the same amount that he did towards the cost."

"It's amusing to hear a chap with an unlicensed set complaining about fading," said Wishart, "but I know one who is always criticising the stations, and who hasn't a license."

"Talking of fading," said Drexter, who went by the well-earned nickname of "Silent George," "I wonder how that fading investigation is getting on."

"Pretty well," said Blinks. "I know 'Megohm,' the technical expert, who is going to collate the results, and he says that there are plenty from every district. Possibly some valuable data will be unearthed."

"I think some rotten sets will be unearthed," said Brenton. "That's my opinion. Didn't you see what Baume, city editor of the Sydney 'Guardian,' said about New Zealand station? His set gets them all the time, without any fading at all. I don't think the fault lies with the sending at all."

"Did any of you chaps hear that address of Mr. W. R. B. Oliver's on 'Birds and the Forest?'" queried Larton, who had just arrived.

"Yes," said Drexter, "I did—and a jolly good one it was, too. It would be a bad look-out for us without the birds."

"Infernal pests," said the oldest member irritably. "Eat all the crops and the fruit—shooting's too good for them."

"Wrong again," said Larton. "We simply couldn't do without them. They have a wonderful effect on forest life, and are partly responsible for the beauty of our New Zealand forests."

"How does that come about?" said Blinks.

"Mr. Oliver explained that a tree, like a living being, was constantly undergoing growth and change. It only lasts a certain time, and if

the forest is to endure it must be replaced. The successful transference of pollen and seeds depends on the help of insects and birds. Birds perform three valuable functions in the forest. They destroy injurious insects, carry pollen from tree to tree, and distribute tree seeds."

"But insects don't greatly harm trees," said Brenton.

"Oh, yes, they do. They bore into the wood and do a lot of damage. You can't check them by control measures, so the birds are invaluable. Self fertilised plants never grow as well as those that are cross-fertilised, and that's where the birds come in."

"Funny enough, the flowers that are fertilised by birds are generally red or yellow. The rata, pohutukawa, puriri and rewarewa all have red flowers, and the kowhai is a conspicuous example of the yellow-flowered tree that has been pollinated by the birds."

"What birds do the work?" asked Blinks.

"The tui is one of the best. Watch him feeding on a rata or a flaxbush and you will see that his forehead is yellow with pollen. The parakeet is another, but of course he's fast disappearing from the more settled districts. The bell bird and the white eye are two others which assist in the good work, so you see there are plenty of bush birds which help our forests by cross fertilising the trees."

"In scattering the seeds and making replacements, the birds do great work," interposed Drexter, who had also been tremendously taken with the address. "When trees are blown down or die, replacements have to be made, and these are brought about mainly through the agency of the birds. It's up to us to protect them, since they work so much for our advantage."

"And it's up to us to get home to dinner now," said Blinks, "since it's well after six o'clock."

AUDIO-TRANSFORMERS

HOW THEY FUNCTION

There are many brands of audio frequency amplifying transformers on the market, but so much information and misinformation has been published that it is difficult at times to decide what brand one wants.

With an understanding of what happens in an audio frequency amplifying transformer you can judge for yourself whether statements regarding this or that brand are logical.

The broadcasting station sends out a large amount of power in the form of an electro-magnetic wave oscillating at a frequency of from 1,500,000 to 500,000 cycles per second, depending on the wave-length given to the station. This large amount of energy varies in intensity, is modulated proportionately to the frequency of the singer's voice, the violin's notes or whatever form of sound or noise is made in front of the microphone. These sounds vary from 50 to 5000 cycles per second and are called audio frequencies because they are audible to the human ear.

RADIO FREQUENCY ENERGY.

This energy at radio frequencies, varying in intensity at audio frequencies, goes out into space in all directions and travels on and on until completely absorbed by trees, wires, buildings, aërials and loops.

Every radio receiving set must have some form of aerial to pick-up from space some of this radio frequency, which has in it the undistorted voice of the singer or the note of the violin, but in such a form that it cannot be made audible until stripped of its carrier or radio frequency component.

This is accomplished by the detector found in every radio set even if radio frequency amplification has been employed first. The detector reduces the energy to a pulsated direct current, but some detectors do not do a clean job, and the voice and notes become distorted, that is, are not the same as the ones sent into the microphone.

After detection some of the energy from the broadcasting station is in a form easily put into head phones for hearing, or into an audio amplifier for even louder hearing.

An audio amplifier consists of audio frequency amplifying transformers, valves and accessories for the control and operation of the tubes. The number of stages of amplification is determined by the number of valves or transformers used, but for the broadcast listener should never exceed three audio stages on account of engineering difficulties even when using efficient transformers.

TRANSFORMER A LEVER.

The valve and B battery may be considered as a pipe line with a pump and shut-off valve in the line. The battery is the pump and the grid of the tube is the shut-off valve. The more pressure applied to the valve the more water the

pump will push through. Therefore, if you use a lever or gear on the valve, you can with the same pressure release more water. The transformer is the lever or gear; this is why they have ratios, that is, the primary or input has less turns than the secondary or output.

This audio frequency energy coming from the detector has so much pressure and is fed into the primary of the transformer, or gear box, and stepped up or increased. Naturally, one would think a transformer with as high a ratio as possible would be the best, and so it would if the pressure didn't vary in frequency. Being an alternating pressure of from 50 to 5000 cycles per second other factors enter into the picture and become of great importance both for reproduction and efficiency.

As the ratio of transformation is increased until the ratio reaches 4 to 1, when maximum amplification without distortion is obtained. Further increases in ratio increase the amplification slightly with a greater and greater amount of distortion until ratios of 10 to 1 are reached, when both amplification and reproduction suffer.

EFFECT OF RESONANCE.

Why? you ask. Resonance and distributed capacity. Too technical, you say. Resonance is the relatively free passage of energy at one frequency and the suppression of energy at other frequencies. When ratios of over 4 to 1 are used resonance creeps in and at higher ratios distributed capacity, that is, the condenser effect of the windings causes energy to be absorbed in the insulating materials used.

But ratio is not the whole story of an audio transformer. There are other technical factors. There are impedance, iron, air gaps, size wire, short circuited turns, burn outs, losses, etc. Impedance is the resistance a winding has to alternating currents, and in a properly designed audio transformer is the same as that between the plate and filament of the tube. With this fixed ratios mean nothing.

GOOD IRON NECESSARY.

Iron, good iron, must be used, or things happen in it which cause losses and distortion.

An air gap in the wire acts as a valve for energy. When signals are very loud the air gap prevents overloading the gear-box with consequent distortion.

The radio valves of to-day use plenty of B battery current and most transformers leave such small wire that these currents are crowded for space.

One short circuited turn in over twenty thousand reduces the amplification 10 per cent., so a few short circuited turns make the transformer useless except as a paper weight. The only way to prevent short circuited turns is to test the coils and throw out the shorted ones.

Burn outs in amplifying transformers occur with different degrees of frequency with different brands, but the only thing to do when it happens is to send it back to the manufacturer for repair or replacement. They ought to do it because they can't convince you that it was your fault.

To keep losses a minimum in transformers it takes transformer engineers to design them. They know where they can get in and how to get them out.

A GOOD CATWHISKER

TIPS FOR CRYSTAL USERS.

Users of the catwhisker type of crystal detector know how frequently adjustment has to be made, due to the tendency of the whisker to jump from a good spot, owing to a slight jar or vibration. The slight shocks caused by tuning adjustments (says "N.A.T." in the Melbourne "Listener-in") are often quite sufficient to move the point of the wire, especially on a smooth-surfaced crystal of the galena type.

The amount of attention bestowed on the crystal detector can be considerably reduced if it is placed on a shelf just above the wireless bench or on a separate table not too far away. The connections between the detector and set are best made with flexible wire, as with rigid wire any movement at one end will be transmitted to the other, and any advantage from isolating the detector will be lost.

Use Flex Wire.

Having obtained a piece of flexible wire of the required length—such as is used for electric iron or radiator extensions—untwist it and make the connection with separate lengths. We know that we have been told not to do the wiring of a set with flexible wire, owing to the capacity between the five strands; but for a short length such as this no ill-effects whatever will be noticed.

For Heavy Vibration.

If the set is situated in the neighbourhood of heavy traffic, such as trains, etc., the vibrations of the wall may be too great to place the detector on a shelf. In such a case the following scheme has given excellent results.

Obtain a disused inner tube of a motor tire and cut from it several strips about 3 inches wide by 18 inches long. Now fold these strips of rubber—not too tightly—into cushions, and place one under each table leg. The cushions will damp the vibrations

received from the floor.

Saves the Good Spots.

These precautions will save a lot of time and annoyance, as it will generally be found that one setting of the detector will suffice for a considerable period, the good "spots" not wearing out as quickly as many suppose.

It is interesting to note that the rubber cushion is more efficient when placed under the table leg than under the detector itself. This is because of a smaller moment of vibration being present in the former case. The effect is seen when a long stick is held in the hand and swung through the arc of a circle. The end near the hand moves through a relatively short space compared with the far end of the stick.

So it is with the table leg. If we absorb the vibrations at the bottom of the leg there is much less trouble to overcome than if we attempted to do so after they had been amplified by travelling up the leg.

at least A Rechargeable Dry Cell Radio Battery

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As Sole New Zealand distributors, we have just received a shipment of TAB Batteries, and your immediate inquiries are invited.

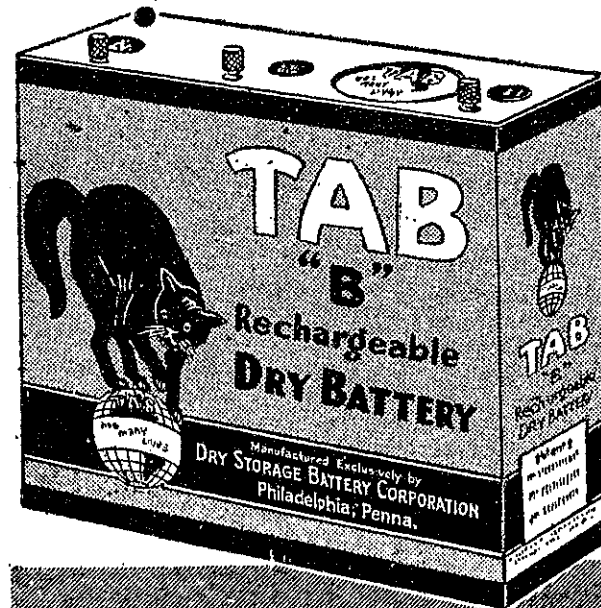
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All literary matter and contributions must be addressed to the Editor. If the return of M.S. is desired, enclose 1d. stamp.

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A. J. HEIGHWAY,

Managing Editor,
"The N.Z. Radio Record,"

P.O. Box 1032,
WELLINGTON.

FRIDAY, OCTOBER 14, 1927.

THE FADING TEST.

In this issue "Megohm" gives a preliminary survey of the reports sent in by our readers, and promises further comparisons and analysis. We are particularly pleased to note that he anticipates being able to draw some conclusions of value from the reports. For that result we will be indebted to the enthusiasm and care of our readers in sending in their records, in such number and fullness. We extend to all who took part our very deepest thanks for their co-operation, and our assurance that we desire to "secure the facts," which will permit of all knowing the best means to adopt to secure the best transmission and the best reception.

TRAINING THE "BLOOPER."

An article elsewhere in this issue calls attention to the growing difficulty that listeners in metropolitan centres are experiencing through the inefficient operation of neighbouring sets. The ranks of listeners are continually being increased by newcomers, and it is natural enough that these newcomers should require a period of practice before attaining proficiency in the manipulation of their dials. Newcomers, too, are attracted by the glamour of distance, and tend to search for stations beyond their immediate capacity. In thus striving, they tax their set beyond its capacity, and cause radiation, and consequent interference, to neighbouring listeners. This inexperience on their part is becoming quite a nuisance, and calls for definite measures to effect remedy. In the first place, it is the duty of every listener to learn to efficiently handle his set. With the simplicity that now characterises most modern sets, this is a comparatively simple matter, provided the advice of technically experienced listeners is sought and closely followed. For our part, recognising the position, we hope to give service to intending listeners and the newly-joined recruit by instituting a column for the special guidance of these classes. This will be conducted by a member of the Institute of Radio Engineers, who fully appreciates the problem, and will undertake to give the best possible assistance and guidance to new set owners. Valuable as this will be, however, it will not altogether displace the need of practical demonstration by technically experienced operators. We would therefore make a double-barrelled appeal; first to the recruit, to seek experienced advice, and secondly to experienced listeners, to give that advice as freely and liberally as possible in the general cause.

Another factor in the situation is said to be the composition of the programme and the inclusion of talks in the 8 to 10 session. The argument is that, where music makes a universal appeal, a talk on any set subject immediately narrows the appeal to those who are interested in either the speaker or the subject. The immediate effect, therefore, is that those who are not interested in the subject immediately seek to swing over to another station, and by possibly straining their sets to secure reception, create radiation and interference which disturbs those who do not remain upon the home station. The remedy proposed for this phase of the evil is the rearrangement of the programme and the restriction of the 8 to 10 session of entertainment, and the concentration of talks in the period prior to 8 o'clock. This is the course advocated by a not inconsiderable section of listeners, and it is undeniable that there is some weight in the argument. On the other hand, it is only a minor phase of the trouble, and we do not see that the mechanical inefficiency of a section of listeners should deprive those who wish to hear interesting talk from the opportunity of doing so at the most convenient period of time, and the time most convenient to the generally expert class who give these talks. The main cure lies in the attainment of efficiency on the part of the general body of listeners.

THE COUNTRY LISTENER.

The question of Sunday services and their nature has lately been given some prominence in our columns. The same subject has been exciting interest in Australia, where quite a warm controversy has raged in radio circles upon the point of Sunday's programme being maintained on the basis of exclusively religious services, or enlarged to include secular music. The suggestion has been made here that the narrower standard should apply, and that nothing but church and religious items should go on the air on Sunday. A correspondent in this issue eloquently advocates the cause of the farmer listener, and that advocacy has our sincerest sympathy. We look to country listeners as the biggest potential field for the development of a radio service. They are the people who deserve the fullest possible consideration, and who will derive the greatest proportionate good from the maximum development of which wireless broadcasting is capable. The point is made by our correspondent that, on present arrangements, the farmer's opportunity for listening to satisfactory entertainment is limited by his vocation and the times he can devote to listening. We know it to be the policy of the Broadcasting Company to give the most attractive service possible to all listeners, and particularly to develop a programme in nature and time which will appeal to country listeners. We believe the time will come when an increased Sunday service can be given, and for our part, although we have every respect for the day and its associations, we think the greatest good can be done and satisfaction given by a judicious broadening of the programme to include high-class items of entertaining and musical value in sessions apart from the actual services themselves.

4YA STUDIO

RENOVATIONS COMPLETED

The builders, the paperhangers, the painters, and the upholsterers, have been and gone, leaving 4YA like a new studio, and a credit to Dunedin.

The place has been entirely renovated. There are swing doors where there were no doors before. There are new carpets and new furniture, and through big plate glass windows the lobby looks into the lounge, lounge into the studios, and studios into lobby. All is now lightsome and cheerful; a well ordered studio.

The renovations make 4YA a thoroughly up-to-date studio which will be a delight to the broadcasting artists of Dunedin. The whole place has been furnished with great taste. The colour scheme of the lounge is rose pink and blue. One studio is in pale green and fawn, and the other in apricot and mauve.

The first of the regular Saturday night concerts was broadcast from the studio on Saturday, October 8, to the evident satisfaction of all listeners in Dunedin and Otago.

FOR 2YA

SERIES OF RECITALS

BY MR. A. STANLEY WARWICK.

In continuation of their policy of engaging the best artists available, the Radio Broadcasting Company of New Zealand, Ltd., have arranged for Mr. A. Stanley Warwick, the well-known elocutionary teacher and adjudicator, to give a series of recitals of works by well-known writers on Monday evenings at 9 o'clock, commencing on October 10. Besides being well-known as an adjudicator, Mr. Warwick is recognised as one of the Dominion's leading recitalists, having toured New



Zealand on several occasions. In Australia Mr. Warwick was well-known as the first registrar for the State Conservatorium of Music, Sydney, having been associated with Mr. Henri Verbrugghen. In 1920 he came to New Zealand to adjudicate at the Wellington Competitions, and has remained here since that time, with the exception of a visit to Ballarat Competitions as adjudicator in 1925. Mr. Warwick is well-known for his ability to find new material, and, while not neglecting the classics, his programmes will embody many pieces that are not generally known.

CANTERBURY LISTENERS' LEAGUE

A meeting of the committee of the above league was held on Wednesday evening, Mr. J. H. Gresson presiding. Correspondence was received from various sources, complaining about the nuisance caused by howling valves. The committee discussed the matter fully, and decided to endeavour to ask several listeners to try and track the offenders, and report same.

The "Canterbury Radio Journal" was appointed the official organ of the league.

The secretary reported that on the day that Parliament was to receive the new Customs Tariff, he had wired 2YA asking them to obtain the information concerning the alteration, if it could be done, and broadcast it in the evening. 2YA was successful in obtaining this, and acted on the suggestion. The news was broadcast, and was greatly appreciated, not only in Canterbury, but all over the Dominion.

The secretary's action was approved, and the committee of 2YA commented upon, a letter of thanks being sent to them.

The general improvements in broadcasting, within the past 12 months, was commented upon, and the committee would like to impress on all listeners that they should support the league, to the fullest extent, if they desire an avenue through which to place their grievances and troubles before the Government or the broadcasting company.

Herbert H. Frost, former President of the Radio Manufacturers Association of the United States, who has been making a study of radio conditions in Europe, in reporting his survey of conditions abroad showed European broadcast programmes to be of excellent quality. England, he said, was still in the crystal-set stage because the high power used by their broadcasting stations made multiple-valve sets, such as are common in the United States, unnecessary.

INTEREST IN SHORT-WAVE WORK

A USEFUL LOG FROM MR. SELLENS

Interest in short-wave reception from overseas is steadily growing, and we hear on all sides of enthusiasts who have either installed, or are proceeding to instal, short-wave sets in order to reach out and take advantage of the growing service of overseas stations. By courtesy of Mr. F. W. Sellens, Northland, Wellington, we are able to publish the attached list of short-wave stations on telephony, together with their time of operation.

Mr. Sellens mentions that he has lately been receiving both the Russian and Dutch stations with remarkable volume and clarity. The Belgian station, which has recently begun operating, comes in very loudly, but the modulation is very bad at present. On Friday morning last, Mr. Sellens had the Belgian station in considerable strength, and several times received their call sign. He also had PCJJ, Holland, at loudspeaker strength up to 7.30 Friday morning. It was announced by this station that they would be rebroadcasting on short-wave the London description of the boxing contest.

The Russian stations, notably RFN, which is situated in Siberia, frequently gives splendid music.

At the present time 6AG, Perth, is testing from 9.30 p.m., New Zealand time, nearly every evening for about half an hour. This station is owned and operated by the engineer-in-charge of the Westralian Farmers' Station, Perth, 6WF.

SCHEDULE OF SHORT WAVE STATIONS ON TELEPHONY.

	Wave-length Metres	N.Z. Mean Time	
PCJJ, Holland	30.2	4.30 a.m.—7.30 a.m.	Wed. and Fri.
2XAF, Schenectady, N.Y.	32.77	9.30 a.m.—3.30 p.m.	(varies) Wed., Fri., and Sun.
2XAD, Schenectady, N.Y.	22.02	9.30 a.m.—3.30 p.m.	(varies) Mon., Tue., Thur., and Fri.
KDKA, East Pittsburgh	64 & 26 (about)	9.30 a.m.—3.30 p.m.	(varies) Daily except Mon.
WLW, Cincinnati	52	Irregular.	
RFN, Russia	50 & 60	10 p.m.—11.30 p.m.	Tue., Thur., and Sat. (occasionally on other evenings on 60m.)
6AG, Perth, W.A.	32.9	9.30 p.m.—10 p.m.	(varies) nearly every evening.
6WF, Perth, W.A.	100	11.30 p.m.—1.30 a.m.	every evening except Sat., Sun.
2NM, England	33	Testing on different wave-lengths, sometimes early morning and late afternoon.	
5GC, Adelaide	31	Sunday afternoon—sometimes.	
3AJ, Rangiora	(about) 35	Sunday afternoon—sometimes.	
3AU, Rangiora	(about) 35	Sunday afternoon—sometimes.	
3LO, Melbourne	29.8		
2XD or 2XG (?)	(about) 34		
4NW, Pittsburgh	(about) 32	Late Saturday evenings.	
Radio-Belgique, Belgium	(about) 33	Heard on several Wednesday mornings till about 6.30 a.m.; also Fri.	
(?) (?)	(about) 32	From 10 p.m. occasionally, talk in French, and some music.	

Other stations are often heard, but too weak to identify.

As showing the growing interest in shortwave work "Microphone" writes from Timaru: "In your leading article of September 30, you speak of the excellent work done by Mr. O'Meara and Mr. Sellens. These two amateurs were not alone in their skill in picking up 2XAF. Quite a number of amateurs in the South Island heard the 'fight.' In Timaru Mr. Ellis, Mr. Buckley and Mr. S. Hanan reported excellent reception. Mr. Hanan is perhaps one of the earliest valve users in the Dominion. It's a pity you couldn't obtain his log book covering the last six years. This amateur has done an immense amount of work on short wave. 2NM Caterham, London, was bagged on September 9 and 18, 1927, in a clear and loud manner. I thought it just as well to let the 'Radio Record' know that the pioneers are in the South Island, viz., Mr. Bell, Mr. Orbell, Mr. R. Slade, Mr. Shiel, Mr. S. Hanan, Mr. Courtis, Mr. McDonald, etc., etc."

[We are only too pleased to give publicity to our southern friends' performances, and appreciate, at any time, items of interest. We would be pleased to have good logs of distant reception.—Ed.]

ESPERANTO

Mention has been made to the instructor that the lessons comprising the Esperanto course of "Radio Record" do not contain a sufficient number of Esperanto words. This is explained by the fact that all available space is being utilised for the publication of subject matter for each broadcast lesson. However, students who desire to extend their vocabulary more rapidly than by means of these lessons may do so by obtaining an Esperanto text-book. A reliable and complete edition containing an extensive list of words and which should, therefore, meet the requirements of students in this direction, is obtainable from the instructor, who is in a position to supply a limited number of copies for 1s. 6d., post free.

As in the past, inquiries relative to Esperanto may be forwarded to "The Esperanto Instructor," N.Z. Broadcasting Co., Wellington, or care of "Radio Record." A stamped addressed envelope must accompany each inquiry.

LESSON XII.

(To be broadcast from 2YA on October 20, from 7.30 to 7.54 p.m.)

Sinjorinoj kaj Sinjoroj, Bonan vesperon! THE PREPOSITION.—Prepositions in Esperanto are always placed before nouns or pronouns, to show the relation (of position, etc.) between the thing for which the noun stands and another thing or action. The following prepositions have been used in previous lessons:—Al, de, el, kun, per, po, por, and sur. The other prepositions are:—Apud, beside, near, by; da, of (indefinite quantity); en, in, into, within; ekster, outside; ĝis, until, as far as; inter, be-

tween, among; je (see below); kontraŭ, against, opposite; laŭ, according to; post, after; pri, concerning, about; sen, without; super, above, over; tra, through; trans, across, on the other side; ĉirkaŭ, about, around; anstataŭ, instead of; krom, besides, except; malgraŭ, notwithstanding; pro, for, owing to; preter, past, beyond; spite, in spite of; sub, under; antaŭ, before; antaŭ ol, before (time).

All prepositions require the nominative case after them. Mi donis ĝin al Li (not ĉin), I gave it to him; Li akceptis la aparaton por Mi (not min), He bought the apparatus for me.

The prepositions anstataŭ, antaŭ (ol), and por, are used before infinitive verbs—e.g., anstataŭ diri, antaŭ ol paroli, por lerni.

Each Esperanto preposition has a definite and constant meaning. If the meaning of an English preposition is not clear, it may be translated either by je, or by the accusative—N without a preposition, as, Ili ridis je li, or Ili ridis lin.—They laughed at him. Je is really the indefinite preposition—it may be used when no other preposition will suit.

Bonan nokton al ĉiuj!

The Canadian delegation at the International Radio Conference is expected to renew negotiations looking to the assignment of additional wave-lengths for the use of broadcasters north of the border. The Dominion now enjoys six "exclusive" wave-lengths and shares twelve others with the United States. Unofficial information received at Washington is that Canada will ask for additional exclusive wave-lengths on the ground that the present allocation is not adequate.



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THE GROWING MENACE OF "BLOOPERS"

HOW CAN THE NUISANCE BE SUPPRESSED?

Interference from oscillating sets is reaching a high pitch in most populated centres of New Zealand, and the suburbs of Wellington are by no means immune from the trouble. There are newly-installed sets that whistle continuously for a half-hour on end, others that mop up all before them, and blanket signals completely out with the effect of intense fading. Then there are countless specimens of the wrist-developing variety that work their sets on and off the edge of oscillation for an hour or so, never tiring of trying to catch another few notes of music from that distant but elusive station. One wonders whether these operators would change their ways if they only could know how they mar the enjoyment of so many of their neighbours. We have one thing to be thankful for here in Wellington—it is hardly possible to oscillate on 2YA's carrier, and therefore that station's programmes are enjoyed to the fullest extent.

