

Outstanding Crystal Performances--Fading Enquiry

Christchurch Carnival Preparations

THE RADIO RECORD

Published Weekly

REGISTERED G.P.O., WELLINGTON, N.Z., AS A NEWSPAPER

Price 3d.

VOL. I, NO. 14.

WELLINGTON, N.Z., FRIDAY, OCTOBER 21, 1927.

Per Annum, Post Free, 10/-; Booked 12/6.

Crystal Owner Hears 2YA At 375 Miles

Result of "The Radio Record" Competition

Astonishing results have been revealed by owners of crystal receiving sets who have taken part in the prize "Crystal Reception Competition" conducted by "The Radio Record." The £1 1s. prize has been awarded to—
MASTER JACK BURDETT
(aged 17 years)

Hoanga, North Wairoa (6 miles north of Dargaville, 375 miles from 2YA Wellington).

Master Burdett listens for a half an hour every evening to 2YA, Wellington, on his crystal set which cost him only eight shillings.

The competition was for the best long-distance crystal reception recorded during September of 2YA. To stimulate interest in crystal work and secure knowledge of the records possible therein "The Radio Record" offered a prize of £1/1/- for the authenticated record of the reception of 2YA from the greatest distance in New Zealand throughout the month of September on a crystal set, preferably home-made.

The following simple conditions were applied:—

1. The reception was to be certified to by some reputable person, whose name and address, together with that of the successful entrant, would be published.
2. The reception must take place in September, and entries closed with us on October 10.
3. Only New Zealand entries accepted.
4. Cost of crystal set to be given with brief description, and whether home-made or not.
5. In the event of difficulty in adjudicating the winner on distance alone, the other factors of merit in the equipment and cost would be taken into consideration, the principle being to secure the maximum results at the lowest cost.
6. Decision as to airline distance from 2YA would be based on the "Radio Record" map as published in our issue of August 12.

Master Burdett writes: "In entering for the "Radio Record" long-distance crystal reception competition, I enclose particulars of the reception I received with my set for the month of September, also a description of the set, with the testimonials of friends I have asked to listen.

"Every evening for about half-an-hour I listened to 2YA, and every time I tickled her up she was there with splendid volume and clarity, often quite audible on the speaker at a distance of 6 to 10 feet. Fading is not very noticeable and static is barely audible at all.

"The best items are soprano solos, and of course, bands. I did not miss one children's session, and your carrier was there while no one was talking. Every word of the news was clear and quite loud enough to be heard with the 'phones about two inches from the ears.

"On one or two occasions I have received the whole programme from 2YA without a hitch. (My people have a neutrodyne, so you can understand that I could not use my crystal all the time.)

"The set which I purchase for eight shillings consists of 120 turns of 24 gauge enamelled wire on a two-inch Exelon former, a rod and single slide, and an enclosed detector, with a brass wire cats-whisker in contact with a chip of Hertzite crystal.

"The horizontal portion of the aerial, which is suspended between four large insulators, is 88 feet long and 50 feet high. The down lead, which is thicker than the horizontal portion, is 46 feet long, and passes through a lead-in tube to the set. The earth is another 8 feet in length and is soldered to a galvanised pipe driven three feet into wet clay. The whole aerial circuit is 146 feet in length.

"The stations I have received at 'phone strength on an aerial 120 feet long are 1YA, 2YA, 3YA, 2FC, 2BL, while 2GB was heard faintly, but unfortunately 2BL was too much in evidence.—Jack Burdett.

"P.S.—2FC at about 10.30 is as loud as 1YA. I am six miles north of Dargaville by air line.—J.B."

Complete endorsement of Master Burdett's fine achievement is supplied in letters from:

Mr. E. G. Appleton, Victoria Street, Dargaville.

Mr. William Kay, Hoanga, North Wairoa.

Mr. Roy Bathurst, and Mrs. Florence E. Bathurst, Hoanga, North Wairoa.

Mr. Appleton testifies that he has heard 2YA, Wellington, six feet from Master Burdett's loudspeaker.

SECOND BEST RECORD.

The second best performance is that of MR. J. J. LAMBERT, Upper Waiwera, (30 miles north of Auckland), 330 miles from 2YA, Wellington.

Mr. Lambert writes: "I am situated north of Auckland 30 miles, and I hear 2YA at good strength, at times as loud as 1YA, especially band music, but fading is greatly experienced. I also hear another station which I believe to be 3YA, though speech is not distinct enough to hear the station's name, but this does not concern 2YA, so I will give further details about aerial, etc.