The present inferno of oscillation after 10 p.m. and on silent nights will automatically militate against the proper increase in the number of licences. Any person who cannot tune in a main station of New Zealand or Australia without creating a disturbance is committing an offence against all other listeners around him, and causing unnecessary irritation. In many cases the offenders are well-known to the neighbours, but owing to the danger of creating bad relationship, nothing is done to remind the "bloopers" of their sins. Official action of some kind is very necessary to abate the nuisance. The present behaviour of the one and two-valvers is such as to ensure a demand for an early curtailment of their ruthless and persistent interference.

Owners of sets, large or small, should make a point of getting instruction from a technical friend as to the method of tuning-in without, or with the minimum of, oscillation. All listeners should recognise that it is only by the polite use of the ether and consideration for the rights of others, that broadcasting can become the useful and entertaining medium that it has set out to be.

RADIATION

ADVICE FROM MR. BILLING.

A talk by Mr. Preston B. Billing, delivered through Station 2YA, upon radiation covered the following points of interest to listeners. "It is unnecessary to explain what is meant by the term radiation—we have all experienced its effects from time to time, much to our disgust. You have often listened to a fine broadcast item and been enjoying it when all of a sudden Mr. Squealer arrives and completely mars the remainder of that item and very often the whole of the items for the evening from that particular station. Nor does he confine his attentions to the one station, he seems to be like some of our American listeners endeavouring to let as many stations in a single evening as he possibly can. You know the game or have read it—he totals up the aggregate mileage of the stations heard and as long as his mileage for the evening exceeds that of his nearest competitor he declares himself the winner. It is small wonder with operators such as this in our midst that we can hear anything decently at all.

"These howls or squeals which are heard from your loudspeaker are caused through nearby radiating receivers. It is hard to lay down a specific distance over which one can hear this form of interference, but it does run into miles and that with very simple apparatus can give us quite a deal of annoyance.

"This radiation is occasioned by certain types of circuits in receiving sets and also by improperly handled receivers and those which have been imperfectly neutralised.

"I would suggest first of all that receivers of the Armstrong type (that is the three coil, double and single circuits) be discarded. Possibly the parts could be used in an improved and more tip to date set, preferably with one or more stages of neutralised high frequency amplification on the Hazeltine principle.

"If it is not possible for one to do this a cheaper way would be to convert it to a Browning-Drake or else add a stage of high frequency on the lines suggested. In any case it is nothing short of criminal for parents to allow their children to operate a receiver of the type mentioned (Armstrong). Perhaps there is a young boy in the family who is being encouraged to do his own constructing and operating, there is nothing wrong with this provided the parent or perhaps a helper who really understands radio can assist by seeing that the right type of circuits are being used, and who will also see that the neutralising process if the receiver is of the neutralised type, is correctly carried out. This adjustment should be made at a time when as little interference as possible will be caused to listeners.

"The neutralising process is a fairly complicated one for one who is inexperienced, and I am not going to take up your time with a technical talk as to how it is done. Instead I am going to explain as simply as possible how you

can tell if your receiver is radiating or not. If you have a friend who lives close handy you could arrange to carry out a test on these lines. Arrange to listen on the same wave-length with both receivers at a predetermined time, each man operating his receiver to get the most out of it, and notice if any whistles are picked up at a certain spot on one or the other of the sets. It would be better if one set were set to a wave-length such as Christchurch, for instance, both listeners then retiring to the home of the other listener, to proceed to fish about on this wave-length and notice if any whistles are picked up, use headphones and listen very intently, if no sounds are heard it is safe

WHO HOISTED THE FLAG?

There is a little flag flying at the top of one of the wireless masts at 3YA and, like the pips in a pear, no one seems to know how it got there. Some one of course does know, but he did it darkly at dead of night and the result of his antics was only apparent in the morning. No doubt the escapade was the outcome of a silly bet and it will be just as well if no one attempts to emulate it. The height is 154ft., and there are no landing nets or spring mattresses at the base, only hard ground. Also, the police will take an interest in future proceedings.

to presume that the receivers are reasonably free from any tendency to oscillate.

"You can also ascertain by touching the aerial wire with your finger. If the receiver is radiating there will be a noticeable pop when the finger both touches and leaves the aerial wire. There is of course a difference between signal interruption and the foregoing test. Do not mistake one for the other. I trust you will let my remarks sink in. It concerns you and the other fellow as well. Do make an honest endeavour to keep this nuisance down. With the advent of more receivers there is the possibility of still more trouble being experienced. The cost of converting that old set to a modern one is not big and will give the builder or owner a good deal better entertainment and in addition he will be blessed by all his neighbours." (Loud applause from all sufferers).

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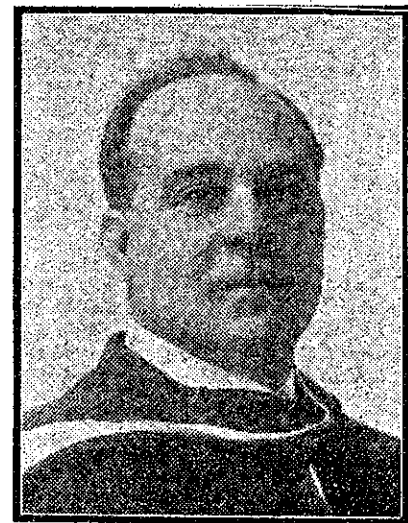
Weekly programmes, hints and constructional data.

INTERESTING LECTURE

MR. RAYNOR WHITE.

One would think there was little association between music, geology, and astronomy, but such are the things that interest Mr. Raynor White, who, as an organist, is frequently heard from 3YA, and who will shortly be heard in a different role, that of a lecturer. It is not to be wondered at that in a city of churches, such as Christchurch, there should be some notable organists, and one who stands prominent is Mr. Raynor White, of Trinity Congregational Church. But one might expect that from a man whose ancestors for hundreds of years back have been organists and musicians. For generations the name of White has been associated with Tewkesbury Abbey, Gloucestershire. One of the famous organs in the Abbey is the identical instrument beloved and played upon by Milton nearly three hundred years ago. This organ is still in order and is an exceedingly interesting instrument. Mr. Raynor White has played on this organ, on which so many of his predecessors performed.

As might be expected, the first tutor Mr. Raynor White had was his father,



who, after leaving Tewkesbury, held several positions as organist and choir-master in Yorkshire. At seven years of age Mr. Raynor White was a chorister, and when 16 was appointed organist and choir-master at St. Oswald's, Thirsk, Yorkshire, and received advanced tuition from Dr. Crowe, of Ripon Cathedral, and lessons in organ playing and harmony from Mr. H. P. R. Walton, who is now one of the world's greatest organists.

Mr. Raynor White enjoys the fellowship of the London College of Music. As far back as 1893 he gained a first-class certificate as an organist at York Organ School. He also held a bandmaster's certificate, and certificates from the Royal Academy and Trinity College. A brother of Mr. Raynor White is principal of the Doncaster College of Music.

As a conductor and choir-master, Mr. White has had much experience. He has conducted in Glasgow, Leeds, York Minster, and for thirteen years the band of the 19th Princess of Wales's Own Yorkshire Regiment was under his baton. Mr. White and his Orpheus Orchestra regularly played at parties, balls, and fetes at Knaresborough Castle, Viscount Lascelles's seat.

Since coming to New Zealand Mr. Raynor White has held appointments in Wellington, Auckland, and Christchurch.

But it is not only in music that Mr. White is interested, or interesting. He is well versed in geology and astronomy. He was a member of the Yorkshire Boulder Committee, under the presidency of Professor Percy Kendall.

Mr. White will shortly be heard as a lecturer at 3YA, he having consented to give talks on geology, migrating birds, and reminiscences of his musical experiences. Listeners will find Mr. White as good a lecturer as she is an organist.

Mr. Raynor White will be next heard at 3YA on Friday, October 21.

NEW AUSTRALIAN
STATIONS

A HITCH REPORTED.

Something like a hitch appears to have occurred in the arrangements by 8LO, Melbourne, for the erection of four 5000-watt relay stations in Victoria. A Melbourne writer says:—

"Following upon the announcement that the technical officers of the Postmaster-General's Department are considering plans for determining by experiment the best positions for relaying stations in Victoria, and that there is a possibility of the Federal Government controlling these stations, the following statement was made by Mr. W. T. Corder, the general manager of 8LO, Melbourne: '8LO Melbourne intends to proceed as far as possible with its plans for relaying in the country. We indicated to the Postmaster-General's Department some months ago that we desired to provide four relaying stations—one near Maffra, one near Wangaratta, one near Bendigo, and one near Hamilton. After the publication of the report of the Wireless Commissioner, we repeated our application for licenses to erect and operate these stations, and are now awaiting an answer. If we obtain the licenses to put in the stations, we intend to go right ahead with the work and have the stations in operation with as little delay as possible. If the Government decides to build them itself we will have to abandon our plans as they now exist, and consider our position under the altered conditions.'

NAURU HEARS 2YA

APPRECIATION FROM 2400 MILES.

"K.W.T." (Nauru) writes:—

"You may be interested to know that the programmes broadcast by your station have been received here in splendid strength, and I must also congratulate you on the quality of your programmes.

"We have here a Marconi YC3, 4 valve, wireless telephony and telegraphy set used by the Commission for daily communication with Ocean Island by speech or morse. A 3-valve amplifier and loudspeaker is also available if required.

"Unfortunately, we cannot use the set for receiving broadcasting on week days, as an Electrical Dust Precipitating Plant (60/100,000 volts) sets up violent interference. However, on Sundays and occasional week days we can listen in.

"Last night the band concert you broadcast was received here perfectly, and we were sorry when you closed down. In my opinion, the notes of the piano being played were heard here quite as loudly as one would expect to hear them if seated in the rear of the hall where the concert was held.

"I quite look forward to hearing you again next Sunday night. Other stations received here are 8LO, 8AR, 2BL, 2BC, 4QC, 1YA and Tokio (Japan).

"The people of Wellington certainly know how to applaud.

"The distance from Nauru to Wellington is about 11 days by tramp steamer—say about 2100 miles."

FRAME AERIAL "PIRATE" TRACED

A triumph was recently scored by the British Post Office wireless van recently at Manchester. Complaints of oscillation had been received from a certain locality, and the direction-finding van was dispatched to the district, and after several bearings had been taken the disturbance was traced to a certain house. The sequel was the appearance at the Police Court of the culprit, who was fined 40s., the Magistrate remarking that, but for the fact that defendant, was unemployed, a fine of £10 would have been imposed.

5KA, SOUTH AUSTRALIA

POWER TO BE INCREASED.

The small-powered South Australian Station 5KA, Prospect, has often been heard in New Zealand, and news comes that it is now to have its power increased to 2000 watts.

Station 5KA, which is situated at Prospect, South Australia, has recently been merged with the National Musical Federation, of Kithers Buildings, King William Street, Adelaide. The latter company was formed a little time ago largely for the purpose of operating radio broadcasting and television stations in the Commonwealth, and hopes shortly to make an announcement regarding their plans. In the meantime, 5KA is to be completely reorganised, with a view to providing a better all-round service. Included in the company's plans is a complete sporting service. This will include special broadcast descriptions of sporting events, and talks by leading sports authorities. The station at the present moment is working on comparatively low power on a wave-length of 250 metres. The power will shortly be raised to 2000 watts, and the location of the station altered.

There are still regions where the fear of witchcraft is not extinct, and radio comes under strong suspicion. A country school teacher in Central Europe was recently the victim of the superstitious peasantry, who associated the mysterious box with recent unfavourable weather. After breaking his windows, they fell upon the radio set and its unlucky owner, both of whom suffered considerable violence.

"FADING"

"Grid" writes: Some Wellington genius has discovered that "fading" is nothing new in connection with radio, and that the subject has been under investigation for some years. Well, now, how brainy! It will be news to that individual that "fading" is to some extent affected by local conditions at the receiving end, and by the terrain between the broadcast station and the receiving set. This is quite apart from the theory of the undulations of the Heaviside layer. In New Zealand there is much scope for investigating terrestrial effects upon "fading." The presence of mineral deposits is held by some investigators to have an effect upon reception, and to be a contributory cause of "fading."

STAR TRIO FOR 2YA

(Continued from cover.)

lets, Gerardy himself would play any other part that was missing. Happy months indeed, during which George acquired his great love for the beautiful in music, Gerardy's own fine emotional sense proving a constant source of inspiration. Gerardy then moved to Berlin, and again the trio followed for further study. After spending eighteen months in that city the Ellwoods came back to New Zealand and toured the Dominion.

In 1913 George Ellwood returned to London to play at Madam Clara Butt's great concert in the Albert Hall, which was, so to speak, the grand finale of her world tour. Unfortunately, on account of ill-health, he was unable to perform, and his place was taken by Jacques Hallmann, the great 'cellist. Recovering, Mr. Ellwood went over to Berlin, only to discover, but a few days after his arrival, that the Great War had commenced. He landed in Berlin on July 28, and on August 1 (the day of the outbreak of hostilities between Germany and Russia) he obtained his passport visa.

As soon as Great Britain's entry into the conflict was announced, on the fateful August 4, he endeavoured to leave Berlin. All routes were being monopolised for military transport, and it was not until about two weeks later that Mr. Ellwood was able to take train to the north of Germany, and there, mixing with some 4000 undesirable Russians whom Germany was sending back to Russia, he was able, without showing his passport, to board a Swedish vessel, on which he was taken to Sweden. From there he went to Denmark, and, eventually, back to England, where he entered the Guildhall School of Music for the purpose of prosecuting his studies in harmony, etc.

On the completion of this course, Mr. Ellwood again returned to New Zealand, and establishing himself as a teacher in Christchurch, where very quickly he won an enviable reputation. Amongst his well-known pupils at that time was Mr. Harold Beck, the 'cellist of the talented trio who nowadays broadcast from 8YA, Christchurch. In 1918 Mr. Ellwood once more turned his face towards Europe, proceeding to Brussels, where he commenced a course of composition, instrumentation, and conducting, with Joseph Jongen, the director of the Brussels Conservatoire, also studying singing and choir training with Maurice Weynandt.

Mr. Ellwood on this occasion remained on the Continent for nearly four years, visiting France, Holland, Germany, Italy, Belgium, and England. About two years ago he "came home" to New Zealand and settled in Wellington, where he is now well known as a teacher, soloist, and choir-master.

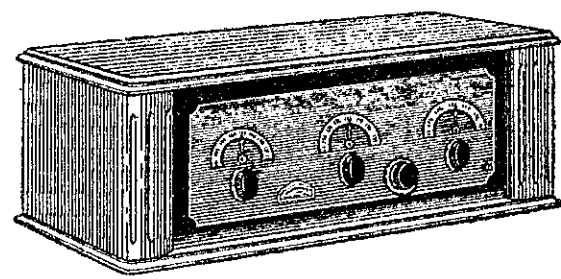


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TO-DAY AND TO-MORROW

see so much to do that there seems
no time for any of us to stop and con-
siderate ourselves on what is already
done.

—Lady Cowdray.

National Concerts.

The International Broadcasting Union of Geneva has recently suggested a series of "National" concerts intended to present something typical of the mind and soul of each country to listeners of other countries. Britain is broadcasting French programmes suggested by the French members of the Union, while Continental stations will broadcast a typically British programme set forth by British members. This is another of the many ways in which wireless is bringing about a better understanding between nations.

Our education is finished only when we have learned that there is no end to it. The best schools are those that show us how to get on without them. What seems to me peculiarly valuable in the broadcasting of talks and lectures is that it declares the unending continuity of education, and at the same time, enables the contact of mind with mind to proceed in a way that transcends the possibilities of actual intercourse.

—George Sampson.

Priority in School Wireless.

At the Grammar School, Ashford, Kent, a complete wireless apparatus, home-made, with the exception of headphones, was set up as long ago as 1912. The daily weather reports were picked up and decoded by the boys, also the evening news bulletin. One boy could receive at forty words per minute.

House 'Phones—New Style.

The owner of an ordinary home-made crystal set in England holds conversations in his house with two pairs of 'phones. "When one of us wishes to go to bed early," he says, "one pair of 'phones is installed in the bedroom at the end of a long lead from the set downstairs. An inquiry over the 'phones is easily heard and as easily answered."

"Margot" Sermonises.

Lady Oxford, in her latest book, retains all the frank outspokenness of her earlier efforts, but has happily avoided offending her readers' sense of good taste. "Lay Sermons" is well worth reading; much of it is extremely clever, and thoughtful, in fact many of the sermons reflect a profound wisdom, rather tending to prove that "Margot" does take life seriously in spite of herself. Her sermon on health is the essence of common sense. Of course, it has a text—"Let not the sun go down upon your wrath." Lady Oxford realises the importance of the influence of the mind upon the body. She says that the repression of anger, and the substituting for it of a feeling of goodwill is a "practical prescription for restoration—a corrective, or form of physical healing." The much-criticised title appears to us to be singularly apt.

Breaking Down the Barriers.

I cannot but express my admiration of one side of the British character which shows itself so frequently when eye-witnesses of events of the Great War tell of their experiences—all expressing a humane and generous spirit. Would that all the people of Germany might draw their information about British character from the direct and clear source of broadcasting, instead of from the daily paper—that slave of faction.—From a German listener.

The Modern Eve.

Eve, up to date; with all the ingenuity and resource of her sex, has not only vanquished her old enemy but has even made use of him to adorn her fair neck. Little flexible gold snake necklets with pale green eyes are one of the newest eccentrics which play such an important part in our dress.

For the Motorist.

An ingenious idea which cannot fail to appeal to the car enthusiast is loudly claimed by speed fiends at home. It is embodied in a pair of driving gloves, having a back-handed punch in the shape of two lights—red and white—the red to warn followers and the white or use as a spotlight. The current is derived from a small battery on the gauntlet, and contact is made by metal plates on finger tip and thumb. Signally effective!

Multum in Parvo" Mascot.

Another novelty is a lighthouse mascot which carries a radiator thermometer. Besides being an arresting ornament, its lantern lights are connected with the rear light. When this light glows, the lighthouse lights do likewise, and you know perfectly well you are on the rocks before it is too late!

Flatlets.

The voice of "Annabel Lee" crying in the wilderness of flatdom for solitude and silence brought before our minds a vision of ideal little homes for hard-worked women who seek respite from garrulous humanity when the day's work is done. These havens are "one-roomed" or "two-roomed" flats at the lowest possible rentals, with everything designed with a view to comfort, convenience, and the saving of labour. Each "flatlet" is absolutely self-contained, and for the use of one tenant only; sometimes two or three tenants share a bathroom, but otherwise are quite independent. This accommodation is being provided for women workers in London by the United Women's Homes' Association Ltd., but would be as great a boon to, and equally warmly welcomed by the "Annabel Lees" of New Zealand.

ROADWAYS

One road leads to London
One road leads to Wales,
My road leads me seawards
To the white dipping sails.
One road leads to the river,
As it goes singing slow;
My road leads to shipping,
Where bronzed sailors go.
Leads me, lures me, calls me
To salt green tossing sea;
A road without earth's road-dust
Is the right road for me.
A wet road heaving, shivering,
And wild with sea-gulls' cries,
A mad salt sea-wind blowing
The salt spray in my eyes.
My road calls me, lures me
West, east, south and north;
Most roads lead men homewards,
My road leads me forth.
To add more miles to the tally
Of grey miles left behind,
In quest of that one beauty
God put me here to find.
—John Maschfield.

TO-DAY AND TO-MORROW

O well for him that finds a friend,
Or makes a friend where'er he comes,
And loves the world from end to end,
And wanders on from home to home.
—Tennyson.

Who's Zoo?

In the world of fashion, Who's Zoo? The doe is responsible for my lady's gloves, the calf for her belt, the tortoise for her shinglecomb, the snake for the cover of her cigarette box, the lizard and the crocodile for her shoes, the ostrich provides her feather fan, the silkworm her stockings and lingerie, and the fox gives up his skin for her fur.

Imitation Pearls.

Few people realise of what ancient lineage are imitation pearls, which to-day are endowed with such exquisite

sheen and lustre, and such perfection of gradation and tint that it is well-nigh impossible to tell the false from the true. According to one authority, they were first produced in the reign of Henry IV of France; while another one states that they were being made by a Parisian rosary-maker, named Jaquin, in 1656.

The modern girl has been severely criticised and scathingly commented upon, yet in spite of all the sarcasm, the British girl is welcomed wherever she goes. Her supremacy lies in her adaptability, which is the hall-mark of her nature. This versatility of character carried her through the war. She made munitions, built up businesses, created professions. The British girl's place is wherever her destiny directs her. She is never at a loss to discover a "way out." She confronts life in the spirit of true gallantry.

—Phyllis Rees.

The Letters of Annabel Lee

My Dear Elisabeth,—

"Manners maketh man" is as true now as ever it was. There are those who quarrel with their fate, and one such we encountered yesterday in a city tea-room. We had been buying the trousseau of Suzette, who is in all circumstances, as you know, a gentle soul. But even she was ruffled. Our genial Hebe stood and glowered at us from under her black, black hair. We requested oyster patties, and without comment or apology she hurled ham sandwiches before us. After that she left us in the lurch for quarter of an hour or so, finally rounding up this pleasant repast with lukewarm tea, when we asked for coffee. There is no redress for this kind of rudeness, but I would commend to these resentful damsels the quaint and wise old saw, "There is no office in this needful world, but dignifies the doer if done well."

Which reminds me of my latest domestic find, Emma Jane, who comes in by the day, looks after me—body, soul, and spirit—refusing to allow me to soil my lily-like hands; and wields cedar mop, vacuum cleaner, and other cute devices with efficiency and clamour. She approves of my clothes, my morals—everything but my looks. Yestreen she surveyed my not too chesty form with a kindly gimlet eye. "Hev ye consumption in your family, me gerr?" she asked, in her democratic way, and obviously doubted my hasty disavowal.

For useful information on How to be Healthy and Happy and Wise, commend me to the recent lecture of a psycho-physical culturist. This lady radiated energy, assurance, purpose. Forceful were her words, positive her theories, graceful her pose, as she held forth to an adoring audience. She advised us never to ignore the great law of compensation; also to get in touch with the Universal Spirit, this desirable end being achieved mainly, it would seem, by deep breathing through the solar plexus. We would be all right in body and mind if we allied to these plenty of God's good sunshine (preferably on the soles of our feet), cold water liberally dashed on our shrinking forms, oranges and lemons galore. "To think," declaimed the lady, dramatically,

"that there exist those who allow days to go by without purchasing an orange!" I reflected guiltily that I had not bought one for many a moon, in fact not since I read a Walpole thriller of a red-haired murderous monomaniac who reeked of the odour of oranges. A voluble and cheery lecturer this, with an Arcadian tale to tell of summer camps, hygienic laws, and virtuous thinking. There's nothing new under the sun, of course, and we'd heard it all before; but 'twas none the worse of that, judging by the way the audience mopped it up.

Richard tells me his Aunt Griselda (who intends leaving him her money) announced by last mail that she has acquired a radio set, and a portable one at that! The very latest, most expensive make! Think of the dear Victorian lady, in her home in a quiet English backwater, toddling upstairs to the music of Madrid, and going forth to her daily drive with the world's wonder of wireless tucked under her arm. I shouldn't wonder if she associates it with the powers of darkness, but she is enchanted with it, nevertheless. For my part, I envy no one who gets in touch with Europe, though I don't deny it would be fascinating; but meantime I am happy in my lot with my little crystal set, listening with delight to my favourites—amongst whom soon will be the Billwood Trio.

Being such an out-and-out Imperialist, you would love Kirkcaldie's window. It is an encouragement of trade within the Empire, and is by way of being a paean of praise for those who live and work under the British flag. In the middle stands Britannia the Beautiful, silken strands binding her to the New Zealand poster, which portrays our butter, cheese, apples, a row of succulent little piglets and leggy lambs, gambolling on a green sward. Below is a picture of a desirable rug, made from the wool of the frisker when he grows up. On the other side of the helmeted lady a poster exhibits something of what Old England can do in the way of the manufacture of cotton goods, pottery, motor-cars, and what-not.

In a shop in Willis Street I notice they are starring "Mary's Boxes." So

nice, so useful, ranging in size from the dressing-table variety to quite large ones for slippers and jumpers, and in price from half a crown to four guineas. Octagonal, round, and oblong in shape, they are quite substantial and extremely decorative; the colour design effective on a background of black or dull gold. Suzette picked a huge glory box, with a flight of blue birds and the apples of Eden rioting upon it, which struck me as appropriate for a bride. Into it will go so easily her gadgets of silk and muslin and lace; also several of the slinky jumper suits she favours. She has some lovely ones, but my pick was of blue crepe de chine, from Smith's, with pleated skirt, the top part a contrast of multi-coloured stripes of the round-and-round kind, which will look infinitely smart on Suzette's lovely slimmness. By the way, don't forget to order a navy blue walking suit, with bits and pieces of gummetal grey, and stockings of the same dim hue, as this is to be the well-dressed woman's stand-by this season.

A young friend of mine, of the fair and fluffy kind, when walking abroad with her Orlando of the moment, clasps under her thin arm what is apparently a teddy bear, but in reality it is a quite serviceable handbag. Sometimes the bag takes the shape of a bunny or a Persian cat, and it is a flapperish fad, to be avoided by the Not So Young, like many another fancy of fashion, more particularly the too, too brief skirt, which does not look its best on elderly legs.

Isn't it strange how the holiday feeling creeps upon us unaware, or a sudden, in the twinkling of an eye? Into the dusty town comes a ruslie, a whispy, and we begin to look out our submerged suit-cases. Yestreen I met some migrants from the south, bound for the Hot Lakes, because the winter is over; and a leading society hostess here has led the van of summer trippers by seeking the green peace of Waikanae. Seaside hotels are bristling up the cuisine and staff, and we shall soon all be on the move, even if it's only for a week-end at one of the bays.

ANNABEL LEE.

"Turn-on-the-Tap" Radio

An instrument which gives the listener entertainment with no more effort than is required to draw water from a tap has arrived in England. The usual batteries are dispensed with, and the necessary electrical energy is taken from ordinary house lighting mains. There is no need for anyone to know much about the construction of these sets, for they are designed to enable anyone to listen in merely by operating an ordinary electric light switch. Excellent results have been obtained from Daventry from this "simplified wireless" at a distance of 200 miles.

Raffia Still to the Fore.

Wherever there is decoration, there is raffia! Dear little brooches and scarfpins have long been favourites—now we have cunning little raffia buckles for our shoes and also for our hats, carrying out our pet colour scheme, and varnished, of course.

Wonderland Alice.

A Melbourne writer says: Few people have been so popular with younger listeners than Miss M. Shepherd—or "Wonderland Alice"—in her lectures "Myths and Facts of the Commonplace." This series has proved most fascinating to the kiddies, and had led them step by step into the realms of knowledge by a delightful road that isn't the least little bit like "lessons"—but more like a real fairy tale. The objects we see around us, and have become so used to, spring into fresh being, and are possessed of a new charm when seen through the eyes of a wonderland.

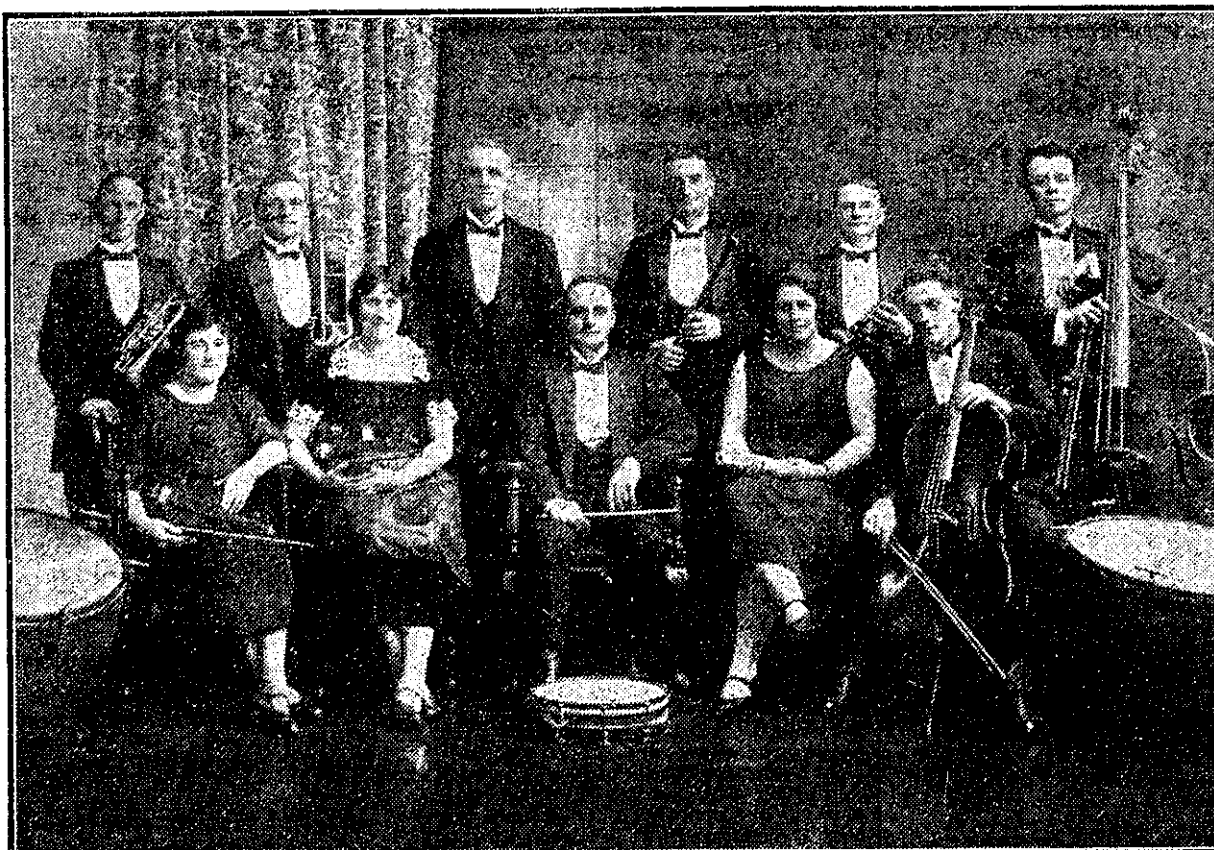
If you are born without temperament you are extremely fortunate, for none can descend to such depths of agony as the temperamental. It is not only in the great things, but in the trivialities of life that one is weighted with a temperament. The sudden hurt look in the eyes of a little street urchin who has lost a halfpenny cuts to the heart as sharply, as deeply, as the contemplation of the ruin and the waste of a devastated land.

But that same nature by whose forces we temperamentals are held has a wonderful quality of readjustment. Just as we know the horrors of the depths, so we can rise to heights of happiness and exaltation that make us tremble with the pure wonder and joy of living. No matter what form deathly may take—a line, an expression, a splash of colour, or it may be just a beautiful gesture—it gives us always the same exquisite happiness.

—Anon.

A New Zealand-made Picture.

"Under the Southern Cross," at the Paramount Theatre, is interesting. The Paramount Theatre, Wellington, is interesting. A New Zealand film, the interest focused amid scenes of our own countryside—and very lovely, indeed, are some of those from around Hawke's Bay—the story begins on board ship and reaches its denouement on a real true-to-life sheep station, where sheep-dogs round up flocks and flocks of silly sheep, and prize beasts of the field rear their stately heads. As to the cast, Jean Leckie is as ingenious and delightful on the stage as off; Moaata Doughty, if not as debonair as when he lounges along the Quay, looks and acts quite well as the squatter; Tai Fryer and the others including Pat Ward (son of our own Sir Joseph), are adequate; but the honours lie with the two who look and act to the life the dear old couple on the station, and with Mr. Ashford, whose appearance and acting are entirely right as an Englishman trying his luck in the Dominion. The plot is neither original nor exciting, the charm of the picture being in the portrayal of colonial life amid beautiful and typical New Zealand scenes. Good luck to it when it reaches the wider world!



—Webb, photo.

The orchestra of the Liberty Theatre, Christchurch, which is very frequently relayed by 3YA. This orchestra is under the conductorship of Mr. Ernest Jamieson, who is recognised as one of the best all-round musicians in Australia and New Zealand. Mr. Jamieson's ability as a conductor is indisputable. Paderewski, during his recent visit, attended the Liberty Theatre, and at the conclusion of the performance congratulated Mr. Jamieson on the wonderfully correct interpretation of his famous "Minuet." It was, he said, his ideal interpretation.

Some Features of Next Week's Programmes

1YA FEATURES

On Tuesday, October 25, Mr. Fred Bowes, the well-known cornetist, will contribute several numbers, including a fantasia on the popular old song "Silver Threads Among the Gold." Miss Edna Peace, talented contralto, will sing, and her numbers will include Elgar's "Come Gentle Night." Mr. H. Barry Coney, well-known baritone, will make his debut before the microphone as a solo pianist. Mr. Coney's ability as a pianist is well known throughout New Zealand, and listeners can look forward to a delightful rendering of the numbers he intends to perform. They include "Four Waltzes" by Brahms and "The Sea" by Schubert-Liszt. Mr. Hal McLennan, popular flautist, will render several flute solos, including "By the Brook," by Wetzler and Kohler's "Valse Rejoice." Orchestral items by the majestic New Orchestra under Mr. J. Whiteford-Waugh will further enhance a splendid programme.

The main contributors to the programme on Wednesday, October 26, will be the ever-popular St. Andrew's Quartet. The members of this quartet are all well-known soloists at 1YA and on the concert platform, and listeners are ensured of a splendid evening's entertainment. The quartet will be assisted by Miss W. Moore, 'cellist, Miss Gladys Gammon, elocutionist, and Mr. Geoffrey College, pianist.

On Thursday, 1YA's programme will be very attractive. Contralto solos will be rendered by Miss Nellie Lingard, who needs no introduction to listeners. Mrs. Hugh Morton, pianiste, who has not been heard from 1YA for some time, will again entertain listeners. Her items include the intricate "Hexentanz," by McDowell, and, catering for the lighter side, several popular fox-trots. Mr. Powell Rogers, violinist, will be heard in several numbers, and in conjunction with Mrs. Morton will render a jazz medley. Mr. Walter Brough, another artist well known to listeners, will contribute a number of baritone solos, including Spross's "Will o' the Wisp."

A unique item on this programme will be a talk on "Flower Legends from Grecian History," by Leonard Griffiths, F.R.H.S.

The Bohemian Duo, popular entertainers, will again delight listeners with items rendered in their own inimitable style.

The concert for Friday evening has been arranged by Miss Dorothy Yoad, and promises to be of a very high order. Miss Yoad herself will contribute a number of items, including Mallinson's delightful "Gloriana."

On Saturday the Municipal Band, under the conductorship of Mr. Christopher Smith, will provide 1YA's programme. These concerts are of such wonderful quality that no comment is necessary. Dance lovers will be catered for by dance music from the Click Clack Cabaret, where the orchestra is under the conductorship of Mr. Walter Smith.

The church service for Sunday will be relayed from St. Mary's Cathedral, the preacher being Canon P. James and the organist Mr. E. Randall. This will be followed by a relay of the municipal organ recital from the Town Hall. Mr. Maughan Barnett being the organist.

DANCE FEATURE FROM 3YA

After dancing all over New Zealand and Australia in cabarets, picture theatres—he was with J. C. Williamson Ltd. for 18 months and toured with "The Cabaret Girl"—vaudeville and in revues. Mr. Cyril Poulton has, in the four years during which he has been resident in Christchurch, become established as one of the most successful teachers of the terpsichorean art that the city has known. Therefore the news that he has been engaged by 3YA to broadcast dancing lessons by radio will be received with pleasure. He will give a series of eight lessons, covering four dances, and the tuition will be complete. Listeners desiring to learn are advised to take notes as the lessons proceed, and Mr. Poulton will reply to all questions, which listeners will be able to ask him in writing. The first lesson will be given on Friday, October 28. Preliminary information will be given in each issue of the "Radio Record" before the lessons.

FEATURES AT 2YA

FROST FIGHTING.

"Frost Fighting" is to be the subject of a special address to be broadcast from 2YA by Dr. Kidson, of the Government Weather Bureau and Meteorological Office, at 7.40 p.m., on Saturday, October 15. Delivered as it will be so opportunely, just before the coming of the frosts, Dr. Kidson's expert advice will doubtless be greatly appreciated by orchardists, and, indeed, by all interested in fruit-growing.

Splendid afternoon sessions have been arranged at 2YA next week. Ladies are being well catered for with lectures on fashions, cooking, and care of the hair. There will also be an address on "First Aid."

Miss Dorothy Dudson, mezzo-soprano, who is to sing at 2YA on Monday, is a well-trained vocalist, whose very pleasing voice has been greatly appreciated by concert patrons.

For the first time in New Zealand a piano quartet will be broadcast, and on this occasion the instrumentalists, Mrs. Flora Peyton, Misses Dorothy Tighe, and Gwen Shepperd, and Mr. Clement Howe, will present two attractive quartet numbers. These items should go well on the air.

Mr. Harry Wilson's pleasing light baritone voice will be heard in specially selected solos at 2YA on Monday. Mr. Wilson is well known in concert circles, having numerous successful appearances to his credit.

Mrs. Philip Clarke, a dramatic contralto with English training and experience, will make her first appearance at 2YA on Monday. She will be heard in several operatic numbers.

Mr. W. J. Kay, the soprano cornet soloist of the Wellington Municipal Tramways Band, is an established favourite at 2YA. He has a wide experience with both band and orchestra, and plays with good tone and marked brilliance. He will be heard again on Monday.

Mr. Roy Hill, appearing on 2YA's programme on Monday, is one of Wellington's favourite tenors, always popular on the concert platform. He has an excellent radio voice, which has met with wide appreciation.

Mr. Stanley Warwick, one of Wellington's foremost elocutionists, and a well-known adjudicator at competitions throughout the Dominion, has been successfully broadcast on several occasions. On Monday evening at 2YA he will be heard in an excerpt from Shakespeare, and the first of a series of studies from Kipling.

Lieutenant Gordon Burt, who was one of the British Arctic Expedition of 1925, will continue his interesting talks at 2YA on Monday, his topic being "Dangerous Experiences in and Amongst the Ice Around Franz Josef Land."

The Savage Club Orchestra will be heard from 2YA Studio for the first time on Tuesday. Hitherto, this talented combination has been relayed from their practice room. They will this evening contribute largely to an interesting programme, specially arranged to cater for all musical tastes. Their numbers will range from ever-popular Gilbert and Sullivan selections to more classical compositions. The instrumental solos for the evening will be presented by members of the orchestra, and will include a flute solo by Mr. Tasker, a piano, 'cello, and violin trio by Messrs. Logan, Booth, and Thomas.

Mr. Byron Brown, one of the ablest exponents of Shakespeare in the Dominion, will present two stirring items at 2YA on Tuesday—"Hotsour's Defence of Henry VIII" and "Henry V at Harfleur." Listeners may be assured of a recital of outstanding merit.

Mr. William Renshaw, tenor, and Miss Nora Greene, contralto, no longer require introduction to wireless listeners in New Zealand. Their previous efforts from 2YA have been greatly appreciated, and for Tuesday evening they have chosen some really delightful numbers.

In the early evening session at 2YA on Tuesday Mr. N. R. Jacobsen will con-

SPORTING

RACING NEXT WEEK

WELLINGTON R.C. MEETING.

The Wellington Racing Club's Spring meeting, which commences at Trentham on Saturday, October 22, will be broadcast by 2YA, and, if conditions are favourable, rebroadcast by 3YA and 1YA.

The Broadcasting Company's official Sporting Announcer will be at the microphone on this occasion. His racy and rapid summing up of the position is always good. Expert sporting men who have frequently listened unhesitatingly state that Mr. Allardyce is the "best in Australasia" in this field.

AUCKLAND TROTS

BROADCASTING REFUSED.

THERE WILL BE NO BROADCAST OF THE AUCKLAND TROTTER CLUB'S MEETING WHICH TAKES PLACE ON SATURDAY, OCTOBER 15 AND WEDNESDAY, OCTOBER 19, THE CLUB HAVING DECLINED TO GRANT PERMISSION TO THE BROADCASTING COMPANY.



MRS. D. W. STALLARD.

A popular artist on 3YA. She sings the good old songs, which will always be favourites. Mrs. Stallard is a Southlander. Her father was a chorister at home, and from him Mrs. Stallard inherited her vocal gifts. For some years Mrs. Stallard lived in Australia, but for the last 18 years has been in Christchurch, during which period she has been a member of the Rugby Street Methodist Church choir. She has sung for the Orpheus Society, and at a performance of "The Messiah" by the combined choirs, a few years ago, she was contralto soloist. She has sung for many concert parties. Mrs. Stallard will sing at 3YA next week.

During the afternoon session at 2YA on Thursday, in addition to the usual talk on Fashions, Miss McKeown, of Messrs. Rolleston Ltd., Hair Specialists, will have something interesting to say concerning the care of the hair.

Mr. Johannes Anderson, Librarian at the Turnbull Library, will deliver another of his delightfully entertaining and instructive lectures on "Native Birds."

Mrs. H. Dawson, soprano, who is to sing at 2YA on Thursday, has had much experience on the concert platform.

Mr. Eric North, elocutionist, will be on the air on Thursday at 2YA. He will present a couple of light and entertaining numbers. He has a good radio voice, and clear diction, and his efforts are sure to be appreciated.

Miss Eleanor Geere Watson, contralto, who is to sing at 2YA on Thursday, is a cultured vocalist, possessing a very pleasing voice of wide range. She has had the honour of singing at the Lyceum Club, before Her Excellency Lady Alice Ferguson, Mrs. Coates, Sir James Allen, and Mr. Alexander Watson.

3YA ATTRACTIONS

Rebroadcasts of 2YA by 3YA have been very successful of late. The afternoon transmissions of the football descriptions and portions of evening concerts came through excellently, and pleased crystal set users in Christchurch immensely. Some more rebroadcasts are promised.

Sir Walter Scott, says the old wizard in "The Lay of the Last Minstrel," "He knew, by the streamers that shot so bright, That spirits were riding the northern light."

But the Rev. B. Dudley, F.R.A.S., will have a different explanation to give when he speaks at 3YA on October 27. His subject is, "Polar Lights and their Meaning."

Two little lassies will take their places at the big studio piano at 3YA on Wednesday evening to play duets. "They are so good that I just had to put them on the main programme, instead of in the children's session," says the programme organiser. He says they will be a treat for the adults. The girls, who are pupils of Miss Cartwright, L.A.B., have won first prizes at competitions with the two items they will play at 3YA, namely, "Hexantanz" (Witch's dance) and "Spanish Dance." The girls are Miss Ellie Holland and Miss Marjory Carwell-Cooke.

Mr. E. J. Bell, Librarian at Christchurch Public Library, will speak at 3YA on Monday evening about books.

Mr. K. Doherty, well known as an entertainer in Christchurch, will play and sing at 3YA on Monday. She is a very accomplished pianiste, and she possesses a fine mezzo-soprano voice.

Miss Bessie Stallard, a daughter of Mrs. D. W. Stallard, a very popular singer at 3YA, faces the microphone for the first time on Monday. She has a nice light mezzo-soprano voice.

Captain Findlay's third talk on "Flying" will deal with future prospects of aviation, with special reference to New Zealand.

Mr. E. R. Pitman, first tenor of the Beckenham Quartet, will make his initial appearance as a soloist at 3YA on Wednesday.

Mr. Robert Samson, of Beckenham, a competitions winner, will sing his first radio song on Wednesday at 3YA.

Miss R. Lucas (mezzo-soprano), a winner at competitions and a member on the Edgeware Road Baptist Church choir, will be heard at 3YA on Monday. She will also be associated with Miss N. Pembertly (who makes her first appearance in radio) in a duet.

Mr. W. H. Honey, organising superintendent of New Zealand-made Preference League, will lecture on the "Pageant of Industry."

The programme for Friday evening's studio concert at 2YA has been arranged by Mr. William Renshaw, one of Wellington's most popular tenors. The contributors will include, in addition to Mr. Renshaw, such favourite performers as Miss Myra Sawyer, Miss Nora Greene, Mr. William Boardman, Mr. Claude Tucker, and Mr. Barton Ginger. The last-named gentleman will, as is his custom, entertain with sparkling musical monologues. Mr. Claude Tucker will again demonstrate his artistry as a flautist, while the talented vocalists of the party will be heard in both concerted and solo numbers.

The editor-announcer's topic for the evening will be relevant to the historic anniversary—Trafalgar Day—and his lecture will be based on authoritative data supplied by the Navy League.

Mr. H. C. Trim, bass baritone, to sing at 2YA on Saturday, will be heard in a couple of light numbers specially suited to his voice, and also, later in the evening, in a duet with Miss Iris Trim.

Mr. Douglas Stark, Wellington's "Harry Lauder" will entertain with popular Scottish humorous songs and patter at 2YA on Saturday. Mr. Stark is an established favourite with radio listeners.

Mr. J. King, a leading cornetist, will on Saturday at 2YA again delight listeners with selections from his extensive repertoire. This will be Mr. King's second appearance before the microphone. His first effort won for him many admirers.

At 9 o'clock on Saturday at 2YA Miss Phyllis Bates will give a lecture entitled "A Waltz Lesson." Miss Bates is a well-known teacher of dancing, and is recognised as the Dominion's leading teacher of ballroom dancing.

Mr. Robert Nairn, of the old-established firm of Messrs. Nairn and Sons, nurserymen, will speak at 3YA on Wednesday concerning gardening.

Miss Doris Irvine, who recently sang very acceptably at 3YA, will make her second appearance on Wednesday. She is a pupil of Mr. Roland Boot.

Dr. Hilgendorf, biologist at Lincoln College, will speak to farmers on Thursday on "Recent Investigation of Grasses." Dr. Hilgendorf is an acknowledged authority on all subjects pertaining to farming.

Mr. R. S. Moloney, of the Public Trust Office, Christchurch, and a brother of Mr. J. R. Moloney, solicitor, whose talks on Rugby were so popular at 3YA, will sing at 3YA on Thursday. During the war he was a member of one of the best regimental revue companies and after the armistice he sang a great deal in Paris. He is one of the favourite baritone singers at 3YA.

Miss Nellie Lowe, one of the radio "stars" of Christchurch, will sing again on Thursday. On this occasion one of her items will have a 'cello obbligato played by Mr. Harold Beck.

Miss Naari Hooper, L.T.C.L., a very clever young elocutionist, will recite at 3YA on Thursday.

Some favourite old songs will be sung at 3YA on Friday evening by Mr. W. Bradshaw (tenor) and Mrs. Stallard.

One of the songs which Mrs. Stallard will sing at 3YA on Friday evening will be "Power of Love" from Balfe's opera "Satanella."

Mr. Ian Perrin is the right class of entertainer for a Saturday evening. He is a very clever novelty pianist, who can play any classical music or improvise and extemporise.

Mr. Eurice Cotton, who is to sing at 3YA on Saturday, won the Alice Gurner Memorial Medal in 1927, a very coveted distinction in the musical world of Christchurch.

Mr. Cyril Rislworth, a popular baritone, and sing at 3YA on Saturday evening.

Mr. E. A. Sargent, who is an established favourite at 3YA, has been engaged again for Saturday evening, when he will give more "songs at the piano," including two which he will repeat by special request.

An address on "Rules of the Road" is to be given at 3YA soon by Mr. R. W. Robinson, traffic inspector for Riccarton.

Portion of Thursday evening's concert at 3YA will be supplied by the Christchurch Liedestafel. This will be the first time that items by this society have been broadcast. The occasion will be "Ladies' Night," and the broadcast will start at 9.20. A splendid programme will be given.

A young Maori singer is to appear soon at 3YA. Her audition test at the studio proved that a real treat is in store for listeners. The young lady is Miss Eileen Grennell.

4YA ITEMS

The Rev. Tulloch Yuille, M.A., will be the preacher when 4YA broadcasts the service from Knox Church on Sunday, October 16, commencing at 6.30 p.m. A studio concert will follow immediately after the church service.

On Tuesday evening a first-class programme will be heard from 4YA, when some well-known Dunedin singers will take part. These include: Miss Peggy Neil (mezzo-soprano), Mr. J. Black (tenor), Miss Tui Salt (mezzo-soprano), Mr. C. E. Gibbons (flautist), Mr. W. Le Gal (violinist). Several recitals will be given by Miss T. Jefferson.

Pastor W. D. More will entertain with "Dog Stories" from 4YA on Tuesday.

Artists who will be heard from 4YA on Thursday evening are: Miss Agnes Holmes (mezzo-soprano), Miss Gwen Cooper (contralto), Mr. Alex. T. Blyth ('cello), Mr. A. J. Frye (violinist). At 9.15 a portion of the Archerfield pupils' concert will be relayed from His Majesty's Theatre.

On Saturday night, at 4YA, Miss Olga Burton (soprano) and Mr. Alex. Snell will be the vocalists, and Mr. Norman Scurr and the Misses M. Watts and A. Wilson will be the instrumentalists. Mr. A. E. Wilson, of the Government Tourist Department, will commence a series of addresses, the first being entitled "The Tourist Resorts of Otago." Dance music by Ern. Beecham will be relayed from the Savoy.

On Sunday, October 23, the service will be relayed from St. Paul's Cathedral. The preacher will be Rev. Canon Neville. A studio concert will follow at 8 p.m.

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Full Programmes for Next

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NEWS AND NOTES

(By "Switch.")

Mica is one of the most efficient insulators known to science. If it requires 100,000 volts to puncture porcelain 1 centimetre in thickness, mica of the same thickness would require 1,000,000 volts to pierce it.

All home-builders of crystal sets should try placing a small fixed condenser between the two 'phone terminals. This generally results in rather stronger reception. A fixed condenser of .001 microfarads will, as a rule, prove the best.

One stage of radio frequency amplification will greatly increase the range of a receiving set. A signal which is too weak to operate the detector valve cannot be amplified by audio-frequency valves.

Never hold a lighted match near the top of a wet battery. The gas given off by a wet battery is highly inflammable as it comes straight from the battery, but when it mixes, or is diluted with air, it becomes harmless.

A good make-shift "earth" can be fixed up by country dwellers who cannot obtain the use of a waterpipe, and is often in demand. A few yards of wire-netting, buried flat-wise about two or three feet below the surface will make a good earth. The ground should be kept moist, and the wire running to the earth terminal of the set should be firmly soldered to the wire-netting. The latter should be placed right underneath the aerial if possible, but this is not at all essential.

When using galena as a crystal detector the cat's whisker wire may also be of silver or brass as well as copper. If you want something more aristocratic use iron pyrites, which requires a cat's whisker with a gold point. Galena and a silver wire, however, take a lot of beating for sensitivity.

Cheap celluloid batteries should be shunned. After a little while celluloid batteries of the cheaper type commence to froth inside, and when on charge the froth comes out of the top so that the liquid is lost and this needs replenishing each time.