"My aerial is about 40 feet in height and 100 feet long, lead-in, 15 feet. The earth-wire is fastened to a water-pipe which stands out of the earth three feet. The wire from the crystal to the pipe is about two feet six inches in length. The earth wire is only bound round the water-pipe. The set is called "Brownie No. 2 model." My brother bought this set for me, said it cost 17/6 without ear phones.—J. J. Lambert."

Complete endorsement of Mr. Lambert's claims is embodied in a letter from:

Mr. Alfred C. Bechar, Teakeraoa.

UNFORTUNATE OMISSIONS

Mr. J. H. Gill, Awanui North, whose home is located 450 miles away from 2YA, Wellington, reports good regular reception of 2YA on his crystal set, but has omitted to comply with the first conditions of the competition that reception must be certified by some reputable person. No letter certifying Mr. Gill's reception has been received, and thus he, unfortunately misses winning the first prize.

Mr. W. J. Hughes, Puka Puka, Rodney County, about 330 miles from 2YA, Wellington, reports that he receives 2YA in the evenings with his crystal set, but he omitted to forward the necessary certificate of a witness. He states that he has on one occasion received 2YA in the afternoon. Seemingly several of the reports received were not intended for competition, and therefore no care was taken to send an endorsement by a witness. This would account for the omissions mentioned above.

Quite a large number of Auckland enthusiasts report reception of 2YA, Wellington, with crystal sets. Among the most notable are the reports of Mr. John A. Waring, Montrose St., Point Chevalier, Auckland; Mr. Walter Wilcock, 14 New Windsor Road, Avondale, Auckland; Mr. Leslie G. Watts, 23 Pah Road, Epsom; Mr. B. Clark, Matai St., Avondale South, Auckland; Mr. L. J. Foster, Rama Rama, via Drury, Auckland; Mr. S. H. Beckett, View Avenue, Onehunga, Auckland; Mr. E. W. Thompson, Panama Road, Otahuhu, Auckland; Mr. B. Davis, 98 Eden Terrace, Auckland.

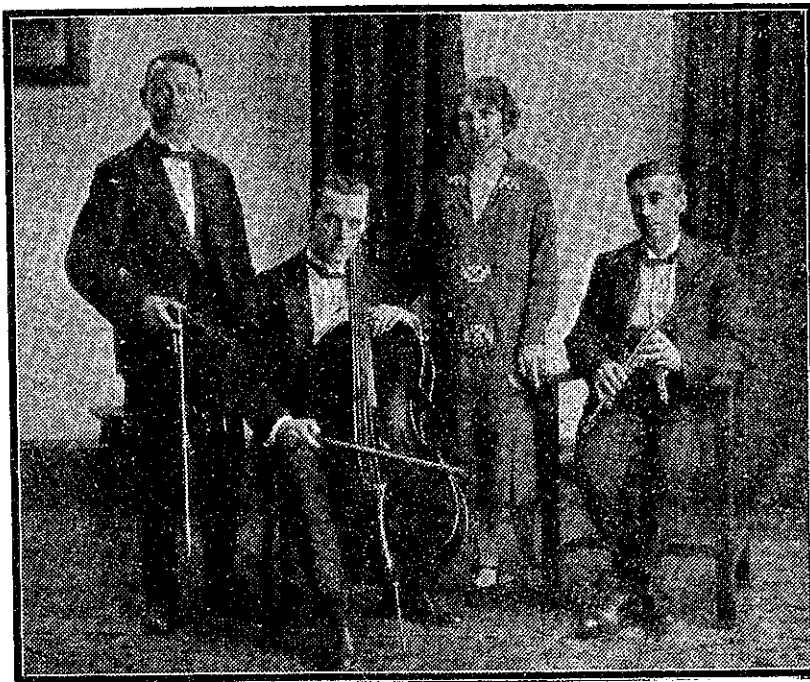
Mr. J. G. Waddell reports good reception of 2YA at his home in Pukekohe.

WITH A VEST-POCKET SET.

Some excellent reports come from the South Island. Included among these is that of Mr. F. J. Parson, New Brighton, Christchurch. He writes:—"With a low loss set of my own construction, which I carry in my vest pocket, I can hear Christchurch without an aerial or an earth. When, however, I am at my father's place at Governor's Bay I can hear 2YA anytime Christchurch is not on the air. But sometimes even when 3YA is going, 2YA can be heard through Christchurch at quite distinct strength. One outstanding example was when one of the two ladies who toured Australia in a motor car gave an account of their adventure from 3YA, a cornet solo from 2YA entitled "Answer" came in, almost cutting Christchurch out. The announcing could be just understood. At any time when Christchurch is off the air I can get 2YA—not once have I failed to get it under any conditions, the afternoon being equally good for reception.

"The aerial was a straight lead from a 62 foot tree, 40 feet away—not one of the lengths of insulated wire joined together leading into the house being soldered, just twisted once. The earth was a three foot pipe driven into the ground.