The effectiveness of an aerial is reduced if the resistance is high. High-frequency or radio-frequency currents flow on the surface of a conductor, largely, and therefore the surface area of an aerial should be as large as possible. Therefore use a stranded aerial in preference to a single wire.

It is wise to purchase a wet battery larger than appears necessary. It is better practice to fit an accumulator of ample size than one which has to be driven to its utmost capacity. The former can be kept in perfect condition by numerous small charges, whereas the under-powered battery will always have to be recharged to its full capacity and with great frequency.

The inverted L type of aerial is to be preferred to the T aerial, as it gives a greater effective length for the same amount of wire. The effective electrical length of an aerial is the distance from the farthest point of the aerial wire to the place where the lead-in is attached, plus the length of the lead-in itself. With the T type of aerial the lead-in wire should be attached to the very centre of the aerial.

The aerial wire and the earth act as two plates of a condenser, and the air between them is electrically stressed whenever currents surge up and down the aerial. If the earth connection is poor, therefore, little energy is absorbed from the wireless waves.

A great advantage in using a variometer for the tuning device of a crystal set is that there are no "dead-end" effects in the variometer. No tapings or inductances are necessary; there is also smooth and infinite adjustment between minimum and maximum positions, and the variometer is a robust mechanism. But get the correct-sized variometer or most efficient results.

The purpose of a small fixed condenser across the 'phones of either a crystal or valve set is to improve the quality and strengthen the volume of reception. The condenser is charged and discharged periodically with the pulsating currents rectified by the detector. It likewise discharges periodically into the 'phones. This arrangement gives a smoother note than could otherwise be obtained.

Field strength measurements made in the eighth radio district of U.S.A. by Radio Supervisor S. W. Edwards have revealed the now oft-confirmed fact that location is of great importance as aerial power in determining the service area of a broadcasting station. The most serious factor which prevents equal radiation in all directions from a radio aerial is the shadow effect of large surrounding masses of both conducting and non-conducting materials. As the cost of transmitting installations goes up, portable transmitters will be used to determine the characteristics of any transmitting point before a station is erected. It appears that irregularities in transmission characteristics, due to location, can be analysed with a portable low-power transmitter and that great increase of power does not change the general nature of shading effects. It is not unusual to find that a broadcasting station of considerable power may serve only fifty or seventy-five miles in one direction, but is easily heard four or five hundred miles in another.

Sunday, October 16th

1YA AUCKLAND (333 METRES)—SUNDAY, OCTOBER 16.

6.55 p.m.: Relay of church service from St. David's Presbyterian Church. Preacher, Rev. D. C. Herron. Organist, Mr. E. C. Craston.
8.30: Relay of organ music from Auckland Town Hall. Organist, Mr. Maughan Barnett.
9.30: A thought.
9.31: Close down.

2YA WELLINGTON (420 METRES)—SUNDAY, OCTOBER 16.

6.55 p.m.: Relay of evening service from the St. Gerard's Roman Catholic Church, Hawker Street. Preacher, Rev. Father Campbell. Choirmaster, Mr. F. G. Oakes.
8.15: Relay of the band concert of the Port Nicholson Silver Band from the Grand Opera House.

3YA CHRISTCHURCH (306 METRES)—SUNDAY, OCTOBER 16.

5.45 p.m.: Song service from 3YA Studio, by Uncle Sam.
7.30: Relay of evening service from Sydenham Methodist Church (Sunday School anniversary). Preacher, Rev. H. J. Odell. Conductor, Mr. G. Rawlinson. Organist, Mr. L. G. Rickard.
Vocal solo—Miss Ada Anderson, "But the Lord is Mindful of His Own," Mendelssohn.
Organ solo—Mr. L. G. Rickard.
Vocal solos, duets, and concerted items by the scholars of the school.
8.15: Rebroadcast 2YA, Wellington, conditions permitting.
Close down.

4YA DUNEDIN (463 METRES)—SUNDAY, OCTOBER 16.

6.30 p.m.: Relay of service from Knox Church. Preacher, Rev. Tulloch Yuille. Organist, Mr. W. Paget Gale.
8.0: Studio concert.
9.0: Close down.

Monday, October 17th

1YA AUCKLAND.—SILENT.

2YA WELLINGTON (420 METRES)—MONDAY, OCTOBER 17.

3 p.m.: Gramophone recital and relay of Manuel Hyman's Exhibition Band from the Adelphi Cabaret.

3.30: Mr. C. R. Stevens, "Household Devices and Comforts."
3.50: Gramophone recital.
5.0: Close down.
6.0: Children's hour—Aunt Jo.
7.0: News session and market reports
7.40: Lecturette—Mr. J. W. Collins, Secretary of Industries and Commerce Department, "A Visit to the Bureau of Standards, Washington, U.S.A."

8.0: Chimes of the General Post Office clock, Wellington.
8.1: Instrumental—Studio Orchestra, selected.
8.11: Mezzo-soprano solo—Miss Dorothy Dudson, "Lieti Signor" (L'Huguenots), Meyerbeer (Boosey).

8.15: Piano quartet—Mrs. Flora Peyton, Misses Dorothy Tighe, Gwen Shepherd, and Mr. Clement Howe, "Valse Brillante," Moskowski (Augener).

8.20: Baritone solo—Mr. Harry Wilson, "Onaway, Awake, Beloved," Cowen (Oliver Dilon).

8.24: Instrumental—Studio Orchestra, selected.
8.34: Contralto solo—Mrs. Philip Clarke, "O Mio Fernando" (La Favorita), Donizetti (Boosey).

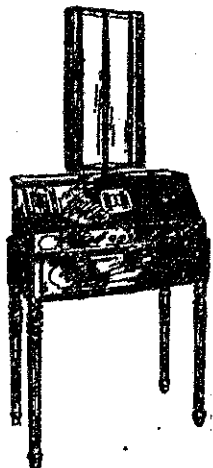
8.38: Cornet solo—Mr. W. J. Kay, "Sweet Spirit, Hear My Prayer," arr. by Weide (Wright and Raines).

8.42: Tenor solos—Mr. Roy Hill, Old English songs, (a) "My Lovely Celia," arr. by Lane Wilson; (b) "Phyllis Hath Such Charming Graces" (Boosey).

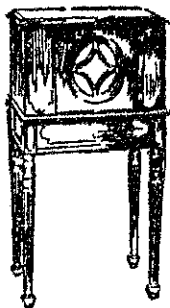
8.47: Violin solo—Mr. Allon Carr, selected.
8.52: Elocution—Mr. Stanley Warwick, "King Henry at Agincourt," Shakespeare; "The Secret of the Machines," Kipling.

9.2: Weather report.
9.3: Instrumental—Studio Orchestra, selected.

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9.13: Lecturette—Lieut. Gordon Burt, "Dangerous Experiences in and amongst the Ice Around Franz Josef Land; Shipwrecked amongst Uncharted Rocks and Homeward Bound."
9.28: Mezzo-soprano—Miss Dorothy Dudson, "Ah! se tu Dormi Svegliati," Vaccai (Boosey).
9.32: Piano quartet—Mrs. Flora Peyton, Misses Dorothy Tighe, Gwen Shepherd, and Clement Howe, "March No. 1, Op. 51," March No. 6, Op. 40," Schubert (Augener).
9.36: Baritone solos—Mr. Harry Wilson, (a) "I Love You Truly," Carie Jacobs; (b) "A Little House," Bond, Aylward (Fred. Harris-Collard and Montrel).
9.40: Violin solo—Mr. Allon Carr, selected.
9.44: Contralto solo—Mrs. Philip Clarke, "Habanera" ("Carmen"), Bizet (Boosey).
9.48: Cornet solo—Mr. W. J. Kay, "The Holy City," Stephen Adams (Boosey).
9.54: Tenor solo—Mr. Roy Hill, "Where My Caravan has Rested," Coates (Chappell).
9.58: Instrumental—Studio Orchestra, selected.

3YA CHRISTCHURCH (306 METRES)—MONDAY, OCTOBER 17.

3 p.m.: Afternoon concert session.
6.0: Children's session, by Uncle Jack.
7.15: News and reports.
7.30: Talk—Mr. E. J. Bell, "Books."
8.0: Chimes. Studio concert by Band of 1st Canterbury Regiment Infantry, under conductorship of Lieut. C. H. Hoskins, and assisting 3YA artists.
8.1: March—Band, "Fernando," Greenwood (Richardson).
8.4: Mezzo-soprano solo—Miss K. Doherty, "Oh! Mistress Mine," Quilter (Boosey).
8.8: Fantasia—Band, "Country Life," Le Duc (Wright and Round).
8.15: Mezzo-soprano solo—Miss R. Lucas, "Play Make-Believe," Weber (Schirmer).
8.19: Polk—Band, "Besses o' the Barn," Clements (Boosey).
8.23: Mezzo-soprano solo—Miss Bessie Stallard, "Wait," d'Hardelot (Chappell).
8.27: Valse de Triump—Band, "A Paeon of Victory," Francois (Boosey).
8.33: Talk—Captain Findlay, of Wigram Aerodrome, "Future Prospects of Flying, With Special Reference to New Zealand" (third of series).
8.48: Selection—Band, "Empireland," Douglas (Feldman).
8.56: Vocal duet—Misses R. Lucas and N. Penberthy, "Twilight," Nevin (Ditson).
9.0: Relay of orchestral selections from Strand Picture Theatre String Quartet, under conductorship of Mr. Harry Ellwood.
9.15: Pianoforte solo—Miss K. Doherty, "Shepherds Hey," Grainger (Schott).
9.19: March—Band, "Hanoverian," Schultz (Hawkes).
9.22: Mezzo-soprano solo—Miss R. Lucas, "The Dawn Has a Song," Phillips (Chappell).
9.26: Selection—Band, "Gipsy Love," Lehar (Chappell).
9.32: Mezzo-soprano solo—Miss Bessie Stallard, "Advice," Carew (Chappell).
9.36: Grand march—Band, "King's Bodyguard," Hume (Boosey).
9.40: Vocal duet—Misses Lucas and N. Penberthy, "Farewell to Summer," Johnson (Gould and Boulter).
9.44: Mezzo-soprano solo—Miss Bessie Stallard, "For You," Montague (Ditson).
9.48: Overture—Band, "The Silver Star," Greenwood (Richardson).
9.52: Mezzo-soprano solo—Miss K. Doherty, "Farewell," Liddle (Boosey).
9.56: March—Band, "Rauparaha," Lithgow (Lyons).
10.0: God Save the King. Close down.

4YA DUNEDIN.—SILENT.

Tuesday, October 18th

1YA AUCKLAND (333 METRES)—TUESDAY, OCTOBER 18.

3 to 4.30 p.m.: Afternoon session—Selected studio items.
6.30: Children's session—Aunt Betty.
7.15 to 7.45: News and information.
8.0: Chimes.
8.1: Relay of overture from Majestic Theatre. Mr. J. Whitford-Waugh, conductor.
8.10: Quartet—Lyric Quartet, "O, Peaceful Night."
8.18: Humour—Mr. Alan McElwain, "Nell."
8.23: Tenor solo—Mr. Herbert Richards, "The Hawk."
8.27: Quartet—Lyric Quartet, "On Wings of Song," Mendelssohn; "De Sandman," Parker.
8.35: Duet—Messrs. Thomas and McElwain, "The Gendarmes," Sorel (Boosey).
8.40: Tenor solo—Mr. A. H. Ripley, "Mifanwy," Forster (Boosey).
8.44: Bass solo—Mr. E. Thomas, "Off to Philadelphia," Haynes.

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Week - All Stations - to Oct. 23

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- 8.49: Soprano solo—Miss Alma McGruer, "Prince Charming."
8.54: Quartet—Lyric Quartet, (a) "Riveries," Old Scotch (Allan); (b) "Afton Waters," Hume.
9.1: Weather report.
9.2: Relay from Majestic Theatre.
9.12: Trio from "Faust"—Miss Alma McGruer and Messrs. Thomas and Ripley, "Holy Angels," Gounod (Chappell).
9.22: More Humour—Mr. A. McElwain, "Imitations."
9.27: Tenor solo—Mr. H. Richards, "So Fair a Flower," Lohr (Boosey).
9.30: Bass solo—Mr. E. Thomas, "Song of the Bow," Aylward.
9.34: Excerpts from "Maritana"—Miss A. McGruer and Messrs. Ripley and Thomas, introducing: "Alas, Those Chimes," Wallace (Pitman-Hart), "Let Me Like a Soldier Fall," and "Turn on, Old Time."
9.46: Duet—Messdames Richards and Thomas, "The Two Beggars," Wilson (Rider and Walsh).
9.51: Soprano solo—Miss A. McGruer, "Mimi's Song" from "La Boheme," Puccini.
2.55: Quartet—Lyric Quartet, (a) "Sleep. Baby. Sleep"; (b) "Cos I'd Nothing Else to Do."
At the piano—Mrs. A. H. Ripley.
10.1: A thought.
10.2: God Save the King.

2YA WELLINGTON (420 METRES)—TUESDAY, OCTOBER 18.

- 3 p.m.: Gramophone recital.
3.30: Lecturette—Madame Barrington, "Electric Cooking."
4.0: Gramophone recital and relay of Manuel Hyman's Exhibition Band from the Adelphi Cabaret.
4.15: Lecturette—Dr. L. A. Line, "First Aid."
5.0: Close down.
6.0: Children's hour—Uncle Jasper.
7.0: News session and market reports.
7.35: Lecturette—Mr. N. R. Jacobsen, "The Story of the Grandfather Clock and the Modern Watch."
8.0: Chimes of the General Post Office clock, Wellington.
8.1: Instrumental—Savage Club Orchestra, selection: "Slavonic Rhapsody," Friedman (Carl Fischer).
8.8: Tenor solo—Mr. William Renshaw, "Serenade," Schubert (Boosey).
8.12: Instrumental—Savage Club Orchestra, selection from "Iolanthe," Sullivan (Carl Fischer).
8.19: Flute solo—Mr. W. J. Tasker, selected.
8.24: Instrumental—Savage Club Orchestra, march: "Old Comrades," Teike (Carl Fischer).
8.29: Contralto solos—Miss Nora Greene, (a) "Drumadoon," Sanderson; (b) "Billy Boy," Terry (Boosey-Curwen).
8.33: Instrumental—Savage Club Orchestra, overture: "William Tell," Rossini (John Church).
8.40: Elocution—Mr. Byron Brown, "Hotspur's Defence of Henry VIII," Shakespeare.
8.44: Instrumental—Savage Club Orchestra, selection: "Poupee Valsante," Pol-dini (Carl Fischer).
8.48: Trio—Messrs. Logan, Booth, and Thomas, selected.
8.55: Lecturette—Mr. H. S. South, "Books: Grave and Gay."
9.10: Weather report.
9.11: Instrumental—Savage Club Orchestra, waltz: "Blue Danube," Strauss (Carl Fischer).
9.18: Tenor solos—William Renshaw, (a) "Linden Lea," Williams; (b) "Sigh No More," Aikin (Boosey-Stainer and Bell).
9.24: Instrumental—Savage Club Orchestra, overture: "Morning, Noon, and Night," Suppe.
9.31: Instrumental—Savage Club Orchestra, march: "Jollity" (Church-Hawkes).
9.36: Elocution—Mr. Byron Brown, "Henry V at Harfleur," Shakespeare.
9.40: Instrumental—Savage Club Orchestra, selection: "Coronach," Barrett.
9.45: Instrumental—Savage Club Orchestra, selection: "Lion de Bal" (Hawkes-Fischer).
9.50: Contralto solos—Miss Nora Greene, (a) "O, Mistress Mine," Quilter; (b) "Blow, Blow, Thou Winter Wind," Quilter (Boosey).
9.55: Instrumental—Savage Club Orchestra, selection: "Scenes Alsaciennes," Saint Saens (Carl Fischer).
10.4: Instrumental—Savage Club Orchestra, march: "On the Mall," Goldman (Fischer).

3YA CHRISTCHURCH—SILENT.

4YA DUNEDIN (463 METRES)—TUESDAY, OCTOBER 18.

- 3 p.m.: Town Hall chimes.
3.1: His Master's Voice recital.
3.16: Address by Miss M. Puechegud on "Interior Decoration."
3.30: Studio music.
4.0: Book reviews, by Mr. H. Greenwood, Librarian, Dunedin Athenaeum.
4.15: His Master's Voice recital.
4.30: Close down.
7 p.m.: Town Hall chimes.
7.1: Children's session—Big Brother Bill.
8.0: Town Hall chimes. Studio concert.
8.1: Orchestral selections, under Mr. L. D. Austin, relayed from the Octagon Theatre.

- 8.10: Mezzo-soprano solos—Miss Peggy Neil, (a) "A Memory," White; (b) "When the Swallows Homeward Fly," White.
8.16: Flute solo—Mr. C. E. Gibbons, "La Fille du Regiment," Donizetti.
8.22: Recital—Miss T. Jefferson, "The Stage Queen," Wilcox.
8.26: Tenor solos—Mr. J. Black, (a) "The Carnival," Molloy; (b) "Phoebe," Cirbal.
8.32: Violin solo—Mr. W. Le Gal.
8.37: Mezzo-soprano solos—Miss Tui Salt, (a) "Serenade," Gounod; (b) "Waiata Poi," Hill.
8.44: Address—Pastor W. D. More, "Dog Stories."
9.0: Mezzo-soprano solos—Miss Peggy Neil, (a) "Starlight and Silver Sea"; (b) "When You Come Home."
9.7: Flute solo—Mr. C. E. Gibbons, "Der Freischutz," Weber.
9.12: Recital—Miss T. Jefferson, "Marriage," O'Neill.
9.16: Tenor solos—Mr. J. Black, (a) "Mona," Adams; (b) "Heart of a Rose," Methven.
9.23: Violin solo—Mr. W. Le Gal.
9.28: Flute solo—Mr. C. E. Gibbons, "Il Trovatore," Verdi.
9.35: Mezzo-soprano solos—Miss Tui Salt, (a) "Villanelle," Dell Acqua; (b) "Sing, Joyous Bird."
9.41: Recital—Miss T. Jefferson, "The Sisters."
9.46: Violin solo—Mr. W. Le Gal.
9.50: Orchestral selections from the Octagon Theatre.
10.0: Close down.

Wednesday, October 19th

1YA AUCKLAND (333 METRES)—WEDNESDAY, OCTOBER 19.

- 3 to 4.30 p.m.: Afternoon session—Selected studio items.
7.15 to 7.45: News and information session.
8.0: Chimes.
8.1: Relay of overture from Strand Theatre—Eve Bentley conducting.
8.10: March—Auckland Artillery Band, "The Cossack," Rimmer.
8.14: Overture—Auckland Artillery Band, "Tancredi," Rossini.
8.23: Soprano solo—Miss Laura Walker, "Softly Awakes My Heart," Saint-Saens (Durand).
8.27: Band—Auckland Artillery Band, "The Unfinished Symphony," Schubert.
8.40: Trombone solo—A. O. Finlay, "Passing Hence."
8.45: Humorous song—Mr. Ned Fort, "House Hunting."
8.49: Selection—Auckland Artillery Band, "No, No Nanette," Youmans.
9.2: Weather report.
9.3: Intermezzo—Auckland Artillery Band, "In a Persian Market," Ketchly.
9.12: Soprano solo—Miss L. Walker, (a) "Carrissima," A. Penn (S. Bloom); (b), "When Love is Kind," Moore (Boosey).
9.20: Selection—Auckland Artillery Band, "Maritana," Wallace.
9.34: Band—Auckland Artillery Band, selected.
9.48: Humour—Mr. Ned Fort, "The Cricket Match at Killaloe."
9.52: March—Auckland Artillery Band, "Independencia," Hall.
Bandmaster—Mr. E. Tregilgas.
God Save the King. Close down.

2YA WELLINGTON—SILENT.

3YA CHRISTCHURCH (306 METRES)—WEDNESDAY, OCTOBER 19.

- 3 p.m.: Afternoon concert session.
6.0: Children's session, by Uncle Sam.
7.15: Addition stock market reports and news.
7.30: Talk—Mr. Robert Nairn, "Gardening."
8.0: Chimes. Relay of orchestral selections from Grand Picture Theatre Orchestra, under conductorship of Mrs. Black.
8.15: Soprano solo—Miss Doris Irvine, "My Prayer," Squire (Boosey).
8.19: Violin solo—Miss Irene Morris, "Air" from "Concerto," Goldmark (Schweers and Hearke).
8.24: Tenor solo—Mr. E. R. Pitman, "The Garden of Afterwards," Cleaver (Cramer).
8.28: Pianoforte duet—Misses Ellie Holland and Marjory Carwell-Cooke, "Hexentanz," Macdowell (Bosworth).
8.32: Baritone solo—Mr. Robert Samson, "The Heart Bowed Down" from "Bohemian Girl," Balfe (Boosey).
8.36: Instrumental trio—Christchurch Broadcasting Trio, "Rondo alla Turca" from "Second Trio," Hummel (Litoff).
8.46: Soprano solo—Miss Doris Irvine, "O Mio Fernando," Donizetti (Ascherberg).
8.50: Violin solo—Miss Irene Morris, "Scherzo," Dittersdorf-Kreisler (Schott).
8.55: Tenor solo—Mr. E. R. Pitman, "Mountain Lovers," Squire (Boosey).
9.0: Relay of orchestral selections from Grand Picture Theatre.
9.15: Talk—Mr. Leo Hayward, "Characters One Meets in the Southern Lakes of Mt. Cook District."
9.30: Baritone solo—Mr. Robert Samson, "The Prologue" from "Il Pagliacci," Leoncavallo (Ascherberg).
9.35: Pianoforte duet—Misses Ellie Holland and M. Carwell-Cooke, "Spanish Dance," Moszkowsky (Augener).
9.39: Soprano solo—Miss Doris Irvine, "The False Prophet," Scott (Allan).
9.43: Tenor solo—Mr. E. R. Pitman, "Joggin' Along the Highway," Samuel (Chappell).

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RADIO LITERATURE

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The difference between success and failure of a receiving valve set lies in the correct amount of B battery voltage applied to the detector valve. The amount of B battery voltage on the valve must be correct for the particular type and make of valve used. Read the instructions which accompany the valve, and also experiment for best results.

The best method of connecting the gridleak depends on the valve itself. Some valves work more efficiently with a negative grid potential, while others require a positive potential. The usual arrangement with a single detector valve is to place the leak in parallel with the grid condenser and connect the positive L.T. to earth. For H.F. amplification it is generally correct to place the leak between the grid and negative L.T. In multi-valve sets the detector valve has its leak placed between the grid and positive L.T., thus assisting rectification.

Conversation by radio telephone between a mail aeroplane pilot and a test station of the United States Bureau of Standards at Bellefonte, Pa., U.S.A., has been successfully maintained over distances of 150 miles, it was stated recently in a Commerce Department report.

A little while ago the Americans decided to substitute the word "radio-cast" for "broadcast," and the idea was largely adopted. Lately, however, the word "broadcast" has been re-adopted by many papers, owing, probably, to the euphony of the word as compared with "radio-cast."

Some concern has been expressed at Washington over the information that Cuba contemplates commissioning a number of high-powered stations that might cause trouble to broadcasters on the Southern and Eastern coasts of the United States. This question also will have consideration by the October International Radio Conference.

Advertising through radio announcements over Station WGL (Secaucus, New York State) costs 47.50 dollars (£9 10s.) for twenty-four announcements of 100 words each, according to a contract which the Theatre Sales Company says it made with the International Broadcasting Company.

On September 1 the well-known Yankee radio station, WGY, Schenectady, announced that the Federal Radio Commission had permitted it to use 100,000 watts of power in transmitting its regular programmes, beginning that evening. The station has been experimenting with the superpower for some time to determine whether the increased output would interfere with other broadcasters.

A peculiar blanket on short-wave reception was experienced in the North of the United States from about August 19 till August 22. A representative of the Radio Corporation said that the peculiarity was due to the Aurora Borealis. Nothing could be heard of short-wave transmission in the Northern Hemisphere. Even the Marconi beam traffic between England and Canada had to be diverted.

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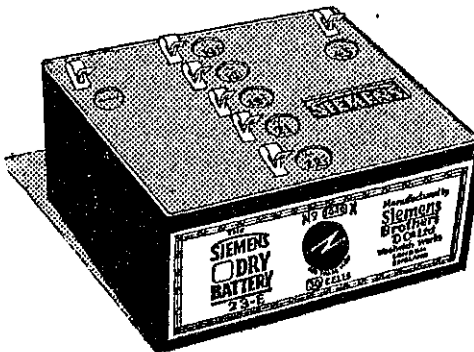
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Programmes Continued

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- 9.47: Instrumental trio—Christchurch Broadcasting Trio, (a) "Andantino," Lemare (Novello); (b) "Dialogue," Bachmann (Jurgenson); (c) "Moment Musical," Schubert (La Fleur).
9.55: Baritone solo—Mr. Robert Samson, "Lighterman Tom," Squire (Chappell).
10.0: National Anthem. Close down.

4YA DUNEDIN—SILENT.

Thursday, October 20th

1YA AUCKLAND (333 METRES)—THURSDAY, OCTOBER 20.