"Christchurch can be heard on the whole tuning band, while 2YA has an easy tuning of its own. At first I thought my success was obtained from a radiating set in the harbour somewhere near, but I am convinced it is not, for, as I previously stated, every time I was successful. When 3YA was off the air, and all was still, the announcing was quite distinct, every word being understood, while the volume was constant, there being no sign of fading, or of any interference whatsoever."



STRAND THEATRE ORCHESTRA, CHRISTCHURCH.

A quartet of musicians under the control of Mr. Harry Ellwood, which plays to the pictures screened at the Strand Theatre, Christchurch.

The members of the orchestra (from left to right are):—Mr. Harry Ellwood, Mr. Hamilton Dickson, Miss Pauline Ellwood, and Mr. Albert Hutton.

For Prospects and Recruits

By M.I.R.E.

It has been suggested in these columns that receiving sets in New Zealand may be divided roughly into two groups, viz., those that will receive Australian stations and those that won't. The latter group may be subdivided again into valve and crystal. Of course there are many other subdivisions, such as those that only use headphones and those that are capable of working a loudspeaker.

In the cities the greater proportion of licenses are for the crystal sets, but, as has been stated before, there is a surprising proportion of multi-valve receivers in New Zealand, and this popularity is maintained in the cities.

It is proposed in this article to deal with some of the salient points of practical importance to be borne in mind by those uninitiated into the mysteries of radio when they decide to make the purchase of a set. In view of the fact that there are so many people interested in multi-valve sets, and that theirs is the problem of most complex interest, they will be given due precedence, although at the same time our remarks will be of interest to all.

The first question is how much is the buyer prepared to spend? Suppose we endeavour to convey the necessary information to lead to the formation of a perspective on this point.

COMPARISON WITH GRAMOPHONE

If the purchaser is only concerned with the musical entertainment which a radio set will give, he should view the problem from an angle of comparison with the cost of some other musical producing instrument. Obviously the gramophone appears the most natural comparison. A decent gramophone costs £20 at least, without accessories, in the shape of records. A selection of records satisfying to the average individual would amount to a minimum of thirty double-sided records, or sixty musical pieces, costing at least 7s. 6d. per record, or a total of £11 6s., which makes £33 6s. as a grand total. Probably the total cost of the average individual's gramophone and records would amount to at least £50, because a proportion of records would cost ten to twelve shillings each, and thirty records is a low assessment of the total stock generally found in a gramophone cabinet. It is to be noted in passing that the usefulness of the gramophone is limited to the records available, and if a gramophone is ever noticed lying

idle, and inquiries are made, the explanation given is always the same: "Everybody is sick of the records we've got and new ones cost a lot. Besides new records get played to death and soon scratched."

The majority of homes have pianos. A piano such as discriminating persons would put in their homes approximate £100—in fact, a really good piano will cost very much more. So also do pianolas. There are hundreds of New Zealand homes to-day where there are pianos which are merely ornaments. The story here is the same incidentally. "So and so used to play it, but since they have left home it is never touched."

WHAT RADIO WILL DO.

A good radio set costs much the same as a gramophone, and a very good one as much as a piano. This grade of apparatus, of course, is capable of doing wonderful work and will bring the listener in New Zealand into touch with at least a dozen stations and give the listener a choice of as many items per day as the gramophone user has in his whole selection, and in view of the fact that the items are ever changing, the interest in the programmes and the set is sustained. The complaint here is fairly frequently met with also that "the programmes are not worth listening to and we are tired of radio." However, if you visit the same party a few hours later you will find it in full swing, and again comes the stereotyped remark, "We wondered what was on to-night and switched it on! No, we wouldn't be without it for the world!"

It is a good axiom to follow, that when buying anything electrical, don't buy anything cheap. It is false economy. Also, don't buy anything that is not a "stock" line, so that replacement parts may be readily obtainable. Buy therefore from good houses or their recognised agents, so that redress may be obtained if the goods are not up to standard or give dissatisfaction. It is remarkable how the average person buys wisely and cautiously when

obtaining articles which he is not the slightest bit familiar with. When it comes to radio there seems to be a sort of mesmerism creeps over the wits of many people, possibly because the novelty of radio has not worn off, and people find themselves loaded with a box of mystery which finally develops as many troubles as a second-hand car which has been salvaged from a fall over a cliff and been given a coat of paint to make it look innocent and pretty.

The accompanying accessories are very often a bigger source of trouble than the set, but comments on this subject will follow later.

BUY FROM GOOD SOURCES.