- 3 to 4.30 p.m.: Afternoon session—Selected studio items.
7.15 to 7.45: News and information session.
8.0: Chimes.
8.1: Relay of overture from Rialto Theatre, Henry C. Engel, conductor.
8.10: Vocal—The Snappy Three, popular numbers.
8.18: Violin solos—Mr. Alfred Gracie, (a) "Kuyawiak Mazurka," Wieniawski; (b), "Serenade," Schubert, arr. Elman.
8.26: Soprano solo—Miss Ida Holmes, "Angels Guard Thee," Godard (Metzler).
8.30: Instrumental—Ingall's Hawaiian Instrumentalists, (a) "Marche Directeur," (b) "Hawaiian Rainbow."
8.39: Baritone solo—Mr. Clinton Williams, "Harlequin," Sanderson (Boosey).
8.44: Mezzo solo—Mrs. J. Parry, (a) "Scenes that are Brightest," (b) "Vanity Fair," Clutsam.
8.52: Weather report.
8.53: Talk on Shakespeare's Plays—Richard III and Othello, by Mr. Culford Bell.
9.8: Vocal—The Snappy Three, popular numbers.
9.16: Violin solo—Mr. A. Gracie, "Nocturne," Chopin (Paxton).
9.20: Soprano solo—Miss I. Holmes, (a) "Should He Upbraid," Bishop (Boosey); (b), "Down in the Forest," Ronald (Enoch).
9.28: Instrumental—Ingall's Hawaiians, (a) "Hilo Waltz," (b) "Aloha-oe," (c) "Hawaiian Echoes."
9.43: Baritone solo—Mr. C. Williams (a) "Submarines," F. Elgar (Enoch), (b) "The Floral Dance," K. Moss (Chappell).
9.51: Relay of Musical Interlude from Rialto Theatre.
9.56: Mezzo solo—Mrs. Parry, "I Know of Two Bright Eyes," Clutsam.
10.0: A thought.
10.1: Close down.

2YA WELLINGTON (420 METRES)—THURSDAY, OCTOBER 20.

- 3 p.m.: Gramophone recital and relay of Manuel Hyman's Exhibition Band from the Adelphi Cabaret.
3.30: Lecturette—Miss Mann, "Fashions."
4.0: Gramophone recital and relay of Manuel Hyman's Exhibition Band from the Adelphi Cabaret.
4.20: Lecturette—Miss McKeown, "Care of the Hair."
4.35: Gramophone recital and relay of Manuel Hyman's Exhibition Band from the Adelphi Cabaret.
5.0: Close down.
7.0: News session and market reports.
7.35: Lecturette—Mr. W. King, D.E.B.A., "Esperanto."
8.0: Chimes of the General Post Office clock, Wellington.
8.1: Band—Central Mission Band—March, "Freedom and Honour," Rimmer (Wright and Round).
8.7: Soprano solo—Mrs. H. Dawson, "Il Bacio," Arditi (Holmes).
8.11: Band—Central Mission Band, selection: "Musical Fragments," Round (Wright and Round).
8.20: Elocution—Mr. Eric North, "A Most Uncommon Patient," Jerome.
8.24: Band—Central Mission Band, waltz: "Grenadiers," Perritt (Richardson's "Cornet Journal").
8.30: Contralto solo—Miss E. Geere-Watson, "Keramos," Harris (Warren and Phillips).
8.34: Flugel horn solo—Bandmaster Lance Baker, "Sweet Spirit, Hear My Prayer," Round (Wright and Round).
8.41: Band—Central Mission Band, march: "Glorinda," Round (Wright and Round).
8.48: Soprano solo—Mrs. H. Dawson, "Believe Me if all Those Endearing Young Charms," Moore (Boosey).
8.52: Band—Central Mission Band, march: "Queen's Guard," Anderson (Wright and Round).
8.59: Weather report.
9.0: Lecturette—Mr. Johannes Andersen, "Native Birds."
9.15: Band—Central Mission Band, Air Varié, "Adeste Fideles," Round (Wright and Round).
9.23: Contralto solo—Miss E. Geere-Watson, "Fairy Waters," Hadyn Wood (Boosey and Co.).
9.27: Band—Central Mission Band, fox trot: "Bye, Bye, Blackbird," Henderson (Albert's "Journal").
9.32: Soprano solo—Mrs. H. Dawson, selected.
9.39: Band—Central Mission Band, "In Sunny Lands," Laurent (Wright and Round).
9.47: Elocution—Mr. Eric North, "The Selfishness of Travellers," Knox.
9.51: Band—Central Mission Band, selection: "H.M.S. Pinafore," Sullivan (Smith's "Journal").

NEW SHORT-WAVE STATION

Another short-wave broadcast station, 2XBI, transmits now simultaneously with broadcast station WCGU, Sea Gate, Long Island, U.S.A. The wavelength of the new transmitter is 54 metres. The chief radio engineer of the station is Mr. Jesse Holland, who was one of the few operators to hold consistent communication with Donald MacMillan's vessel, the Bowdoin, during the explorer's voyage to the Polar regions in the summer of 1925.

INTERNATIONAL RADIO CONFERENCE

The question of the distribution of votes at the International Radio Conference being held in Washington, U.S.A., this month, was raised recently through the contention of the German Government that it should be accorded the six votes it possessed at the International Telegraph Conference in London, in 1912.

Other Governments pointed out, however, that in 1912 votes were based on the number of colonies possessed by each power, that Germany was deprived of her colonies at Versailles and that consequently she should have but one vote at the coming conference.

This basis for the distribution of votes is disputed by Germany, which contends that colonies were used artificially as criteria for the distribution of votes, but that in reality votes were distributed on the basis of the economic power of each nation.

696 YANKEE STATIONS

On August 29 forty United States broadcasting stations which had so far failed to apply for renewal of licenses that expired on August 14 last were notified by the Federal Radio Commission that unless they applied by September 6 for authority to continue on the air their names would be deleted from the Government list. This means that the stations involved would be liable to prosecution if they operated after the date named without a license as required by the Radio Act of 1927.

Exactly 696 American stations are now on the air and all but forty have received new sixty-day licenses dating from August 14. It was understood the forty delinquents were mostly small stations, many of which, officials in Washington believe, were ready to retire from the broadcasting field.

INTERNATIONAL BROADCASTS

ENGLAND AND AMERICA.

Captain Peter P. Eckersley, Chief Engineer of the British Broadcasting Corporation, announced on August 23 at a luncheon in London that he intended to visit the United States in September to begin negotiations which he believed would result within a year in a regular exchange of English and American radio broadcast programmes.

Eckersley's announcement, made at a luncheon of the Radio Manufacturers Association of Great Britain at the Hotel Metropole, London, was relayed to New York by radio telephone and received by American radio men breakfasting in a New York apartment.

The engineer will be followed to America in November by Sir John Reith, Director-General of the British Corporation, who will make final arrangements with Merlin H. Aylesworth, president of the National Broadcasting Company, and David Sarnoff, general manager of the Radio Corporation of America.

INTERFERENCE FROM MORSE

SHIP EQUIPMENT BLAMED.

Steps will be taken by the American delegation to the International Radiotelegraphic Convention, being held this month in Washington, U.S.A., with a view to effecting an agreement that will protect land broadcasters from interference caused by radio operations at sea. The interference of sea radio with land broadcasters is due, in the main, to the style of equipment used aboard most ships, and this is a matter that requires adjustment by international agreement.

Complaints have been made to the Federal Radio Commission that sea signalling is causing substantial interference at times with broadcasters on Long Island and at other points on the North Atlantic, as well as along wide stretches of the Pacific Coast. The commission is powerless to deal with this situation without concurrent action on the part of other marine nations involved.

Through Admiral W. H. C. Bullard, its chairman, who has been named a delegate to the October conference, the commission will emphasise the need for international regulations that will eliminate the marine interference with land broadcasting. All that is necessary, officials in Washington say, is for the nations concerned to require their ships to install modern equipment.

- 9.59: Contralto solo—Miss E. Geere-Watson, "Plumstones," Warlock (Chappell and Co.).
10.3: Band—Central Mission Band, march: "Westbury," Lithgow ("Commonwealth Journal").

3YA CHRISTCHURCH (306 METRES)—THURSDAY, OCTOBER 20.

- 3 p.m.: Afternoon concert session.
6.0: Children's session, by Uncle Jack.
7.15: News and reports.
7.30: Talk—Dr. Hilgendorf, "Recent Investigations on Grasses."
8.0: Chimes. Relay of orchestral selections from Liberty Picture Theatre Orchestra, under conductorship of Mr. Ernest Jamieson.
8.15: Pianoforte solo—Miss Aileen Warren, "Berceuse," Chopin (Wood).
8.19: Baritone solo—Mr. R. S. Moloney, "Lolita," Buzzi-Pecchia (Ricordi).
8.20: Instrumental trio—Christchurch Broadcasting Trio, "Third Movement, D Minor, Trio," A-ensky (Jurgenson).
8.27: Humorous recitation—Miss Naare Hooper, L.T.C.L., "Peter," Scott-Canty (Chappell).
8.31: Contralto solo—Miss Nellie Lowe, "A Summer Night" (cello obbligato by Mr. Harold Beck), Thomas (Metzler).
8.36: Pianoforte solo—Miss Aileen Warren, "Alt Wien," Godowsky (Schirmer).
8.40: Baritone solo—Mr. R. S. Moloney, "Pearl of Sweet Ceylon" from opera "Cingalee," Moncton (Chappell).
8.45: Contralto solo—Miss Nellie Lowe, "Beloved, it is Morn," Aylward (Chappell).
8.50: Humorous little talk—Miss Naare Hooper, L.T.C.L., "The Dancing Partner," "Punch."
8.55: Baritone solo—Mr. R. S. Moloney, "So ben che differ me" from "Pagliacci," Leoncavallo (Ascherberg).
9.0: Contralto solo—Miss Nellie Lowe, "Mifanwy," Weatherley (Chappell).
9.4: Recitation—Miss Naare Hooper, L.T.C.L., "It Isn't Done," Burnaby (Cavendish).
9.8: Instrumental trio—Christchurch Broadcasting Trio, (a) "Minuet in A," Beethoven (Metzler); (b) "Melody," Moskowski (Augener); (c) "Polonaise," Chopin (Metzler).
Relay from Liberty Picture Theatre.
9.20: Relay of concert from Choral Hall. Liedertafel ladies' evening. Close down.

4YA DUNEDIN (463 METRES)—THURSDAY, OCTOBER 20.

- 7 p.m.: Town Hall chimes.
7.1: Request gramophone concert.
8.0: Town Hall chimes.
8.1: Orchestral selections, under Mr. Chas. Parnell, relayed from the Empire Theatre.
8.15: Mezzo-soprano solos—Miss Agnes Holmes, (a) "Down in the Forest," Ronald; (b) "You've Got Your Mother's Eyes," Drummond.
8.21: Cello solo—Mr. Alex. T. Blyth, "Drink to Me Only," Mellish.
8.26: Violin solo—Mr. A. J. Frye, "Liebesfreud," Kreisler.
8.31: Contralto solo—Miss Gwen Cooper, selected.
8.36: Orchestral selections from Empire Theatre.
8.42: Cello solo—Mr. Alex. T. Blyth, "Ave Maria," Bach-Gounod.
8.47: Violin solo—Mr. A. J. Frye, "Liebeslied," Kreisler.
8.52: Mezzo-soprano solos—Miss Agnes Holmes, (a) "Sing, Sing, Blackbird," Philip; (b) selected.
8.58: Cello solo—Mr. Alex. T. Blyth, "Bouree," Handel.
9.2: Contralto solos—Miss Gwen Cooper, selected.
9.8: Violin solo—Mr. A. J. Frye, "Legende," Bohn.
9.15: Archerfield pupils' concert, relayed from His Majesty's Theatre.
9.45: Orchestral items relayed from the Empire Theatre.
10.0: Close down.

Friday, October 21st

1YA AUCKLAND (333 METRES)—FRIDAY, OCTOBER 21

- 6.30 p.m.: Children's session—Tom Thumb.
7.15: News and reports.
7.30 to 7.45: Talk on "Motoring," by Mr. Geo. Campbell.
8.0: Chimes.
8.1: Relay of concert from Messrs. John Court's, Ltd.
8.30: Violin solo—Norman Watson, (a) "Hungarian Dance," Drdla; (b) "Souvenir," Drdla.
8.38: Soprano solo—Mrs. C. Towsey, "O Mio Lirundo," Donizetti (Ricordi).
8.43: Baritone solos—Mr. Frank Sutherland, (a) "The Lute Player," Allitsen; (b) "The Ship of Golden Dreams," Oliver.
8.51: Duo—Griffiths Duo, (a) "Tea for Two," (b) "Shakespeare's House."
9.0: Weather report.
9.1: Relay from Prince Edward Theatre—Mr. Geo. Poore, conductor.
9.15: Piano solo—Mr. Cyril Towsey, "Ballade in A Flat," Chopin.
9.20: Boy soprano, David Lunney, "The Lilac Tree," Cartland.
9.24: Viola solo—Mr. N. Watson, selected.
9.29: Soprano solo—Mrs. C. Towsey, "Softly Awakes my Heart," Saint-Saens (Durand).

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Programmes Continued

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9.34: Baritone solo—Mr. F. Sutherland, "Invictus," Huhn.
9.39: Duo—Griffiths Duo, "A Seaside Trip."
9.46: Piano solo: Mr. C. Towsey, "Polonaise in C Sharp Minor," Chopin.
9.51: Soprano solo: Master D. Lunney, (a) "Love's Old Sweet Song," (b) "The Swallows," F. H. Cowen.
10.0: Close Down.

2YA WELLINGTON (420 METRES)—FRIDAY, OCTOBER 21.

3 p.m.: Gramophone recital.
3.30: Lecturette—Miss Marion Christian, "Gas Cooking."
4.0: Gramophone recital and relay of Manuel Hyman's Exhibition Band from the Adelphi Cabaret.
5.0: Close down.
6.0: Children's hour—Uncle Ernest.
7.0: News session and market reports.
8.0: Chimes of the General Post Office clock, Wellington.
8.1: Instrumental—Studio Orchestra, selected.
Studio concert arranged by Mr. William Renshaw:
8.11: Quartet—Miss Myra Sawyer, Miss Nora Greene, Mr. W. Renshaw, and Mr. Wm. Boardman, "Regular Royal Queen" from "The Gondoliers," Sullivan (Chappell).
8.15: Bass solo—Mr. Wm. Boardman, "The Floral Dance," Moss (Chappell).
8.20: Flute solo—Mr. Claude Tucker, "Concertino," Chaminade.
8.27: Contralto—Miss Nora Greene, (a) "Sea Fever," John Ireland (Curwen); (b) "June," Quilter (Boosey).
8.31: Musical monologue—Mr. Barton Ginger, "The Shooting of Dan McGrew" (Miss Gwladys Ginger at piano), Robert Service.
8.37: Tenor—Mr. Wm. Renshaw, "Like Stars Above," Squire (Boosey).
8.41: Instrumental—Studio Orchestra, selected.
8.51: Quartet—Miss Myra Sawyer, Miss Nora Greene, Mr. W. Renshaw, and Mr. Wm. Boardman, "In England, Merrie England," German (Chappell).
8.54: Soprano solo—Miss Myra Sawyer, "Villanelle," d'Agua (Boosey).
8.59: Weather report.
9.0: Lecturette—Editor—Announcer, "Imperial News."
9.15: Instrumental—Studio Orchestra, selected.
9.25: Bass solo—Mr. W. Boardman, "Sir Roger de Coverley," Coleman (Boosey).
9.30: Vocal trio—Miss Myra Sawyer, Miss Nora Greene, and Mr. Wm. Renshaw, "O Memory," Leslie (Novello).
9.35: Flute solos—Mr. Claude Tucker, (a) "Papillon," Kohler; (b) "Carnival of Venice."
9.42: Vocal duet—Miss Nora Greene and Mr. Wm. Renshaw, "Down the Vale."
9.46: Monologue—Mr. Barton Ginger, "Me, Too," Wallace; "A Drama in Three Acts in Three Minutes."
9.51: Soprano solo—Miss Myra Sawyer, "The Nightingale and the Rose," Thompson (Chappell).
9.59: Quartet—Miss Myra Sawyer, Miss Nora Greene, Mr. Wm. Renshaw, and Mr. W. Boardman, (a) "Sweet and Low," Barnby; (b) selected.

3YA CHRISTCHURCH (306 METRES)—FRIDAY, OCTOBER 21.

3 p.m.: Afternoon concert session.
7.15: News and reports.
8.0: Chimes. Relay of orchestral selections from Crystal Palace Picture Theatre Orchestra, under conductorship of Mr. A. J. Bunz.
8.15: Tenor solo—Mr. W. Bradshaw, "The Star of Bethlehem," Adams (Boosey).
8.19: Contralto solo—Mrs. D. W. Stallard, "The Power of Love" from opera "Satanella," Balfe (Boosey).
8.23: Cello solo—Mr. Harold Beck, "Berceuse," Jarnfelt (Chester).
8.27: Humorous dialogues—Mr. Sydney Comfort, "Snips and Snatches," M.S.
8.31: Pipe organ solos—Mr. Raynor White, F.L.C.M., (a) "Allegro" from "Second Concerto," Handel (Novello); (b) "Anglican Gavotte," Mollon (Hart); (c) "Priore a Notre Dame," Boellman (Durand).
8.46: Tenor solo—Mr. W. Bradshaw, "In Happy Moments" ("Maritana"), Wallace (Boosey).
8.50: Instrumental trio—Christchurch Broadcasting Trio, "Vivace" from "Trio," Godard (Schirmer).
8.56: Contralto solo—Mrs. D. W. Stallard, "Softly Awakes My Heart" from "Samson and Delilah," Saint Saens (Bayley and Ferguson).
9.0: Relay from Crystal Palace Picture Theatre.
9.15: Humorous recitation—Mr. Sydney Comfort, "Toasts, Bread and Butter," M.S.
9.19: Cello solos—Mr. Harold Beck, (a) "Air," Matheson (Harris); (b) "Scherzo," Van Goens (Hamelle).
9.23: Contralto solo—Mrs. D. W. Stallard, "Lie There, My Lute," McCunn (Chappell).
9.27: Tenor solo—Mr. W. Bradshaw, "The Holy City," with chorus, Adams (Boosey).
9.31: Instrumental trio—Christchurch Broadcasting Trio, (a) "Angels Guard Thee," Godard (Augener); (b) "Barcarolle," Tschalkowsky (Metzler); (c) "Scherzo," Jade (Hansen).
9.38: Contralto solo—Mrs. D. W. Stallard, "The Old Rustic Bridge by the Mill," with chorus (by special request), Skelley (Allan).
9.42: Pipe organ solos—Mr. Raynor White, F.L.C.M., (a) "Chorus in Bb," Durante (Peters); (b) "Pastorale in D," St. Clair (White); (c) "Idylle et calme du soir," Moskowski (Schmidt). Selections from Mendelssohn's works.
Close down.

4YA DUNEDIN (463 METRES)—FRIDAY, OCTOBER 21.

3 p.m.: Town Hall chimes.
3.1: His Master's Voice recital.
3.15: Afternoon tea music from the Savoy.
3.30: Studio music.
3.45: Humorous reading, by Mrs. I. W. Cowie.
4.15: His Master's Voice recital.
4.30: Close down.
7 p.m.: Town Hall chimes.
7.1: Children's session—Big Brother Bill.
7.40: News service and market reports.
8.0: Town Hall chimes.
8.1: Special relay.

THE LOUDSPEAKER

FIND THE BEST POSITION.

It is always a good idea to experiment with the position of a loudspeaker. Quite frequently the arrangement of adjoining rooms in a house has the effect of producing annoying echoes, and the horn must be tried in several places before satisfactory acoustics are obtained.

If the loudspeaker is too near the ceiling, as when placed on a piano, the sound waves will be deflected downward on the listener's head, and speech or music will sound decidedly unnatural. Similarly, if it is put on the floor, the sound will hit upward. Music will always sound better if the horn is kept well away from where the listeners sit. A jazz band will never sound clear if the loudspeaker is put on a dining-room table. If powerful amplifiers are employed, the radio listener cannot expect pleasant reception, any more than he can expect a drum to sound pleasant if he sat right next to it.

TO MAKE SPAGHETTI

The red, yellow, green, or black insulating covering on the wires inside a receiving set is known as spaghetti. To manufacture your own spaghetti, a piece of wire that is to be used in wiring up the set should first be straightened out; a two-foot length will be sufficient. A large sheet of good, light grade white paper should then be bought; twenty inches wide will be the right size. Strips just wide enough to encircle the wire twice should be cut from the sheet; each strip will then be twenty inches long by about one-half an inch wide.

Paper As a Substitute.

This strip of paper is then wrapped tightly around the piece of wire and tied in two or three places with string to hold it solid. Some paraffin is melted in a pan, and with the aid of a spoon the entire length of the paper on the wire is given a good coating of the molten paraffin. When the paper is dry the strings may be removed, and the wire pulled from within the paper tube. The finished product will have good strength and also will stand a heavy voltage without breaking.

RADIO TRANSFORMERS

Amplifiers are divided into two main classes: Those designed to amplify speech and music directly, or audio-frequency amplifiers, and those for much higher frequencies, known as radio frequency amplifiers. The design differs quite widely between these two. Thus an audio-frequency transformer always has an iron core, made up of laminations—thin sheets—of soft iron wire. This construction is to reduce the losses in the iron. A radio-frequency transformer, on the contrary, has an air core or a core of iron filings. A second marked difference is in the number of turns of wire used. An audio-frequency transformer has several thousand turns on the primary winding, and from three to ten times this amount on the secondary. A radio-frequency transformer for frequencies from 600,000 to 1,200,000 (wave-length from 600 to 250 metres) will have only a few hundred turns on each winding.

BROADCAST REPORTERS

NOVEL AMERICAN ENTERPRISE.

In America the broadcasting companies are commencing to organise staffs of reporters.

WGL (Secaucus, New York State) the radio station that plans to appoint "official reporters" in various parts of the city and State, said it had received many telephone calls from listeners who desired to be enrolled at once on the list of news gatherers. By this staff of "reporters," WGL expects to receive news events from eye-witnesses as soon as possible after they happen. If a news event should be stupendous enough to warrant breaking in on a programme to give it to the listeners, WGL will do so.

Charles D. Isaacson, programme director of station WGL, announced recently that the station plans to organise a staff of voluntary "radio reporters" to telephone events witnessed by them to the station and obtain connection with a microphone for immediate broadcasting.

"We would like to hear from our listeners who would care to be designated as WGL official radio reporters," he said. "Those who wish to co-operate will be given a number, a method of identification to eliminate any possibility of mistake or misunderstanding. Radio reporters who happen to be at or near an accident or crime or any event of importance not expected to happen will telephone to WGL and at proper identification, if the news sounds worth while, will be put immediately on the air by means of a plan we have developed of breaking into a programme."

Saturday, October 22nd

1YA AUCKLAND (333 METRES)—SATURDAY, OCTOBER 22.

7.15 p.m.: News and sports results.
7.30 to 7.45: Talk on "Crankcase Draining," by "Gargoyle."
8.0: Chimes.
8.1: Relay of Municipal Organ Recital and Concert from Town Hall. Organist, Mr. Maughan Barnett.
9.30: Relay of dance music from Dixieland Cabaret by "The Internationals," under Mr. Clyde Howley.
11.0: Close down.

2YA WELLINGTON (420 METRES)—SATURDAY, OCTOBER 22.

11.30 a.m. to 5 p.m.: Description of Wellington Racing Club's meeting at Trentham by company's official announcer.
7.0: News session, market reports, and sporting results.
8.0: Chimes of the General Post Office clock, Wellington.
8.1: Instrumental—Studio Orchestra, selected.
8.11: Bass-baritone solo—Mr. H. C. Trim, "The Ringers," Sanderson (Boosey).
8.15: Elocutionary—Mr. A. Curry, "On Babies," Jerome.
8.19: Cornet solo—Mr. J. King, "Silver Threads Among the Gold," Rimmer (Wright and Round).
8.23: Vocal duet—Mr. H. C. Trim and Miss Iris Trim, "In the Springtime," Newton (Boosey).
8.26: Instrumental—Studio Orchestra, selected.
8.31: Scotch comedian—Mr. Doug. Stark, "Bella o' Dunoon," Lauder.
8.36: Cornet solo—Mr. J. King, selected.
8.40: Bass-baritone solo—Mr. H. C. Trim, "Old Barty," Grant (Boosey).
8.44: Elocutionary—Mr. A. Curry, "The Lament of an Irish Emigrant," Dufferin; "Kitty O'Toole," Allan.
8.48: Instrumental—Studio Orchestra, selected.
8.54: Scotch comedian—Mr. Doug. Stark, (a) "Jazz," Fyffe; (b) "The Cad-die" (character sketch), original.
9.0: Lecturette—Miss Phyllis Bates, "A Waltz Lesson."
9.15: Relay of Charles Dalton's Columbian Solo Six Dance Orchestra from the Columbian Cabaret, Kilbirnie.

3YA CHRISTCHURCH (306 METRES)—SATURDAY, OCTOBER 22.