Too much cannot be said in favour of buying only recognised makes of receivers and makes which are backed by recognised agents and dealers. The buyer should face this question. Would it be judicious to buy a motor-car which did not carry service with it to the extent of ability to buy spare parts in 'three years' time? The same applies to radio exactly—different designs of sets require different types of spare parts. A spare part of the same name for one set will not necessarily suit another, although it may fit it. Neither will a spare part for one make of car necessarily suit another make, although it may slip into place. If a spare part is wanted for the set, or advice regarding the set, go to the man the set was bought from, or write to the main distributor or manufacturer; but this presupposes that the outfit has been bought from a firm which is assured of having representatives available in three or five years' time to give service. The comforting thought, that there will always be an "expert" to assist in days of trouble, should not carry any weight. Even "experts" have their limitations, and usually they are expensive in the long run, because "experts" are numerous in New Zealand to-day, and their limitations are their main characteristics.

The Royal Commission which has just handed in its report on radio in Australia has gone so far as to recommend registration of those counted as competent to give advice and act as dealers, and to only issue registrations to those who pass an examination.

Moral: Buy a set with a recognised name, just as you would buy a car of a recognised make. Fit the set up and adhere strictly to manufacturer's specifications. Ignore advice given by anybody who is not a recognised agent of the maker, or distributor, and if in doubt at all, write to the main distributor or manufacturer.

It takes a while to write this advice, but less time to read it, and it will take less time to decide to carry it out. The results will repay the set owner handsomely, and the potential purchaser will appreciate the make of car is seen repeatedly in trouble, to be able to take advantage of such circumstances by having the backing of real service behind his set.

Another aspect of this discussion is the fact that radio sets have their ills, just like any other machines. If a make of car reasonably well known is seen stuck up on the roadside, it is not counted as evidence that that particular make of car is no good. Naturally, if that particular make of car is seen repeatedly in trouble, judicious inquiries will inevitably reveal the fact that there are certain defects which are weak points in the particular model seen in trouble. Undoubtedly those defects will be cleaned up in the next model.

So it is, or should be, with a radio set. A radio set out of commission is unfortunately the call for general condemnation of the particular make by many people at present in spite of the fact that hundreds of that same model are selling elsewhere and giving absolute satisfaction. A failure on the part of the demonstrator or dealer to make good the trouble in reasonable

time, of course, would give every reason for giving consideration to the purchase of another make.

A radio receiver is only a machine, the same as a vacuum cleaner, sewing machine, or a wheel-barrow, and obeys no known laws. Its principles of operation are well known to the initiated and there is nothing mysterious about it.

Admittedly very little is known of the medium whereby the signals from the transmitter are conveyed through space. These signals play all sorts of freakish tricks and the receiver (or transmitter) gets blamed for them. Under a standard set of conditions a receiver will always give the same results if it is a good make. If comparing two receivers, set them both up with the same type of accessories and put them on the same basis so far as battery power is concerned. Make the comparison by changing the aerial as quickly as possible from one receiver to the other. There is no other way to make comparisons. It is quite impossible to take five minutes even to change from one receiver to another and then decide that this receiver gives stronger or better-toned signals than another, because in the intervening period of changing over, the station may have altered its power or faded, and in any case the memory cannot be trusted to give a decision regarding strength or tone.

A decision that such and such a receiver is better than the one heard last week is worse still, but the worst of all is comparing Mr. So and So's 2-valve receiver with this 4-valve receiver when there is absolutely no basis for comparison.

Who could hear a gramophone of one make one week and compare it with another of a different make the next week and make a satisfactory comparison, especially if a hand piece was heard on one and a soprano singer on another?

If a decision cannot be come to by hearing models of good makes, arrange for a comparison even at home between the machines which are fancied. The simplest way and best is to choose a make of machine of which it has been ascertained many are being bought and pick a model which suits the pocket. By virtue of the machine being a good make satisfaction must be assured because the distributor of a good make must see to that himself.

EARTH EFFECT

A FACTOR IN FADING

CARNEGIE INSTITUTION RESEARCH.

Terrestrial magnetism as a possible cause of the fading of radio signals and the resistance of the ground to the flow of electricity as a reason for unfavourable reception of programmes from some radiocasting stations are two interesting theories advanced by O. H. Gish, of the Carnegie Institution of Washington. Preliminary investigations undertaken by this scientific laboratory under the general heading, "Possible Relations Between Earth-Currents Earth-Resistivity, and Some Radio Phenomena," have been so promising of fruitful results as to warrant a continuation of the studies.

Listeners who are subjected to the exasperating experience of the waning and waxing of signals while listening to a speech or musical concert would like to know whether or not "Mother Earth" is the offender due to earth-current manifestations occurring in conjunction with fading, as suggested by the Carnegie Institution of Washington. Radio fans are likewise perplexed by the phenomenon of unfavourable reception in certain directions from some stations and even from all points of the compass with respect to a few transmitting stations. The probable explanation for this is that the ground at the surface of the earth sets up resistance to the flow of electricity; hence, the Carnegie Institution proposes a "resistivity-survey," as applied to radio phenomena.

"That certain aspects of the earth's electric currents and of radio

phenomena may be related is suggested both by theory and by observational data," contends Mr. Gish, "although," he continues, "it is not to be expected that this relationship is one of cause and effect, yet it is likely a sufficiently intimate one to make profitable a comparative study of these two sets of phenomena."

"Before the development of radio, the conception of a region in the upper atmosphere highly capable of conducting electricity was invoked as a necessary part of the mechanism giving rise to changes in earth-currents and the earth's magnetism. A similar condition of high conductivity in about the same region of atmosphere is now also demanded by some features of radio transmission. It thus seems likely that the same conducting region affects both earth-currents and radio, and on that account certain consistent correspondences may be expected between them."

"The data at present available for such comparison, though meagre, indicate that the daily as well as the annual change in signal intensity for radio waves in the broadcast of frequencies is the reverse of the change occurring in the earth-current activity. These as well as other points of correspondence could be deduced from the correlations found by Dr. Greenleaf W. Pickard, of Boston, between the earth's magnetic activity and variations in signal strength, for it is well known that earth-currents and terrestrial magnetism are closely related. Furthermore, since good theoretical grounds now exist for expecting terrestrial magnetism to directly affect radio transmission, perhaps producing such phenomena as fading, one may also find earth-current manifestations occurring in conjunction with fading."

THE LOUDSPEAKER

A WONDERFUL DEVICE

To compress an entire orchestra into a tiny circular sheet (the diaphragm of a loudspeaker) this is the audacious demand of the modern radio engineer when he insists that the loudspeaker shall reproduce perfectly for the broadcast listener the concert which is being given at some broadcast station studio. The problem is really a comparatively recent one. While telephone receivers have been known for fifty years, they were generally adapted only to reproduce the voice feebly and with fair accuracy at best. It was necessary to press them to the ear to understand well, and they failed to reproduce music with any reasonable degree of satisfaction. If it was attempted to make loudspeakers of them, they rattled and distorted the music badly. A new electric and acoustic technique has had to be developed to meet the requirements of an effective loudspeaker. Only after considerable research and development has it become possible to produce such devices which will accurately follow their vocal masters at the broadcast studio.

Difficulties To Overcome.

A little consideration will indicate why the construction of a satisfactory loudspeaker is so difficult. It must faithfully reproduce all sounds from frequencies as low as fifty vibrations or cycles per second (corresponding to the deepest tones of the organ and piano) to frequencies as high as eight or ten thousand cycles per second, corresponding to the highest overtones of the violin or piccolo and certain of the overtones of the spoken consonants "s" and "t." It must be capable of producing

soft, pure notes and also extremely loud notes, so that the expression and meaning of musical compositions or oratorical efforts shall not be lost. It must accurately reproduce, in correct proportion, the voice and its piano accompaniment, or the various instruments which blend into an orchestral ensemble. And, when finally produced, it must be a slightly or even ornamental article, since its place is generally in the home.

Don't Blame Transmission.

Great care is taken at high-grade broadcasting stations to ensure accuracy of quality in the concerts sent out from such stations. In fact, a great deal of the distortion imputed by some listeners to the station is really due to their unsuitable loudspeakers. The experience is often repeated of listening to an exquisitely rendered concert from a definite station on one receiving set, only to be amazed at its poor quality on a nearby receiving set. It is for this reason that the listener should suspend judgment on the quality of a concert until he has proven beyond doubt that his receiving set is correctly designed and used, and that his loudspeaker is a good example of a reliable product. The method of supervising the quality of transmission by ear and eye at some big station is most interesting. The supervising engineer listens to the quality of the music on a suitable receiving set, and at the same time watches a wavering line of light on the oscillograph mirror whereby he can tell the strength and, to a great extent, the quality of the outgoing concert. The broadcast listener would be amazed at the extreme complexity of the sound waves shown on the oscillograph mirror. They look as complicated as a cross-section of a line of ocean waves in a bad storm, and it is really one of the great achievements of science that such complicated sounds should be reproducible at all, much less by so simple a physical structure as a circular sheet or diaphragm.

Ingenious Construction.

Loudspeakers in general include a strong magnet, which is either a permanent steel magnet or, in a few cases, an electrically excited magnet, which requires battery current for its functioning. There is also a coil of wire, generally wound over the permanent magnets, through which flow the electric currents, which carry the music in the form of regular or irregular fluctuations of these currents. In some loudspeakers, an iron diaphragm is set into motion by the variation of magnetism caused by the incoming electrical currents carrying the music. In others, diaphragms of mica or other material are set into motion by mechanical systems attached to them, which, in turn, are controlled by varying magnetic pulls on a steel or iron movable part of the system.