11.30 a.m.: Rebroadcast 2YA, Wellington—Wellington Racing Club's spring meeting.
6 p.m.: Children's session, by Uncle Sam.
7.15: News and reports.
7.30: Sporting results.
8.0: Chimes. Relay of orchestral selections from Everybody's Picture Theatre, under conductorship of Mr. Albert Bidgood.
8.15: Baritone solo—Mr. Cyril Rishworth, "A Little Pink Rose," Bond (Harris).
8.19: Piano solos—Mr. Ivan Perrin, (a) "Preludes in C Minor and G Major," Chopin; (b) "Improvisations in Bb Minor."
8.29: Songs at piano—Mr. E. A. Sargent, "The World Went Very Well then," Spurr.
8.33: Soprano solo—Miss Eurice Catton, "Whene'er a Snowflake Leaves the Sky," Lehmann (Cramer).
8.37: Instrumental trio—Christchurch Broadcasting Trio, "La Serenata," Moskowski (Fischer).
8.42: Baritone solo—Mr. Cyril Rishworth, "You'll Get Heaps of Lickin's," Clarke (Chappell).
8.44: Violin solo—Miss Irene Morris, "Madrigale," Simonetti (Ricordi).
8.48: Piano solos—Mr. Ivan Perrin, extemporised version of "Sam, the Old Accordeon Man" and "For My Sweetheart," played in semi-musical box style, M.S.
8.58: Songs at piano—Mr. E. A. Sargent, "Beware of the Maidens" (by request), Day (Cramer).
9.2: Soprano solo—Miss Eurice Catton, "Carmena," Lane Wilson (Reeder and Walsh).
9.6: Piano solos—Mr. Ivan Perrin, (a) "Birth of the Blues," M.S.; (b) "Meadow Lark," M.S.; (c) "There Ain't No Maybe in My Baby's Eyes," M.S.; (d) "Mama's Gone, Good-bye," M.S.
9.16: Baritone solo—Mr. Cyril Rishworth, "Pagan," Lohr (Chappell).
9.20: Soprano solo—Miss Eurice Catton, "Waiata Poi" (Maori poi song), Hill (McIndoe).
9.24: Songs at piano—Mr. E. A. Sargent, "Water Scenes" (by request), Jones (Reynolds).
9.28: Instrumental trio—Christchurch Broadcasting Trio, (a) "Cavatina," Raff (Metzler); (b) "In Sunshine and Shadow," Newmark (Schott); (c) "Poupe Valsant," Poldini (Ricordi).
9.36: Relay Everybody's Theatre.
Relay of dance music from Caledonian Hall by Mr. Reg. Stillwell's Orchestra.
Rebroadcast 2YA, Wellington concert (conditions permitting).
Close down.

4YA DUNEDIN (463 METRES)—SATURDAY, OCTOBER 22.

7.15 p.m.: News and sporting session.
8.0: Town Hall chimes.
8.1: Soprano solos—Miss Olga Burton, (a) "Through All the Days to Be," (b) "What a Wonderful World it Would Be."
8.6: Pianoforte solos—Miss Marjorie Watts, "Love Song," Schumann-Liszt; (b) selected.
8.14: Baritone solos—Mr. A. Snell, selected.
8.21: Guitar solo—Mr. N. Scurr, "Silver Sands of Waikiki."
8.24: Pianoforte duet—Misses M. Watts and A. Wilson, "Valse Brilliant," Moskowski.
8.29: Soprano solos—Miss Olga Burton, (a) "Good Night, Pretty Stars," (b) "Three," Aylward.
8.35: Guitar solo—Mr. N. Scurr, "Mary Lou."
8.39: Pianoforte duet—Misses M. Watts and A. Wilson, selected.
8.45: Address—Mr. A. E. Wilson, of the Government Tourist Department, "Tourist Resorts of Otago."
9.0: Dance music by Ern. Beecham and His Orchestra, relayed from the Savoy.
10.0: Close down.

Sunday, October 23rd

1YA AUCKLAND (333 METRES)—SUNDAY, OCTOBER 23.

3 to 4.30 p.m.: Afternoon session—Selected studio items.
6.55: Relay of Church service from the Baptist Tabernacle. Preacher: Rev. Joseph Kemp; organist, Mr. Arthur E. J. Wilson.
8.30: Relay of Auckland Municipal Band from Town Hall. Bandmaster, Mr. Christopher Smith.
9.30: Close down.

2YA WELLINGTON (420 METRES)—SUNDAY, OCTOBER 23.

6.55 p.m.: Relay of anniversary service of the Church of Christ, Vivian Street. Preacher, Pastor W. G. Carpenter. Choirmaster, Mr. W. J. Mason.
8.15: Relay of band concert of the Wellington Municipal Tramways Band from His Majesty's Theatre.

3YA CHRISTCHURCH (306 METRES)—SUNDAY, OCTOBER 23.

2.30: Relay of special Sunday School Anniversary Service from St. Albans Methodist Church, Rugby Street. Preacher, Rev. L. McMaster, B.D.; organist, Mr. Sydney Jones.

4.0: Close down.
5.45: Children's song service from 3YA studio by Uncle Sam.
6.30: Relay of evening service from above church. Preacher, Rev. L. B. Neale. Special music at both services of over 150 voices.
8.30: Rebroadcast 2YA Wellington of band concert from Grand Opera House Wellington.
Close down.

4YA DUNEDIN (463 METRES)—SUNDAY, OCTOBER 23.

6.30 p.m.: Relay of service from St. Paul's Cathedral. Preacher, Rev. Canon Neville. Organist, Mr. E. Heywood, F.L.C.O.
8.0: Studio concert.
9.0: Close down.



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Preliminary Survey of Fading Test Reports

Interesting Results Likely to Accrue from Hundreds of Reports

Some hundreds of reports are now to hand, and considerable work was involved in opening and sorting the bulky mails that were constantly arriving for some days. The work of going carefully through the whole of these, noting remarks, comparing charts, and other matters, is no small-task, and it is therefore quite impossible to give the full and complete report immediately.

As a preliminary step to getting familiar with the matter upon the reports, it was decided to deal with the first day only at the outset, and in order to give readers a general idea as to what information is contained in the reports, a few typical specimens are quoted below.

It is very gratifying to realise how very generously our readers have given their aid in this matter, and this fact makes the test of value, on account of the large number of reports received, covering practically the whole of the Dominion. Some readers have gone to considerable trouble to draw up charts and forward curves showing very clearly the conditions of reception. Some of these will be published at a later date in a form admitting of easy comparison. Other diagrams are contemplated of the two islands, showing as nearly as possible the intensity of fading in different parts.

It is not proposed at the present moment to attempt to draw any definite conclusions from the test, even if that may be possible later on.

SOME THEORIES.

Fading is at present very little understood, but scientific research has established certain definite facts regarding it, and some very interesting and illuminating work has been carried out in America, especially in the direction of finding out everything possible as to the causes of quality distortion, or interference with the carrier wave and side-bands in their path from transmitter to receiver. It has been proved that high objects such as buildings projecting near a broadcast station can, either by absorption or diversion of the waves, cause a "shadow" that may extend to a great distance. All receivers in such a shadow experience weak reception. In Britain it has been discovered that there are in certain localities "blind spots," or places where the reception of broadcast is extremely difficult, necessitating the employment of a valve or two more than is usually required for the given distance from the transmitting station. There may be such spots in New Zealand, a country rich in metallic deposits, which in turn may have an influence upon wireless reception in certain localities.

Our test cannot be called a scientific effort, for the charts had to be easy to fill in, not to impose too big a task upon busy people, but from the quantity provided it is expected to find definitely where the greatest amount of fading takes place, how much the fading in one district coincides with that in another, and whether much, if any, of the fading is due to local interference by radiating receivers.

THE OSCILLATOR.

The preliminary run through the charts seems to indicate that oscillating valves play a big part in providing at least a fair amount of slight fading. From notes in another column it will be seen that oscillations from receiving sets can be heard up to ten miles distance, and several reports mention that from their isolated positions howling valves can sometimes be heard at a distance of five or six miles. That being so, it is not difficult to imagine that two or three dozen oscillators only a few chains away in populous centres, can have an extremely detrimental effect upon reception upon the same wave-length. Experienced listeners are well aware of the trouble caused by radiating sets, and know how to avoid giving annoyance to others when tuning in. But the novice with a set may innocently be creating havoc and consternation amongst his neighbours until somebody takes him in hand and gives a practical demonstration of correct tuning-in.

PERSONAL INDICATIONS.

The personal equation has naturally entered very definitely into the filling up of the charts, and some have evidently recorded very fine differences in the "slight" column, and some listeners have stated that they found difficulty in discriminating between a soft musical passage and a slight fade. But these differences will not affect the main issues. There appear to be certain "bad periods" during the transmission, and some of these, notably the first fifteen minutes, appear on every chart where the listening-in was commenced at 8 o'clock. Then there appear to be certain other "bad periods," some of which will be noted in certain districts,

We wish to extend our very best thanks to the hundreds of readers in all parts of the Dominion who took the trouble to record and return detailed reports of the reception from 2YA on the nights of September 26 and 27. We greatly appreciate the trouble they took. We are glad to be advised—and they will be too—that in the opinion of "Megohm" something of value will be learned from the investigation. That is our hope and objective. If necessary and desirable, subsequent inquiries will again be prosecuted. In the accompanying matter "Megohm" presents a preliminary report, which will be followed up by further articles and diagrams.

whilst in other districts those periods will be unnoticed and the alternative ones noted. Further comparison will be necessary to properly clear up this aspect.

A number of reports make mention of the fact that the time given out from 2YA during the progress of the test was a minute slow, and this fact was noted by the writer, 9.21 being announced at 9.22, but as time at the commencement and close was correct, the commencing time appears to have been used right through the evening.

VARIABLE BY CONTROLS.

Many reports state that the fading could have been counteracted by altering the controls. That may be so, but it is not the ultimate aim of a broadcasting station to require listeners at a reasonable distance to attend their sets during the whole of a session. Such a position detracts from the advantages of wireless, a great argument in its favour being the absence of necessity for constant attention, such as is required by a gramophone, for instance, to change discs and wind it up. And on dance music nights few would care to sit twiddling knobs when they could be dancing.

There may be distant parts of New Zealand where fading may always be present to a slight extent, but it seems reasonable to expect that a station such as 2YA will eventually be able to increase its non-fading area. It is a

have been of great value in comparison with the reports of valve reception from the same locality. Those that were sent in bear evidence of care and accuracy.

THE WEATHER CONDITIONS.

Unfortunately, the dates fixed turned out to be unsuitable so far as weather conditions were concerned. Late in the afternoon and early in the evening until about 8.15 a thunderstorm was traversing the upper half of the North Island on the first day of the test, and on both days heavy rain and wind prevailed in many districts between 8 and 10 p.m. On this account it is surmised that some of the slight fades on charts may have been caused by aerial leakage, but this will not affect the main issue.

A large section of the listeners is well satisfied with recent improvements made by the company, as is evidenced by the fact that so many took the trouble to include in their reports a few lines of appreciation of what has been done to date. The convenience of having the programmes in advance with other interesting information contained in the "Record" was likewise very frequently mentioned with the reports.

EXTRACTS FROM THE REPORTS.

The following extracts from reports will be of interest to listeners. It is

ROUND AUCKLAND.

A two-valve set at Tawharanui, isolated 2 miles, shows very slight fading 8.0 to 9.0, and no noticeable fading from 9.0 to 10.0. Good speaker strength.

Great Barrier Island, using 4 valves of 5-valve set, 8.9 to 9.0, chart very similar to crystal reports from Titi-rangi and Kaipara.

Howick, 3 valves, isolated half-mile, fading slight, none intense after 8.24. Speaker reception.

Whitianga, 5 valves, reception good, very little fading after 8.16, only one intense.

Coromandel, 4 valves, a fair amount of slight and intense fading before 8.38. Only two intense after 8.38 and very little slight.

Auckland City: A good number of reports, many showing comparatively little fading.

WAIKATO AND KING COUNTRY.

Te Awamutu, 4 valves, reception excellent, at loudspeaker strength. Very few marks on chart, fading stated to be only of short duration.

Mauku, 5 valves, very little fading. Chief marks 8.26, 9.35.

Rotorua, 3 valves, isolated one mile, and 2 miles to next set. No fading at all. Volume full, sometimes a little harsh.

Kawhia, 5 valves, isolated 3 miles, no

OTAGO AND SOUTHLAND.

Southland, 5 valves, isolated 6 miles. "We had little if any fading on 2YA last night, reception almost perfect. Our usual trouble with 2YA is that it is too loud, and there is usually very little fading, but last night (26th) it was almost perfect, the announcer's voice being as natural as if he were in the room."

Gore, Alexandra, Musselburgh, Clinton, supply a good number of charts, showing much less fading than Auckland.

Invercargill, 8 miles out, 2 valves, isolated 2 miles, a very comprehensive report. Shows peak curve which is very similar to that from Port Waikato.

Lumsden, 5 valves, isolated 2 miles, practically no fading, sometimes necessary to use only four valves. At times 3YA fades badly.

Dunedin. A good number of reports show that fading is comparatively slight, but there are a few charts upon which there are a great many marks, especially 9.0 to 10.0, which period is very clean in a number.

Oamaru, reports from a number of 5- and 6-valve sets. Fading about equal to Dunedin.

Longbush, 2 valves, 'phones, fading 8.23 to 8.43, only three fades during remainder.

Mataura, Riverton, Glenorchy, fading slight.

Invercargill, 2 reports, very little fading after 8.45.

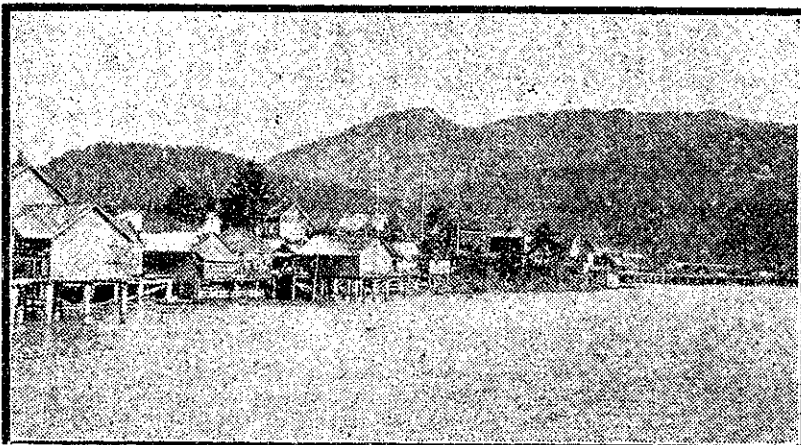
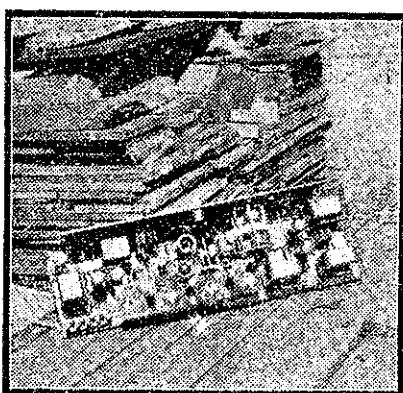
Pembroke, 5 valves, isolated 15 miles, very little fading although situated in deep valley.

Invercargill, 5 valves, isolated 2 miles. Volume poor until 8.40, good thereafter with only a fade at 9.13.

Bluff, 4 valves, isolated 1½ miles. Practically no fading after 8.40. No static heard. (Although there was a fair amount and thunder up North).

Bluff, 3 valves reception poor until

Alaskan Home-Made Set Hears 2YA



These pictures illustrate the set built by a constructor in Alaska, with which he has heard both Australia and 2YA Wellington. The correspondent states that he receives Australia very consistently. The set is known as the Infradyne Circuit which has an oscillator valve, two stages of HF amplification, the first detector or "mixer," then three stages of intermediate amplification of 86 metres. The second detector and two

stages of audio-frequency. The overall amplification is pretty high, and can be relied upon at all times for loudspeaker reception.

The poles in the general view are his antennae poles, which are 65ft. tall, with 100ft. between. The lead-in is 30 ft.

He also has a counterpoise as aerial, but does not use it very much, as he prefers the ground or earth.

peculiarity of wireless waves that they travel over water without detriment, and thus at a distance of 1200 miles or more we get perfect reception of the Australian stations, and in Australia 2YA is received without a fade. Yet in Australia reception of their own stations over land at comparatively short distances is accompanied by the troubles that confront us here with New Zealand stations. But the fact that a station is received perfectly overseas does not prove that nothing should be altered at the station itself, for it is quite within the bounds of possibility that those in charge would ultimately find by experiment the conditions best suited to the immediate territory served. This remark is intended to be general, and not directed particularly at the Broadcasting Company, for, as has been pointed out, the problem is world-wide, though perhaps more acute in Australia and New Zealand than elsewhere, because revenue is small in proportion to the area to be served, a condition that inevitably causes the stations to be comparatively few and far between.

It is certain that the Broadcasting Company will be as keen as any listener to learn all that is possible from this test, and it is equally certain that steps will be taken to remedy any matters that can be altered at the transmitting centre so long as any improvement can reasonably be expected.

It is regrettable that very few crystal owners sent in reports, as they would

fairly evident that isolated sets are less troubled with fading than are others. It is hoped that subsequent analysis will throw more light on this matter.

Many listeners report sudden increases of volume, which in many cases would be more than the speaker could efficiently carry, but had the controls been adjusted to suit these, the standard of comparison would have been discarded. Practically all listeners left controls untouched during the whole evening, and this fact much enhances the value of the records.

NORTH AUCKLAND.

Hikurangi, 3 valves. Reception regularly good except for fading. Ample speaker volume. 2YA not as strong in proportion as might be expected. 1YA and 2YA often same volume. Nearest set half-mile.

Hikurangi, valves not stated. Chart agrees very well with previous one, though not identical.

Hilensville. Mushiness during fading. Three valves give good loudspeaker volume in daylight. Fading on chart mostly slight.

Kaipara District. A good crystal report, which agrees with one for four valves from same district. Crystal a mile from nearest valve set. The valve report has more slight fades.

Marohemo, isolated 1 mile, 5 valves, agrees with crystal chart in main fades.

Kamo, Whangarei, 3 valves, fading very slight, isolated 3 miles. Whangarei, 5 valves, isolated 5 miles, fading very slight indeed, only a few marks on chart.

Russell, 5 valves, fading mostly slight. Mangonui, North Auckland, 5 valves, isolated 4 miles. Reception poor, fading bad. Five long intense fades in chart.

Kaikohu, 5 valves, isolated 2 miles, very slight fading, as usual. Russell, 7 valves on loop aerial, only a slight fade on chart, 9.54.

Silverdale, 2 valves, isolated 1½ miles, splendid speaker reception.

Whakapara, 7-valve super-het., isolated half-mile, few fades, 5 intense, agreeing with main fades on other charts.

intense fading, fair amount slight until 8.18, afterwards very little.

Port Waikato, 3 valves, isolated 1 mile, a very helpful specially-drawn chart showing fading and volume over normal. "The night's transmission was a good one. About 8.5 there was a complete cut-off."

Matamata—valves, increases in volume coincide with those on previous chart, and main fades agree fairly well.

Te Kauwhata, 4 valves, fading frequent, some blurring.

Onewhero, Raglan, 5 valves, isolated quarter-mile. "2YA very unsatisfactory here, very mushy and fading badly at times."

Hauturu, Kawhia, two valves, nearest set (two valves) at five miles. No trace of fading on either speaker or 'phones. "Good modulation and transmission perfect."

Porotara, 4 valves, reception excellent, a few slight fades.

Ongarue, 5 valves, a very good specially-drawn chart working to quarter-minutes. Agrees in many fades with report from Port Waikato.

Rotorua, 5 valves, isolated 5 miles, fairly good reception, little fading compared with many reports.

Matangi, 5 valves, isolated 2½ miles, fading chiefly confined to 8.20 and 9.5 to 9.25.

Waikino (near Waititi), 5 valves, four slight, one intense fade before 8.19, afterwards only three slight. This set is close to high voltage power lines and plant running motors and dynamos aggregating 8000 h.p., yet reception is good. From 2YA, 270 miles.

Te Aroha, 8-valve super-het. A very useful special chart. Fading very sharp and of short duration with distortion when nearing intense. Similar sharp and rapid fading on Australian stations after 10.0. This diagram was carefully compared with that from Port Waikato, and agreed very substantially.

EAST COAST.

Bay of Plenty charts do not show so much fading as some other districts.

Te Puke, 5 valves, "reception better than usual," no intense fading after 8.6, and very little slight.

HAWKE'S BAY.

Napier, five valves, considerable fading until 8.16, much increased 9.27 to 9.42, considerable mushiness. Isolated 10 miles, comparatively little fading, slight.

Eskdale, five valves, isolated 1½ miles, considerable variation in strength 8 to 9, fair amount slight fading.

Rissington, two valves, isolated 5 miles, elevated position, fading only slight, accompanied by some distortion at times.

Hastings, three valves, fading very slight, reception in the main very good. Five valves, fading frequent, but slight. A wet and stormy night.

Havelock North, four valves of five set. "Beautiful from first to last, fading very slight." Four valves, considerable fading 9 to 10.

Coast, 9 miles south of Napier, three valves, isolated 1½ miles, fading slight, mostly 9.35 to 9.47.

Waipawa, towards coast, seven valves, isolated 1½ miles, very considerable fading. Four valves, near town, fair amount fading, all slight.

Waipukurau, fading only slight, and not very frequent. Speech generally good, musical items came through badly. A rising and falling A.C. roar. Station generally good. Daylight perfect, never marred.

CANTERBURY AND WESTLAND.

Christchurch.—Quite a number of reports from three to five-valve sets indicate only one or two fades, yet there are two five-valves showing a great many fades, the 9 to 10 position being the worst. A seven-valve shows more fades than most of the smaller sets. Interference must be seriously hampering these three latter sets.

Greymouth (at sea, 5 miles), four valves, fading slight, but rather frequent, stated to be similar to that

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experienced with IYA when first on the air. More fading here on 2YA than in IYA or 3YA. Daylight reception good. This listener has five years' experience.

Greymouth, five valves, a great deal of intense fading 8 to 9, slight but frequent fading 9 to 10.

Westport, several reports indicate a good amount of fading. One five-valver indicates considerably less than others.

Rangitikei, reception good, only slight fading occasionally noticeable.

Matanui (Westland), five valves, isolated one mile, considerably less fading than in Westport and Greymouth.

Timaru, several reports, a fair amount of fading, especially in the bad period 9.5 to 9.15. An eight-valver gets a good amount of intense fading, whilst a four-valver isolated half-mile, a five-valver isolated 3 miles, get much less than a four-valver not isolated. A six-valve set shows considerable fading; a very complete report.

A two-valver 60 miles north of Christchurch gets what appears to be an undue amount of fading for the distance from 2YA. This set is isolated a mile.

Fairlie, a good amount of slight fading.

Le Bon's Bay, reception on the whole splendid.

Chorlton, five valves, never had any trouble with fading in 2YA. Isolated one mile.

Ashburton, six valves, isolated 3 miles. "Reception good and conditions ideal owing to absence of static. Distortion practically absent." Slight fading charted.

Waimate, four valves, isolated one mile, slight fades in first half, then slight but prolonged at 9.2 to 9.5, and 9.37 and 9.45.

Hokitika, four valves, a fair amount of fading, especially 9 to 10.

Runanga, five valves, considerable slight fading. Shown on detailed chart.

NELSON.

Nelson: Reports from this district very variable as to amount of fading, some with practically none, others with fades every two or three minutes.

ntes. One records distortion at 9.0, 9.2, 9.31, 9.59.

MARLBOROUGH.

Fading very slight or nil in this district, averaging only about 60 miles from 2YA.

WELLINGTON DISTRICT.

Levin is the nearest centre from which reports have been received in North Island. No fading is experienced there, but "at times there was an inclination to mushiness, notably during the talk on 'Spitzbergen,'" but tone and modulation often could not be improved upon," states one report.

At Shannon also there is distortion and blurring, but no fading.

At Ohau an isolated set gets no fading. Distortion and blur not mentioned.

Pahiatua, 6 valves, isolated 4 miles, only a few very slight fades; 6 valves plenty of volume, distortion by morse, no static, some fading, chiefly after 9.0.

Marton: Never any appreciable fading since the station opened. Occasional distortion attributed to power lines. An isolated set received considerable howling before 2YA opened, but since then the nuisance has practically disappeared. Another owner states: "No fading since 2YA opened."

Tikokino: Considerable fading and swaying.

Hawera: "No fading from 2YA, but it is often mushy," states one report. A large set in an isolated position received no fading or mushiness either evening, and on both test evenings reception was better than usual.

Eltham: A report indicates only slight occasional fading, some probably caused by other sets. The report states that 2YA's modulation has become "worse and worse since the opening of the station."

Kaponga: No fading apparent.

Stratford: One report states that there is no fading of any consequence, but bad distortion and mushiness. "Tinny and mushy music, Australian stations also bad," says another.

New Plymouth: Reports are fairly unanimous in showing considerable fading. A two-valver with 'phones gets good strength and much less fading than the average, the fades occurring chiefly at the general bad periods.

REPORT FROM LEVUKA.

Levuka, one of the Fiji group, has produced a good report from an enthusiastic listener with a six-valve neutrodyne, using loudspeaker. Hearing from 2YA the announcement of the test to be held, this listener did not possess one of the charts as published in the "Record," so made a list of the items with fades and other remarks opposite. This has been compared with a report from Timaru, which was one of the very few that had the items marked against the chart. The fades on both charts seem to coincide, at least in a general way, but an endeavour will be made to construct from the report a curve that will compare with others. Levuka is about 1000 miles from 2YA, or about the same distance as from Wellington to Brisbane.

ITEMS FROM THE REPORTS.

An Otago listener says: "I think that the best hope of improving matters lies in experimenting with different wave-lengths, if possible. We noticed here a distinct reduction in fading from Auckland, when its wave-length was lowered."

A Hawke's Bay listener says: "I would like to make a suggestion, and that is: Has it ever occurred to the officials of 2YA that when IYA was working on 420 metres it was a failure in most parts of New Zealand, but since its wave-length has been changed IYA has considerably improved?" This reader has been studying wireless and radio broadcast for over six years, and his experience shows that signals between 400 and 430 metres are the weakest and most interfered with of any he receives. High praise is also given to the improvements carried out by the Broadcasting Company, and to the enterprise of the "Record."

A listener at Marlborough Sounds states that fading is not so pronounced there as blurring and distortion. Some nights the news session is so badly distorted as to be hardly worth listening to, and will be followed by a lecture, every word of which comes through perfectly. This listener thinks this points to the trouble not being always atmospheric. A six-valve set is used, and afternoon reception is "just about perfect."

A listener in Bay of Plenty, and another in Otago, both state that when 3YA is relaying 2YA, that if 2YA fades when picked up direct, no fading is experienced if 3YA is tuned in.

A listener states that he sometimes gets heterodyning from a five-valve set situated ten miles away. Another listener five miles from any other set states that "he rarely gets any howling, and then only faintly." Another reader with a five-valve set is six miles from the nearest other set, but thinks he can occasionally just detect a howl.

WLWL, the 5000-watt station operated by the Panlist Fathers, has acquired a plot of about one acre on the Belleville Turnpike, Jersey City, U.S.A., as a location for a 5000-watt transmitting station. The Federal Radio Commission has already granted WLWL permission to test with 2000 watts. In the event that no interference results, the station will receive the right to use full power. The new transmitter will be governed by remote control from the studios at Columbus Avenue and Fifty-ninth Street.

Our Mail Bag

Sunday Services.

Pelorus Jack writes: "One of the bright spots in broadcasting up till last Sunday has been the Sunday afternoon concerts from Auckland, and I, and I know many others, are looking forward to the time when Wellington will be on the air on Sunday afternoons with secular music."

"Several letters have appeared in your columns recently protesting against the broadcasting of anything but sacred matter on Sundays; I would like to put the case for the other side, which is largely represented by the farming community, to whom the Broadcasting Company must look in the future for most of their new business."

"Radio to the farmer is very little use through the week except for the news and market reports; his wife, of course, can enjoy the afternoon concerts, which are excellent, but the average working farmer is not in the house in the afternoon, except on Sunday and an odd wet day, and further can't sit up all hours of the night listening in and be up at daylight next morning to milk the cows. Speaking generally, the farmers' only chance of hearing an afternoon concert is on Sunday afternoons, and if these are to be given over, as on Sunday last at IYA, to the broadcasting of Sunday School meetings, it is time to register a protest."

"As probably not ten per cent. of the farmers of New Zealand are members of any church, the Broadcasting Company can be fairly certain that any extension of the time already allotted to broadcasts of a religious nature will not be appreciated."

"No reasonable minded listener would object to the broadcasting of evening services as at present for the benefit of those who enjoy this class of item, but it is equally unreasonable for correspondents such as 'Miramar' and 'Crystal Set' to ask that Sundays should be wholly devoted to broadcasts of a sacred nature."

"While there are no doubt a few listeners who want more items of a sacred nature on Sundays, I feel certain that they constitute a small percentage of the whole."

Football Broadcast Appreciated.

W. B. (Cashmere): "I cannot let your very successful broadcast of the big football match in Wellington last Saturday go by without a word of praise and thanks to you; praise for the very successful efforts of your sporting operator, and thanks for the great pleasure and profit I derived from listening-in. I am sure many hundreds of others think as I do."

The Dunedin Station.

Southernite: I wish to express myself in favour of the suggestion advanced by "Backblocks" (Westport) about a 10,000-watt station in Dunedin; but, after reading Mr. Harris's rather unfavourable report regarding 4YA, I doubt if the Broadcasting Company will spend a large sum on improvements to this station. However, the suggestion advanced by "Backblocks" is worth considering. I have listened-in to fourteen Australian and New Zealand stations, and I do not hesitate to say that

the 4YA announcer is undoubtedly the best, and he certainly deserves a first-class high-power station from which to send forth his fine radio voice, "Station 4YA, Dunedin."

Backing for Dunedin.

G. Robertson (Rahotu): Sir, in your last issue I see what I think is quite a good idea put forward by a West Coast correspondent. That is, that listeners should get behind the company to the extent of £1 each by way of a loan to make of the Dunedin station one as powerful as 2YA, or even better. I am not overstocked with £ s. d., but would willingly put a few pounds in the pool, and even if interest was small, consider I had made a good investment by getting a second choice in programmes, as 2YA is about the only consistently good New Zealand station we have. Just another suggestion. I notice an Editor's note in answer to another correspondent explains that humorous items are not very easily procured—of the right kind, anyhow. That seems a pity, as there is no doubt about their popularity with almost every class of listener. What about a few good gramophone records of a humorous selection? Might I say that many good musical monologues are spoilt by a too loud piano accompaniment, and that the same applies to most of the comic songs where the singer plays his own accompaniment. The above is not a growl. Indeed, I think you are doing "brawly." "Carry on."

Dunedin's Wave-length.

W. A. Roberts (Seaton): I gather the New Zealand Broadcasting Company are at present putting the Dunedin station, 4YA, on higher power, and generally bringing the station up to date, for which the company are to be commended; but will this benefit the listeners in Wellington? I have a good seven-valve receiving set, but still cannot tune in Dunedin on its present wave-length whilst Wellington is in operation, and I have yet to learn of anybody who can, with or without a wave-trap. Could not something be done now to alter the Dunedin wave-length to, say, 300 metres, which would give six points of difference between Dunedin and Christchurch, or on 320 metres, which would give ample clearance between Christchurch and Auckland, and where, I have no doubt, the majority of sets would be able to tune Dunedin in. Now that the Summer-time Bill will soon be in operation, and all New Zealand programmes will be completed before the Australian programme proper starts, no objection can arise on the score of overlapping Australia. Should there be slight interference, with a good set this might be overcome, but as things are at present—well, the Dunedin station may as well be counted out, so far as Wellington is concerned. Some solace may have been received had Dunedin been in operation on a Wednesday; that is the day Wellington is silent, but both stations being silent the same day, that opportunity of receiving Dunedin is lost. All the New Zealand stations are in operation for the benefit of all New Zealand listeners, therefore give all New Zealand listeners the benefit of all the New Zealand stations.

[Wave lengths are allotted by the

Postal authorities, who, it is understood, work in harmony with Australia. As the Australian Royal Commission's recent report recommends some reallocation of wave-lengths, possibly some betterment may be effected. It is certainly desirable that all stations should be available to all listeners, and we will advocate any possible change to that end.—Ed.]

Thanks to Correspondents.

F.J.R. (Taumarunui):—I would like to thank you for inserting my letter in the "Record," also the two correspondents who so kindly supplied the information. The set I am using is a King five-valve, and, as far as I am aware, the circuit is in conformity with the New Zealand Postal regulations. I experience little fading with 2YA. Some nights it is worse than others, but on the whole the station and its transmission is nothing to worry about. 3YA is quite good, only fading is a bit more pronounced, whilst 1YA fading is bad. 4YA I do not pick up at all well; in fact, I can get Hobart with equal strength, also 2BL, Sydney. With reference to my previous letter re close proximity of stations, I have no interference from stations close together, and can cut out IYA from 3YA, or 2BL, Sydney, from 3YA, and these two stations are almost on top of one another on my dials. You will, perhaps think I am a bit of a pest troubling you, but your paper is of real service to amateurs who take up wireless as a hobby, and do not get the opportunity of going into it as deeply as one would like to. I hope later on to try a short-wave adapter on my set.

30 Stations on Three Valves.

A. W. Jones (St. Kilda, Dunedin): I have read many lists in the "Record" that have been sent in by different listeners. I have only been going for about nine months, and I am using a three-valve R.S.L. receiver. My aerial is 45 feet high, and of the four-wire type. The following is a list of stations I have heard:—New Zealand: 1YA, 12B, 2YK (old station), 2YA, 3YA, 4YA, 4AT, 4AK, 4ZB. Australia: 2BL, 2FC, 2GB, 2KY, 2UE, 2UW, 3LO, 3AR, 3BY, 4QG, 5CL, 5KA, 5DN, 3DB, 7ZL. American: KFOR, KGO, KFWB, KOA, KFI. Japanese: JOAK. That makes 30 on broadcast wave alone. This list does not include the morse code stations I have heard. I should like to know if anyone can beat this with a three-valve set, but, of course, Dunedin is slightly further away than the northern towns.

A device designed to control the tuning of single dial radio receivers from a distance was demonstrated recently in New York by the Algonquin Electric Company. The tuning control enables the set owner to install the receiver wherever most convenient, in a cupboard, in the attic or in a room remote from the loudspeaker. The unit is built in two forms, mechanical and electrical. The size of each model is such that it can be held in the palm of the hand or placed on the arm of a chair. The tuning dial of the set is turned by a small reversible motor placed on top or at either end of the cabinet, connected by a chain gear to the receiver dial shaft and controlled by a switch and rheostat in the unit bed plate. The rheostat regulates the volume.



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This B battery eliminator has been designed to provide a constant and reliable source of high-tension power to suit the average receiving set. The full-wave principle has been adopted on account of the greater output it gives, and also for the greater smoothness of working, which is an important point for DX reception. The principle of using two separate rectifying valves has been adopted because a burn-out of one filament only costs the price of a single rectifier, which is considerably less than a double valve. The filament secondary to the transformer is tapped in such a way that several voltages can be obtained to suit various makes of rectifier valves, so that it is not necessary that only one particular make should be used. On the other hand, if it is desired to use a double valve, only a very slight alteration will make it possible at any time. Then, again, using the full-wave puts less strain upon the two valves than would be placed upon a single one, so that filament life is longer, as they need not be run so bright, yet giving greater output. Three different voltages are provided for, ranging from about 160 volts to 350 volts. The eliminator is designed to work off alternating current of 50 cycles at 230 volts. By providing a tap at the 1300th turn of the primary winding, and using these turns only, it would work off 105 volts as a temporary expedient until changed over to 230 volts, as would be the case at the present time in some parts of Wellington. The inclusion of a pair of radio chokes is of special value in subduing stray noises caused by radio-frequency interference. Each voltage output is protected by a fuse, so that there is no danger of destroying a filament in case of an accidental "short" in the set. And in order to protect the fine wire of the transformer secondary windings, a fuse is also provided on each output lead close to its lead-out from the transformer.

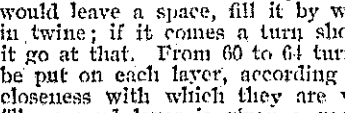
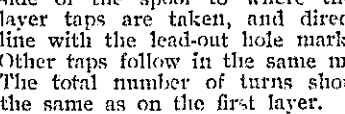
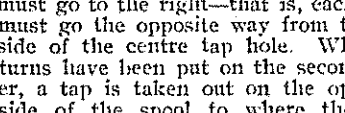
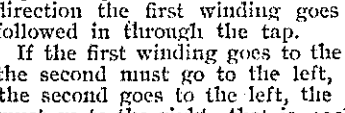
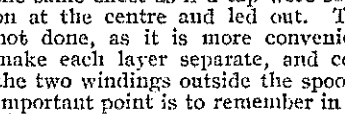
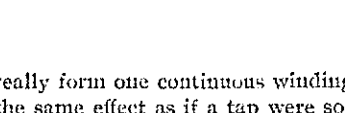
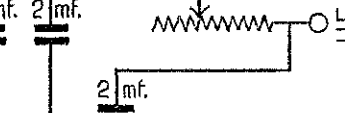
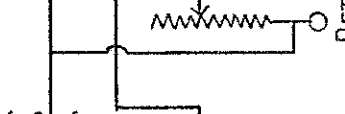
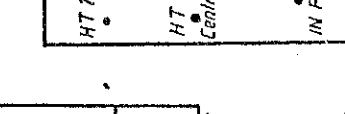
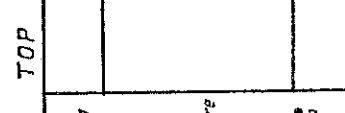
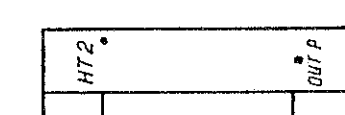
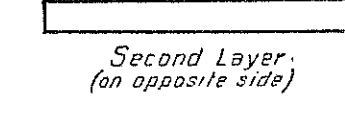
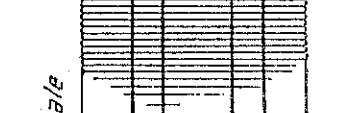
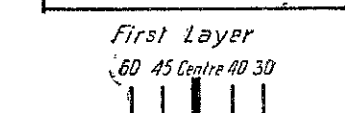
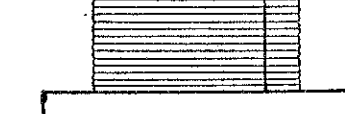
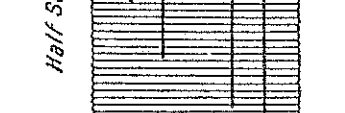
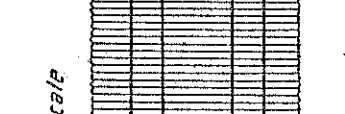
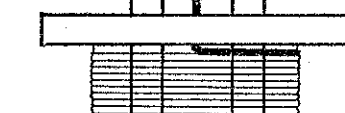
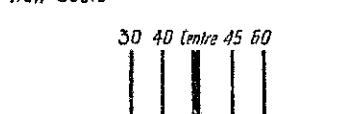
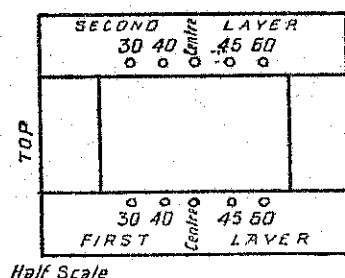
THE TRANSFORMER.

This is the most important part of the eliminator, so it will be described first. The laminated core is built up of ordinary tin plate, which is quite good soft iron for the purpose. The only difference between using this and stallion is that rather more wire must be used in the windings in order to compensate for the lessened magnetic flux density in the core. There are three separate windings, that for the filaments consisting of two layers of No. 18's double cotton-covered wire, 60 to 64 turns in each layer, tapped in nine places. The primary winding is next, and through this the alternating current supply flows. It consists of 2600 turns of 30's enamelled wire,

diagram, a piece of three-eighths dowel 9 or 10 inches long running through the centre and secured by screws. This is to act as a spindle when winding the thin primary and secondary wire, so it must be arranged that the dowel is fairly centrally placed. A handle is provided as shown. This former is now covered with two layers of thick manilla paper such as that used for folders in offices, and this is secured with glue or seccotine in such a manner that it may be slipped off at a later stage when the winding is completed. The square edges of the former may have just the sharpness taken off. Now for the ends of the transformer spool. They are made of strips of heart rimu or other good wood, shaped as shown in the diagram, the long pieces five-eighths wide, three-eighths thick, and the short pieces just over half that thickness, the ends of the long pieces being "halved" so that the short pieces will be let in flush. The short pieces are drilled at each end to take a small brass screw. These spool ends are assembled by gluing the inner edge and sticking them to the manilla, which must be made to stay nice and flat. When the four sides are in position and glued at the halved corners also, the four small screws are put in carefully on the inside surface without splitting the wood. The long end pieces should first be drilled for taps as shown and marked. The spool ends are so placed on the manilla that their inside surfaces are from 4 1/16th inches to 4 1/8th inches apart. About two dozen strips of good writing paper 4 1/16th inches wide and about 11 inches long will be required to place between layers of wire, and if these are accurately cut by a printer they can be wrapped round the core and used as a gauge for getting the position of the second spool end, with the advantage that the paper strips will fit accurately at the ends when used. When the glue has properly set, the spool is ready for the winding of the filament turns, which is done by hand, owing to the 18's s.w.g. double cotton-covered wire to be used.

THE FILAMENT WINDING.

The first layer of this is commenced by passing the end of the 18's wire from inside through the hole marked "Centre" in first layer side of spool end, leaving six inches projecting, then winding on the wire as shown with solid line for the first turn. Take care to make every turn sit snugly against the previous one, and nice sharp turns at the corners. A flat-faced hammer is of great assistance in making the turns lie flat by tapping them with sufficient force. When the 30th turn is reached, the first tap must be attached in the position shown in the diagram. These taps are required to lie as flat as possible in order not to



up at the ends, and then a layer of paper.

THE PRIMARY WINDING

may now be proceeded with, and in order to be able to rotate the spool, a stand must be made as shown, collars of some kind being slipped over the dowel ends to keep the spool running easily without end-play. The wire to be used is 30's s.w.g. enamelled, run on as evenly as possible with a layer of paper between each layer of wire. The end of the wire is passed out through the hole marked "In P." and winding is proceeded with by turning away from you with the right hand, guiding the wire on with the left. Very soon it will be found that if the wire is held a few inches away from where it meets the spool it can be run on very evenly at a good speed, provided the reel containing the supply is running on a spindle in a convenient position. If it is necessary to make a joint in the wire, it must be carefully soldered and covered with shellac and tissue paper or other insulation. If possible, get the assistance of a friend to turn the spool during winding, so that attention may be concentrated on the wire alone; this will add to the speed at which the winding may be done. This wire winds about 70 to the inch, so making a small allowance for loss of space at ends, about 270 turns will go on a layer, so that ten layers will be necessary to take the 2600 turns. When the required turns have been wound, a lead-out of thicker wire, say 22's d.c.c., should be soldered to the 30's, given a turn round the spool, and then led out at "Out P." This attaching of a strong lead-in and out wire should be carried out on both the primary and high-tension secondary windings. The primary winding is then covered with two layers of empire cloth and then a layer of paper to give a smooth surface for the high-tension wire. Whilst winding is proceeding, all projecting tap wires are to be coiled up round the spindle and tied, so that they do not get caught and damaged or broken off.

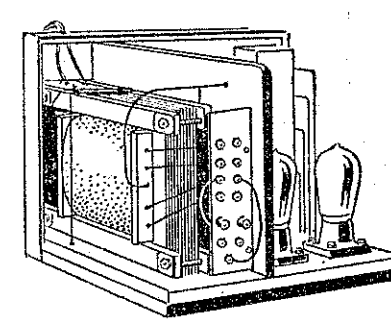
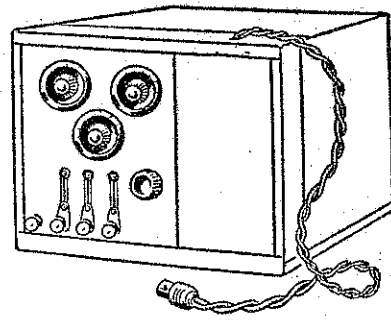
THE HIGH-TENSION WINDING

is the next matter for attention. The wire to be used is 34's s.w.g. enamelled. There will be fourteen layers of this wire, each separated by a layer of good paper. At the seventh layer the 2500th turn will be reached, and must be provided with a tap, which could be two 22's cotton-covered wire twisted together and soldered on. The joint must be covered with shellac and tissue paper, or other insulation. The tap must go out through the hole marked "centre-tap" on the high-tension end of spool. In case the winding is not yet completed where the tap has to cross to the hole, the tap must be twisted up and secured until the layer is completed, when it can be placed between tape and led out. Great care must be exercised in making a good job of this tap joint, because the wire is thin, and getting to it afterwards is a matter of difficulty. The remaining seven layers can now be put on, the wire led out through HT2. The winding may now be given a good coat of paraffin wax or resin and beeswax in equal parts, melted and put on with a brush. Two layers of empire cloth are then put on, and may be finished off with an outside covering of dark book-cloth. During the winding of the fine wire great care must be taken at the ends of layers to prevent any wire sinking down to come in contact with wires in the previous layer. A good way to prevent this is to put on at the ends a round or two of fine twine, securing it with seccotine, and thus fill up any space into which the wire might sink.

THE DIAGRAMS.

A view of the eliminator as it looks when completed is shown. The front panel, on which are placed the three resistances, rheostat, fuses, and connecting terminals, is ebonite, whilst the remainder of the case is of tin, to which is imparted a smart finish with black cycle enamel. Another view gives a general idea of the interior arrangement, the transformer divided off from the remaining components by a wooden partition lined with tin, to isolate the hum as much as possible. At the rear of the transformer is a small distribution panel, from which varying voltages may be taken to suit different valves, and provision is made here for the insertion of a piece of resistance wire to regulate the current for each valve filament. Behind the partition are the two rectifying valves, the bank of condensers, tail and narrow, and the three 'c'-res,

not in view. On top of the transformer a small piece of ebonite or fibre holds the fuses for each side of a.c., and each output high-tension



lead, which will save a burn-out of the windings in case of an accidental "short." Further diagrams connected with the former, and winding of the transformer, will appear next week. The finished size of the case is twelve inches wide, ten high, and ten inches deep.

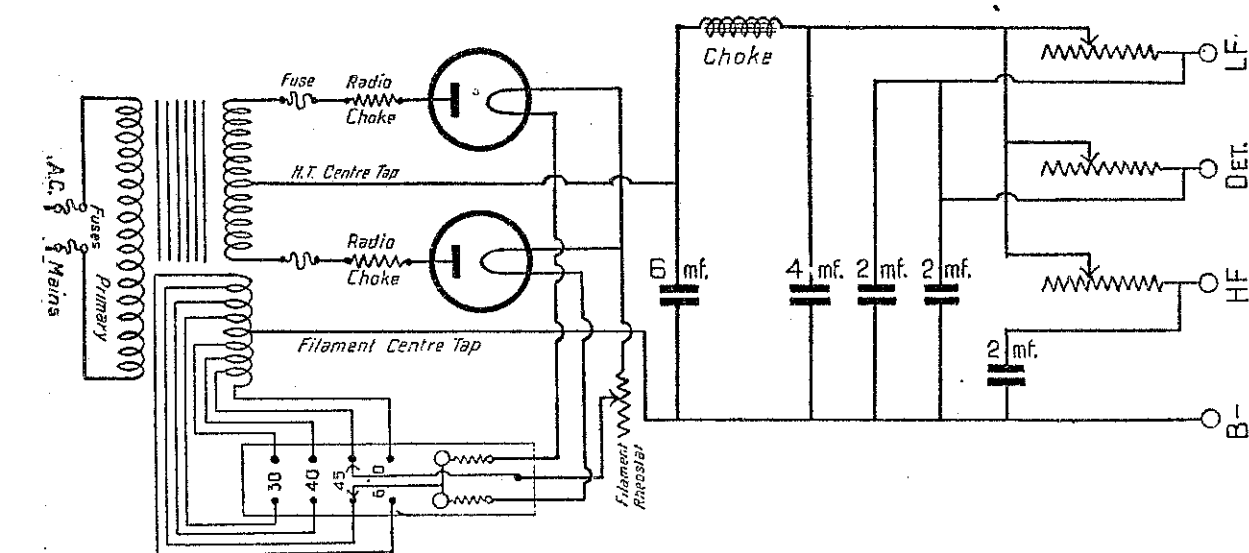
ANSWERS TO CORRESPONDENTS

(By "Megohm.")

D.B. has a five-valve neutrodyne and would like an article on how to add four stages of radio frequency on the one side, and the addition of a power valve to follow the present two stages of audio. Most people are fairly well satisfied with the output of a five-valve neutrodyne if it is behaving efficiently. One would be inclined to think that in our correspondent's case he is not getting the results from his set that he has a right to expect. If that is the case, it would be far better to make the best of the present set, experimenting continually to bring it to a state of high efficiency. This should be done before additions are made to any set. Adding a number of radio stages as proposed would not be a simple matter, even with instructions, as R.F. is not easily handled in successive stages, and would probably need the extra complication of screening each valve. Two stages of audio transformer coupling is looked upon as the limit at the present time, though some sets are being specially designed to carry three stages. But the amateur is advised to stop at two, so that our correspondent should replace his last valve by a power-valve to give a greater output than that at present in use. The introduction of a super power valve often imports a further problem in the shape of much increased high-tension voltage and a grid bias of anything up to 40 volts. It is not essential to run a power valve to the limit of voltage allowable, and much increased volume and quality may be obtained by striking a happy medium.

F.R.C. (North Auckland) wishes to know if the remaining voltage of a 45-volt dry B battery, that has gone down to half, may be utilised to charge a 6-volt battery, and thus recover the remaining voltage. Theoretically this is possible, but in practice the 25 volts remaining in the B battery has such small amperage that its impression on the 6-volt battery would be practically nil.

In tuning a properly balanced neutrodyne receiving set the broadcast stations will be picked up without hearing "beat notes" and the usual regenerative whistle. As the dials are turned the programme of different stations will be heard, first gradually, and then with greater intensity and clarity as all the adjustments are properly made for that particular station. If the stations come in with a whistle, your neutrodyne is not correctly neutralised and you are causing your neighbours the annoyance of having their pleasure spoiled by a "howling" valve.



no taps being required, except that at the 1300th turn already mentioned, in case it is desired to work temporarily off 105 volts. The third winding is that supplying the high-tension current, which passes to the valves for rectification, consisting of 5000 turns of 34's enamelled wire, tapped at the 2500th turn. Each 2500 turns gives about 200 volts, which leaves a good working voltage after the drop of about 30 volts in the rectifying valves.

The filament windings are brought out to a small distribution panel which allows of any available voltage being utilised for the rectifier filament, and also provides for the insertion of a short piece of resistance wire by means of which the voltage supplied to each filament will be equal, thus allowing of control by a single rheostat for the two filaments.