BAD NEUTRALISATION

CAUSES INTERFERENCE

There is not the slightest doubt that much of the howling valve nuisance in New Zealand is due to badly adjusted neutralising condensers of neutrodyne sets.

A neutralised receiver, also, unless it is carefully adjusted, can be less efficient than one in which neutralisation is not employed. There are (says Sydney "Radio") three chief ills of improper neutralisation.

The first and most obvious manifestation of incorrect adjustment of the neutralising device is oscillation in some or all of the radio-frequency circuits. These oscillations, as a general rule, become more severe as the frequency is increased, and a loud squeal or whistle will be heard as the tuning controls are adjusted to receive some station that is transmitting.

Causes Interference.

Such an effect will make it difficult for the user of the receiver to obtain satisfactory reception, and the oscillations will be radiated from the antenna attached to the receiver, and cause interference on other receivers located in the neighbourhood. Such oscillations can be prevented by correct adjustment, and it is essential that the proper setting be determined in order to make it possible to obtain best results from the receiver.

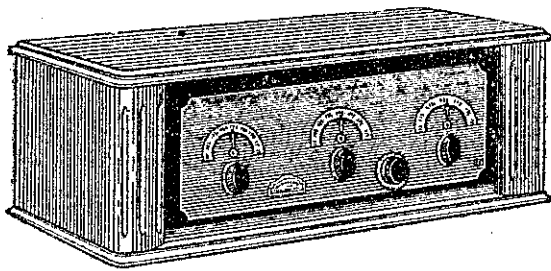
Distortion Results.

A second detrimental effect of maladjustment of the neutralisers is poor quality, which is generally due to the existence of too much regeneration. The quality, under these conditions, will generally sound drummy, indicating that the various frequencies in the carrier are being unequally amplified by the radio-frequency amplifiers. To preserve good quality, the radio-frequency amplifiers must amplify without distortion a band of frequencies extending about 5000 cycles above and 5000 cycles below the carrier frequency, and this condition does not exist unless proper neutralisation is obtained.

Loss of Sensitivity.

Another effect of improper neutralisation is to cause one or more of the tuned circuits in a single-control receiver to be thrown out of synchronism, so that the set loses a great deal of its sensitivity, and, as a result, it is not possible to tune-in distant stations with satisfactory volume. These three major effects of improper neutralisation indicate how essential it is that neutralisation be always carefully and completely accomplished.

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No Set can compare with the AMRAD in actual value.

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AGENTS WANTED IN UNALLOTTED TERRITORY.

"Atmospherics or static, that well-known nuisance to the radio audience, is to the geophysicist an interesting phenomenon, deserving more of his attention than it has thus far received. This phenomenon has an apparent counterpart in earth-currents and makes itself most commonly evident on telephone lines, in which a ground return is used, producing sounds in the receiver which resemble in a remarkable degree the clicks, crashes, grinders, etc., which interfere with radio reception."

"Similar changes are probably occurring in terrestrial magnetism, but the magnetic instruments are not capable of responding to such rapid changes. The electrical effects can, however, be easily detected and even measured or photographically recorded without great difficulty, thus admirably supplementing the magnetic measurements. With ample measurements of these magnetic, earth-current and radio effects over the same interval of time and in the same general region, doubtless much of both practical and theoretical value may be learned."

"The resistance offered by the ground at the surface of the earth to the flow of electricity also plays a part in the transmission of radio waves, and such knowledge of this property of the earth as may be obtained by 'resistivity-surveys,' similar to those made by the department of terrestrial magnetism of the Carnegie Institution of Washington as part of a study of earth-currents, would doubtless indicate the reason for unfavourable reception in certain directions from some broadcast stations and even in all directions from a few."



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The Chit-Chat Club—

Points from Papers Put "Over the Air."

(Set Down by "Telanother")

"I wish I could go back to school-boy days once more," said Blinks plaintively. "They're the best days of your life."

"And I wish," said Harrison crisply, "that I could be the teacher. Ah, Blinks, you'd be a better, braver man, if I had wielded a rod upon you for a few years," and to clinch his argument, he made a few expressive gestures with his right arm.

"Pooh," said the oldest member disgustedly, "I like the way you always want to go back to school. A nice squawking little devil you were in your Youth, Hargost, I'll bet. You're always crying for something you can't have—and if you could get it, you wouldn't want it."

"Home truths and wisdom from the old 'un for once," said Brenton. "He's quite right, Blinks. It sounds all right to want to go back, but you can have it for me. A fond parent inspecting your ears before you depart in the mornings, and then half a dozen of the best because you spent more time birdnesting the previous evening than learning your homework."

"But you never have such jolly fun after you've left school," protested Blinks, still determined to cling to his illusion.

"No, you certainly have a lot of fun," said Thribs, "which reminds me that I heard quite an interesting address over the air recently on 'Humours of School Life.' It was given by Mr. T. R. Fleming, formerly senior inspector of schools."

"Good Lord," said Blinks. "He used to examine me, and didn't we sit up and try to make it seem as though we'd swotted all the year, when he came along. I bet he could tell you some good yarns of school life."

"He did," affirmed Thribs. "He interspersed a lecture containing many good solid points, with such well told stories, that it was most interesting. One thing he said, and with which I heartily agree, was that no one should take up school-teaching merely for the sake of earning a living."

"It's a dog's life at any time," asserted the oldest member, "especially," he added, "when you have kids like Blinks must have been."

"It would be all right if you were fond of children. The sort of master who is useless is the fellow who has gone into teaching merely because he thinks it's a soft job. He has no sympathy with the kids then."

"You'd get a good deal of fun from some of the humorous answers you get," said Thribs. "A good story of this kind was told of Mr. Tate, Director of Education in Victoria, and a member of the late New Zealand University Commission. Shortly after his appointment as director, he went into a school where the children sang the Canadian boat song. Anxious to discover whether they understood what the song meant, he asked 'What were the men who were singing this song?' One boy immediately replied 'Rabbit trappers, sir.' Mr. Tate couldn't see how the boy came to give the answer until he asked him to recite the poem. It was rendered: 'Row, brother, row, the stream runs fast, the rabbits are near and the daylight past.'"

"That," interjected Blinks, "reminds me of a kid who was in my class at school. She was crying because she couldn't do the multiplication sum. The teacher went up to her and she wailed: 'I wish I were a rabbit.' 'Why, Katie?' asked the teacher. 'Because rabbits multiply so fast,' was the answer."

"Another story that Mr. Fleming told in his address," said Thribs, "was that of a boy in an exam who, when asked to write something about Joseph Chamberlain, said that he was 'the founder of some tablets, now called Chamberlain's Tablets.' Apparently the schoolboy of to-day can size up the Americans pretty well, for in the same exam one candidate, in comparing the ancient Britons of the time of the Roman invasion with the Maoris of 1840, favoured the Britons. He wound up his answer

with: 'Taken all round the ancient Briton resembled the Maori about as much as the modern Englishman resembles the American.'"

"The best yarn of the lot though," continued Thribs, "was one about the Rev. W. J. Habens, the first Inspector-General. During a short address he gave to the inmates of the lunatic asylum at Wellington, he referred to the practice of the women of India of throwing their babies into the Ganges. At the close of the address one of the women approached him and asked him if what he had stated was true. Mr. Habens said it was. 'Then,' said the lady, 'I wonder why your mother did not put you in.'"

"The best address I've heard during the last week," said Wishart, who had just joined the circle, "was that on 'Communications,' given from data by the Imperial Affairs Department."

"Was it good?" said Blinks surprisedly. "I switched off when it started, because I thought it would be dry."

"More fool you then," said Wishart. "It was easily the best they've given yet, and showed what a delightfully intangible thing our Empire really is—held together by bonds of affection only."

"Nothing intangible about it," growled the oldest member. "Haven't we fought and bled..."

"Who did you bleed?" queried Blinks innocently, stopping the flow.

"Damme, sir, I tell you I fought for the Queen. I was a member of the Armed Constabulary."

"Oh yes," said Blinks. "I remember the time you fellows got lost in the bush."

By this time the oldest member was showing signs of having an apoplectic seizure, so Wishart hastened on with the story.

"The Imperial Conference meets every three years, but it has no executive or administrative powers, whatever, and can do no more than make recommendations to the Parliaments concerned. The continuation of the Empire depends in the last resort on the good-will of its component parts. As long as Great Britain and the Dominions are satisfied with their association, so long will the Empire endure."

"Nonsense, sir," said the oldest member. "It will endure for ever."

"We all hope so, of course," said Wishart, "but who knows? As the address stated, we recognise the advantages which association give us. It is the racial tie that has strengthened the Empire in the past, and the mutual sympathy which one part of the Empire feels for another is the thing that is keeping us together today."

"What's that got to do with communication?" said Blinks.

"Everything. Sympathy and understanding can be maintained only when the various parts of the Empire are kept closely in touch with each other. The Empire is a pretty unwieldy concern geographically, its component parts being scattered in all four corners of the globe. If our present day communications had been available, we would probably never have lost America, for the statesmen in England would have been better able to understand the position of the colony. The introduction of the steamship and the laying of the first electric cable in 1850 provided important advances in our communications."