THE CENTRAL FORMER.

The building of the transformer is commenced by making a wooden core upon which to build a spool and wind the wire. This wooden core measures 8 1/2 inches long by 2 inches wide and 1 1/2 inches thick, and must not exceed these dimensions. This core is built up of pieces as will be shown in a

throw the winding out of shape, so that three 22's enamel wires are cleaned at the ends, hooked over the 18's, the cotton being scraped away at that place, and the three wires soldered in place. The joint is now shellaced and a piece of tissue paper wrapped round, then a strip of 3-inch adhesive tape is taken, folded at the joint so as to run above and below the tap wires, right up to their exit through the hole marked 30, 1st layer, a few inches being left projecting. Taps on all the windings are treated in the same way as regards insulation with the double strip of tape. This insulation of taps must be carefully done so that the enclosed wires are unable to contact any others, especially at the inside of the spool ends. Proceed with the winding, tapping as shown in the diagram at 40, 45, and the last turn, which may be held with thin twine passed round and tied. When this layer is complete, the whole is well shellaced, and when dry a layer of empire cloth is carefully placed all round with an overlapping joint and no spaces at the ends. Then the winding of the second layer is proceeded with, but a very important point must be noted in commencing this layer. The two layers

really form one continuous winding with the same effect as if a tap were soldered on at the centre and led out. This is not done, as it is more convenient to make each layer separate, and connect the two windings outside the spool. The important point is to remember in which direction the first winding goes when followed in through the tap.

If the first winding goes to the right, the second must go to the left, and if the second goes to the left, the second must go to the right—that is, each wire must go the opposite way from the inside of the centre tap hole. When 80 turns have been put on the second layer, a tap is taken out on the opposite side of the spool to where the first layer taps are taken, and directly in line with the lead-out hole marked 30. Other taps follow in the same manner. The total number of turns should be the same as on the first layer. If this would leave a space, fill it by winding in twine; if it comes a turn short, let it go at that. From 60 to 64 turns will be put on each layer, according to the closeness with which they are wound. The second layer is given a good coat of shellac, and when dry is covered with two layers of empire cloth coming well

HOME CONSTRUCTORS

Write for our Illustrated Catalogue of Radio Parts.

DE FOREST VALVES
BRANDE'S PHONES
IGRANIC COMPONENTS
RADION PANNELLING

INTERNATIONAL RADIO CO., LTD.
FORD BUILDINGS, WELLINGTON.

FEEBLE RADIO CURRENT TO AVOID LEAKAGES SOME GOOD POINTS.

Even in a set which has been built of the best materials, which has been constructed by the best of radio engineers and which operates "perfectly" the percentage of the initial electrical impulse which has been utilised is very small. That is to say, the efficiency of a well-constructed and well-designed receiver is far from being 10 per cent. There are certain factors in energy losses which man has not been able to overcome. Some of these difficulties have been dealt with to a certain extent successfully.

Careful Insulation.

It is in the aerial and earth systems that the first losses of the received energy are sustained. The aerial should present a large surface of bare metal. Serious leaks are to be found in faulty insulators or insulators of poor quality. For all-round satisfaction employ the fluted or petticoated glazed porcelain insulators. These will generally be found to hold up in all weather and under severe physical strains. Bring your lead-in through a window pane. If this is not possible insulate it with a porcelain tube. An immense loss will result from jamming the lead-in under a window, not to speak of the danger incurred. Keep the wire away from the building a foot or more if possible to prevent absorption of the received waves.

The earth system has one main danger to be guarded against, providing that a good earth has already been established. Be careful to keep high resistance joints out of the circuit. This maxim holds for the aerial and the wiring of the whole set.

Sources of Losses.

Among those losses over which man has little control are those resulting from difference of electromotive force of two parts of a circuit. This has generally been known in the case of a wire-wound inductance as distributed capacity loss. It is on account of this loss the bank-wound coils are wound in a particular manner and not layer upon layer. Another source of trouble is poor insulation. This difficulty has been overcome to a very great extent, but in dealing with electrical impulses at radio-frequency the problem of insulation must be carefully regarded. In the true sense there is no substance that has yet been found which has perfect insulating qualities. An insulating material is one which offers a resistance high enough to retard to a great extent the flow of electricity. China and glass may both be called insulators. They differ only in degree of insulating properties. There is no well defined line between insulators and conductors, because each has to some extent the properties of the other. In a general way all metals are good conductors, and glass, porcelain and rubber constitute good insulators.

Avoid Resistance.

Aside from such uncontrollable (to some degree) energy losses, there are many ways in which energy is lost that are inexcusable. When constructing a set keep in mind that the initial impulse is very feeble, wire and arrange your set so as to offer as little resistance to it as possible. It is a known fact that electricity travels on the surface of its conductor. Never use a wire of small diameter for connection between instruments when a wire of fairly large diameter is available. No. 16 aerial wire is a good wire for wiring a set, although proper "bus" wire is better.

Bare Wires Best.

Because of absorption, another of radio's seemingly insurmountable difficulties, bare wire should be used wherever possible. Wire insulated, first with a single layer of cotton and then one of silk, is very efficient and very neat appearing in coils. In wiring the set, if a rather intricate job is encountered, and "bus" wire is not available, use heavy copper aerial wire and cover this with natural-coloured varnished cambric tubing or "spaghetti." Always use insulators in their natural colours if possible. Some of the dyes that are employed in colouring them have strong powers of absorption or conduction or both.

Advice On Wiring.

Every wire in which an electric current is flowing has about it a magnetic field. It is this property of an electric current that is taken advantage of in coils and transformers of all kinds. The field of a coil is much stronger than that about a single wire. This property, although most useful and essential in our receivers, constitutes a source of trouble alone. Never run high-frequency wires parallel to each other if they are within an inch and a half of one another. The field about one or two parallel conductors may set up a current in the wrong direction in the other. This last is called an induced current, for it is set up by the induction of another current. If the induced current "bucks" against the current already flowing in the wire it can readily be seen that trouble will result.

In circuits employing a tickler coil for regeneration, care must be taken in placing the coil in position so that its windings are in the same direction as those of the secondary. Otherwise the fields of the two coils will counteract and neutralise each other.

Induced Currents.

While we are speaking of induction it would be well to caution against crowding the parts of a receiver into too small a space. Amplifying transformers are surrounded by a strong

magnetic field, and for this reason should be as far removed from the tuning units as possible. Shielding these transformers with a metal case helps greatly to dampen this field, but does not prevent some of the strongest lines of force from breaking through. In some cases action in the radio valves is paralysed on account of some strong magnetic field in their proximity. Proof of this statement can easily be had by the experimenter. Set your outfit into operation and then place a large horseshoe magnet around your valve. Swing the magnet around in a circle in a horizontal plane and notice the effect produced on the signal strength.

Avoid Dust.

A common factor which lessens the efficiency of a set is dust. Dust causes leaks of high resistance all over the set. A heavy coat of dust will destroy the efficacy of an insulator. If dust is allowed to accumulate on the plates of a variable air condenser, the capacitance value of the latter will fluctuate and cause trouble. Dust must absolutely be kept off the grid leak.

Can you open up your set and disclose a shining and neatly-wired apparatus? Square corners in the wiring helps the general appearance. A neatly—and cleanly—wired set will be found to give greater satisfaction than one in which the wiring is a maze of twisted and coiled wires, going to and coming from only the constructor himself (perhaps) knows where. If ever you wire a set as an experiment, it will pay to use flexible insulated wire temporarily, and as soon as the set is found to function satisfactorily replace with permanent heavy wire.

A "SICK" SET

TO ASCERTAIN CAUSE.

When a receiving set does not operate to full efficiency or refuses to operate it is sometimes hard to put one's finger on the spot where the trouble lies. By using the following pointers it will be found that trouble-shooting in a set will be greatly simplified.

If a set refuses to bring the stations or just delivers signals that are audible one should first determine whether the aerial is in perfect condition. The loud-speaker or 'phones should be tested, then the batteries and the valves. If these are all perfect then start on the set proper.

Simple Tests.

Test all coils with a battery and a flashlight lamp to see if there is an open circuit in any of the windings. The condensers should then be tested for short circuits. A battery and lamp will do this also. If the lamp lights, the condenser under the test should not be used.

All connections from the instruments should be tested for contact and strength. As some soldering flux corrodes it is advisable to use rosin core solder for all connections; this eliminates the chance of corrosion. This information is given on the supposition that the set is wired correctly; this is really the first point to look over.

Locating the Trouble.

Another thing to remember is that if the detector valve delivers a signal and the amplifier will not, then one can be positive that the trouble lies in the amplifier. If the signals are heard in the first step of amplification and not in the second, then the trouble lies somewhere between the jack and the loudspeaker or 'phones on the last stage.

Jacks, valve socket contacts, run down batteries and poor connections are the four things that are the cause of most sets that are inoperative. Bearing these things in mind it should not be difficult for the listener to hunt trouble in his own set.

VOLTMETERS USEFUL

HINTS FOR BUILDERS.

When building a set now it is the desire of the fan to have as neat a looking outfit as it is possible for him to build. The more professional-looking the set the better pleased the constructor is with it.

There is one thing which adds to the appearance of any radio set, and that is the addition of a voltmeter. Some fans wish to use an ammeter, but this is not necessary. Besides adding to the general appearance of a set the voltmeter is a useful instrument on any tube receiver.

Valves Are Critical.

The reason for this is apparent when one knows that valves of to-day are critical to the voltage used to light the filament, and not to the amperage. For long life it is necessary that the valve be burnt at a voltage equal to the rating on the carton in which the tube came.

The amperage of the valve is taken care of in the tube itself. Besides the filament voltmeter there are no instruments that are of any great assistance in a set unless very fine work is to be done; in that case a plate milliammeter is an aid to fine adjustment.

To Select a Voltmeter.

In picking the voltmeter for a set the size and rating depend upon two things, the panel space, for size, and the number and type of tube for rating. In using storage battery valves such as the UX-201A or C-301A the rating of the voltmeter must be seven volts or slightly higher.

Using WD-11, 12; C-11, 12 the voltmeter should have a range of two volts. For the UX-199 or C-299 valves the range of the voltmeter should be four volts. Of course, it is possible to have the scale reading of the voltmeters used higher than that suggested above, but this is not advisable, because the higher scale the harder it is to obtain a fine reading on the low voltages.

The Children's Corner

By "ARIEL"

Dear Family—"Squealers" and "Surprises" are arriving for the zoo by every mail. We hope to have our "Squealer" in his cage next week and he should be a fine fellow. I'm afraid the verses are not always quite as good as they might be. Try shorter ones, about four lines. I think many of you would find it easier to make just a simple little rhyme like that. This week we have some of Uncle Jack's songs, and also one of Uncle Sam's jingles. No doubt you all know the tunes perfectly well, but it is rather nice to have the words to refer to, isn't it? I am glad you find the competitions interesting—there are quite a number of young authors and authoresses coming to light, or say nothing of poets! Thank you all for your letters. I am always interested to hear all about you, and what you do at home and at school. I am glad, too, to have so many new "joiners" this week, and am looking for some good work from them!

Yours,
ARIEL.

The Words of Uncle Jack's Songs

FOR LISTENERS TO STATION 3YA.

THE TWILIGHT SONG.

Sing a song at twilight, when the lights are low;
And the flick'ring shadows softly come and go,
Whisper-wills a-sing, robin's in his nest,
May our song at twilight lull you to rest—
Lull you to sweet rest.

BED TIME.

The evening is coming, the sun sinks to rest,
The crows are all flying straight home to the nest.
"Caw, caw," says the crow, as he flies overhead,
"It's time little people were going to bed."

The flowers are closing, the daisy's asleep,
The primrose is buried in slumber so deep;
Closed for the night are the roses so red,
It's time little people were going to bed.

Good night, little people, good night and good night;
Sweet dreams to your eyelids 'till dawning of light;
The evening has come, there's no more to be said;
It's time little people were going to bed.

GOOD NIGHT AND GOOD MORNING.

A fair little girl sat under a tree,
Sewing as long as her eyes could see;
Then smoothed her work and folded it right,
And said, "Dear work, good night, good night."

A number of rocks came over her head,
Crying "Caw, caw," on their way to bed;
She said as she watched their curious flight,
"Little black things, Good Night, Good Night."

MY GRANDFATHER'S CLOCK.

My Grandfather's Clock was too tall for the shelf,
So it stood ninety years on the floor;
It was taller by half than the old man himself,
Though it weighed not a pennyweight more.
It was bought on the morn of the day that he was born,
And was always his treasure and pride,
But it stopped short, never to go again,
When the old man died.

Chorus:

Ninety's years without slumbering, tick, tick, tick, tick,
His life-second numbering, tick, tick, tick, tick,
It stopped short, never to go again,
When the old man died.

In watching its pendulum swing to and fro,
Many hours had he spent, while a boy,
And in childhood and manhood, the clock seemed to know,
And to share both his grief and his joy.
For it struck twenty-four when he entered the door,
With a blooming and beautiful bride,
But it stopped short, never to go again,
When the old man died.

COMPETITIONS

1. The Best Story; closing date, October 12. Prize, a book.
2. The Best Poem; closing date, October 19. Prize, a book.
3. Our Wireless Zoo. Animal No. 6, the "Surprise"; closing date, October 19. Prize, 5s.

ANSWERS TO PUZZLES

A WORD SQUARE.

1. S A G E S
2. A D A G E
3. G A U G E
4. E G G E D
5. S E E D Y

QUEER THINGS.

The Excursion.

To complete the little story I gave you last week, fill in the following words in this order: Noon, eve, Bob, Hannah, pop, peep, ewe, dad, tit, Aba, sees, eye, pup, peep, bib, pap, tot, Bob, pip, eye, nun, redder, redder, Tut, did, madam, deed, refer, level, eke, poop, gig, Oho, revival.

MORE MISSING WORDS

All the missing words contain the same letters, but differently arranged. Can you find them this week?

THE FISHERMAN.

A man of — had caught a —
And it was windy weather,
"Give me my —," he cried, "to fix,
My fish and — together."

FOUND ON A PENNY.

Take a penny and, looking at the King's head, try to find how many different objects are to be seen there. To begin with, can you see a well known animal? The answer is, hare (hair).

Now find these:—
A place of worship, part of a bottle, part of a hill, a personal pronoun, part of a trunk, part of a whip, a protection against thieves, a river crossing, a badge of royalty, a receptacle for corn.
Answers next week.

LIMERICKS

A thrifty young fellow of Shoreham,
Made brown paper trousers and wore—
ham,
He looked nice and neat
Till he bent in the street,
To pick up a pin, then he torchman.
As a beauty, I am not a star,
There are others more handsome by far,
But my face, I don't mind it,
For I am behind it;
It's the people in front, get the jar.
—Both sent by Nancy McNie.

There was an old man of Dunoon,
Who always ate soup with a spoon,
When they said, "Is it slow?"
He answered, "Oh, no,
I find it a positive boon."

There once was a farmer of York,
Who made all his fortune in pork;
He bought for his daughter,
A tutor who taught her
To balance green peas on her fork.

There was a young lady of Mutter,
Who smeared herself over with butter;
She looked very well,
But they say that the smell
Was too utterly, utterly utter!

There was a young lady of Weedle
When in church she sat down on a
needle
It was luckily threaded
And not far embedded,
And quickly pulled out by the beadle.

HER NEIGHBOUR'S VOICE

When entertaining the children recently, Uncle Sam of 3YA gave an exhibition of his powers of mimicry. And this is what one of his nephews told him happened in his home:—

"It might interest you to know that our Mrs. Cat appreciated your efforts on Saturday night. She was asleep on a couch in another room, but the instant the 'cat fight' started, she darted in and over to the set. She sat down and stared intently at the loudspeaker. There is no doubt that she was keenly interested. The Tunney-Dempsey fight had no more intent listener. But when the dog barked, her ears went back, and she made a discreet disappearance."—
L. A. D., Linwood.

UNCLE SAM'S DITTY

GIVEN FROM 3YA.

There's a radio station in the town—
in the town,
And there old Uncle sits him down—
sits him down;
And tells his tales with rapture free,
A-thinking all the time of you and me,
Fare you well, for we must leave you,
Do not let this parting grieve you,
But remember that the best of friends
must part—must part.
Adieu, adieu, adieu, adieu, adieu, adieu,
We can no longer stay with you—stay
with you.
We'll close down now till we meet you
all again,
And hope you'll all keep merry and
bright till then.

QUESTIONS AND ANSWERS

No one quite tells me what I want to
know;
They answer me—and that's the end
of that.
For if I ask, "What makes a flower
grow?"
Their answer wouldn't satisfy the cat!
If I say, "Daddy, why should snow be
white
And fall in crystals, no one like the
other?"
He mumbles gruffly, while he strikes a
light,
"I'm busy, Tommy. Run and ask your
mother!"
But mother, when I ask why cuckoos
cuck,
Just stares at me and says, "God
made them so,"
And gives me such a wise and solemn
look,
Which means, of course, she really
doesn't know.
And Nannie's way is diff'rent altogether,
For if I ask why winter days get
colder,
She gives a grunt and says, "Oh, it's
just the weather;
You'll understand all that when you
grow older!"
—Algernon Blackwood.

COFFEE-POT FACE

Coffee-pot face both long and thin,
Pelican neck and leathery skin;
Frumptery nose that points straight down,
Forehead crumpled with crease and
frown!
Lips pursed up in ugly pout,
Eyes that sulkily shift about.
O coffee-pot face is in disgrace!
Coffee-pot, coffee-pot, coffee-pot face.
It's a teapot face that is my delight,
Chubby and jolly, merry and bright!
Apple-pie round and cheerfully red,
And smiles that tickle and ripple and
spread!
Lips that wrinkle and entrance,
Eyes that twinkle, laugh and dance.
A teapot face chock-full of glee,
A teapot face is the face for me!

LETTERS

Dear Ariel,—I have been wishing very much to join your page, and am sending in a story. We get the "Record" every week, and I always find your page very interesting. I wanted to ask you when Uncle Ernest is going to be on the air, and which nights. The painting competitions look very pleasing; but I have no paints. I am very sorry that I am unable to write you a longer letter, but I shall have to hurry off to school. We have to drive 4½ miles.—Peggy Farquhar, Rakaia.

(Uncle Ernest is on the air every Friday at 6 p.m. I am so pleased to have you join Our Corner.—Ariel.)

Dear Ariel,—Thank you very much for the beautiful book you sent me. I enjoyed reading it very much. I should like to go in for your story competition, which is mentioned in the children's column of the "Radio Record." I am very fond of writing stories, and reading. My little sister, Beryl, is very surprised at you thinking she was a boy. She is the one on top of the ladder, on the left-hand side, and on the right is her twin brother, —With love from your little friend, Catherine Sale, Mangaohoe.

(I'm afraid I couldn't have looked very carefully at Beryl. It is quite easy to see that she is a little girl. How lucky she is to have a twin brother! Yes, do try for the story competition.—Ariel.)

Dear Ariel,—As I dislike poetry I have written a story about a radish for the competition, and I am hoping it is not too long. I am looking forward to your secret, which is going to improve our corner, and I have an idea what it is. I am glad I am not you, writing letters to boys and girls. I did not realise how many receiving sets there are in New Zealand. Here is a description of a circle. It is a round straight line with a hole in the centre.—George Best, New Plymouth.

Dear Ariel,—I am writing to ask if I may join your corner, for my brother gets the "Radio Record" every week, and I always dive into the children's page. I am fourteen years old, and this is my second year at the High School, but I do not suppose I am too old to join your corner. My father says I am too big to listen to bedtime stories, but I notice that every Wednesday and Saturday he is listening-in, so I told him that he is the one that is too big! As I cannot draw, I am entering for the poem. I have a good few pets, three cats, one dog and two bantams, named Romeo and Juliet. I also have some kind friends on top of the roof.—Eileen Hurrell, Beckenham.

(Of course you are not too old to join Our Corner. I am delighted to have you. Your bantams must be a very romantic pair, with such names!—Ariel.)

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THE RADIO RECORD

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Count 1.—Gentleman: Step forward on right foot, put the whole weight on it; knees straight. Lady: Step backward on left foot, put the whole weight on it; knees straight.

Dancing Taught by RADIO

First Lesson of
Series by
Miss Phyllis Bates.



Count 2.—Gentleman: Bend knees slightly, weight on right foot. Lady: Bend knees slightly; weight on left foot.

A series of lecturettes on modern ballroom dancing will be given by Miss Phyllis Bates, the Dominion's leading teacher, from 2Y.A. Photographs, to illustrate the movements, together with instructions, will be given in the "Radio Record."

The Charleston, explained Miss Bates, as originated in America, was decidedly eccentric and quite unsuited for the ballroom. Its movement combined a tap of the heel on the floor and a strong rebound, an in-and-out twisting of the feet, a bending and straightening of the knees, and a pronounced lift of the feet from the floor. As a ballroom dance the American Charleston did not find favour in England.

An English version, however, was evolved from which the twisting and kicking of the feet were eliminated. The main characteristic of the first English version was the tap and rebound movement of the heels. This, however, gave way in time to a second version, known as the Flat Charleston, in which the feet were kept flat, the heel tap being eliminated. The main characteristics of this were the bending and straightening of the knees, and the in-and-out twisting of the feet, the latter being reintroduced.

To-day the tendency is to omit the foot-twist altogether, so that the present Charleston consists merely of an up-and-down movement obtained by an alternate bending and straightening of the knees. The Charleston is danced to fox-trot time—four beats to a bar, viz.: Accented, 1; unaccented, 2; accented, 3; unaccented, 4. On the accented beats 1 and 3 the knees are straight, and on the unaccented beats 2 and 4 the knees are bent. The feet are kept as flat as possible.

The main step of the dance consists of four movements and each main-step occupies one bar of music—one movement to each beat.



In order to help country enthusiasts, Miss Bates has consented to answer queries arising out of her lecturettes, through our columns. Address either Miss Phyllis Bates, Willis Street, Wellington, or care "Radio Record," P.O. Box 1032, Wellington.

In the main-step the weight is kept on each foot alternately for one bar.

Dancers must not forget to commence the main-step on the first beat of the bar.

The detailed movements are set out in the lines under the accompanying photographs. From the starting position follow carefully through the position and instructions of photos No. 1 to No. 2, then to No. 3, and finally to No. 4, which shows the correct position of the knees.

To continue the gentleman should step forward on LEFT foot and puts the whole weight on it.

The lady must step backward on RIGHT foot and put the whole weight on it.

Then repeat the four movements:
1—step; 2—bend; 3—close; 4—bend.

Practise the main step, at first to slow music, and later to quick time.

Readers may try to evolve simple steps for themselves, but always remember to keep to the principle of the dance—knees straight on 1 and 3, knees bent on 2 and 4.

The Flat Charleston is customarily introduced as a variation of the Quickstep.

Should readers wish to ask Miss Bates any questions bearing upon her instructional lecturettes, they may be submitted and will be dealt with in reply through the columns of the "Radio Record."

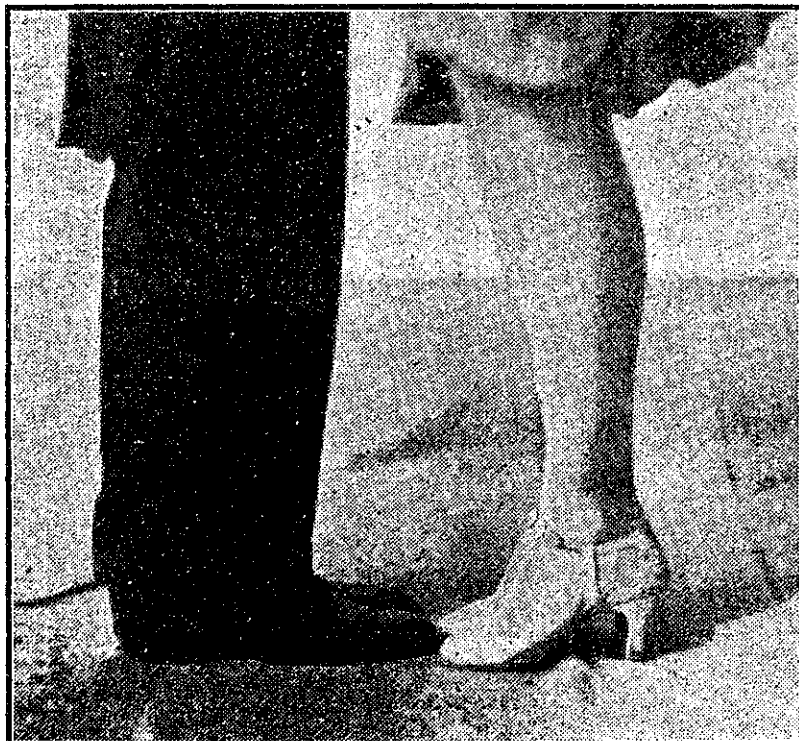
CORRECT HOLD

The lady is held slightly to the left for Charleston and Quickstep, gentleman's right.

THE FOOT TWIST.

Dancers may introduce a foot twist if they wish. The rule is—turn the feet out when the knees are straight on 1 and 3; turn the feet in when the knees are bent on 2 and 4.

All
photographs
by
S. P. Andrew.



Count 3.—Gentleman: Close left foot up to right, knees straight; weight on right foot. Lady: Close right foot back to left, knees straight; weight on left foot.



Count 4.—Gentleman: Bend knees slightly, weight on right foot. Lady: Bend knees slightly; weight on left foot.