"And what is wireless going to do?" said Blinks.

"Make idiots of most of us," growled the oldest member. "Oh, it isn't fair to blame wireless for your little trouble," said Blinks expressively, whereat Wishart hurried along with the story, determined to stop the flow which inevitably followed such a baiting.

"Wireless, as the address stated, is going to make it very much easier for the different parts of the Empire to keep in touch. To-day the Rugby wireless station sends official news of the day's happenings in England to the furthest Dominions, and we in New Zealand can read it in our papers before it is known in the streets of London."

Pertinent Points On—

"Humours of School Life"

"Our Extraordinary Empire."

"Adventures in the Arctic."

"A still further advance, as far as the Empire is concerned will be made when it is possible to talk from London to New Zealand in exactly the same way as we now talk in Wellington. Then the airship service, about which we recently heard from Group Captain Fellowes, will aid us, and will mean rapid transit for passengers and valuable goods. It will put us in a better position for trading with the Mother Country."

"But the cost is excessive," said Thribs. "Our difficulty lies in the excessive freight charges between New Zealand and England."

"It is just possible that the internal combustion engine may solve this difficulty eventually," said Wishart, "but it is undoubtedly a problem. In addition to the airship service, an aeroplane service is now being proposed, and it is possible that the two, working in combination, will be able to maintain efficient services even to scattered parts of the Empire."

"Do you think the Government is alive to the question, and to the importance of the development of these air services?" said Thribs.

"Undoubtedly," said Wishart. "Every Dominion Government is interested in this project, for all realise that anything that is going to make trading with the Old Country more easy, will assist us in keeping the Empire together and making its different parts prosperous."

"Yes, it offers possibilities," said Blinks. "If the time taken in travelling from one part of the Empire to another can be shortened, travel can be indulged in to an extent unknown at present. People from every part of the Empire will know and understand the people of other parts. Individual problems will become general problems; difficulties will be discussed at length and in person and solutions found."

"That's true," said Wishart. "Take the last Imperial Conference. The Prime Ministers of New Zealand and Australia had to be absent over five months. In the not distant future it will be possible for the Conference

to be called together, and representatives from the most distant parts of the Empire will get to London in a week, and return home in the same time. The main object in improving communication at the present time is to assist defence, to facilitate inter-imperial trade, and above all to increase the knowledge and understanding of the British peoples among themselves."

"Hm," said Blinks reflectively, "it seems there's some meat in these addresses. I'll see I'm 'on the air' for the rest of them, and now Wishie, since you've been talking so long, just call them for the crowd."

Glasses filled, the members settled down an inch or two further in the comfortable chairs, expanded still more, and fitted gaily from one subject to another until at length the talk came back to programmes.

"Some of the letters you see in the dailies about wireless programmes are absolutely dippy," said Blinks. "It makes you wonder what the editors are like for publishing them. One man wants nothing but jazz, and another nothing but sloppy songs. How the devil does anyone think it possible to get a programme to satisfy all? I don't like some of the items, but I've got sufficient sense to know that some of the items I detest will be amusing and pleasing hundreds of listeners-in with different tastes from my own."

"I like the lectures myself," said Drexler, who was usually of a fairly serious turn of mind.

"And in that respect are different from about 90 per cent. of the listeners-in," said Blinks. "You've got to have varied programmes, so that everyone gets something that suits them. It's pure selfishness to want the whole programme to yourself."

"Those Arctic lectures are the ones for me," said Brenton who, being the great outdoors man, always took a personal interest in anything connected with physical endurance. "Take that last lecture of Lieutenant Gordon Burt. It was great, and it thrilled me to think that those two New Zealanders planted the flag so far north. The polar bear chases must have been exciting, and you couldn't get anything much more adventurous than their trip through the Arctic ice."

"Franz Josef Land must be a wonderful place, especially during the long summer days, when the sun never sets," said Blinks.

But how boring not being able to get any darkness in which to go to sleep," said Harrison.

"A feather bed and table d'hôte are your ideas of Arctic exploration, I suppose," said Brenton acidly.

"The Worsley expedition wouldn't have suited you then, for they had some pretty strenuous times. They

tried to circumnavigate some of the Franz Josef Islands, but after some days of hard work among the ice floes, came to an absolutely solid wall of ice, and it was there that they planted the New Zealand ensign."

"How long did they have without night?" queried Thribs.

"Several months," said Brenton, "and then the days began drawing in for the dreaded six months of winter. They started to make south, towards Green harbour, but had some pretty exciting adventures before they actually got there. For days and nights they never got to bed, and ate their meals under impossible conditions, seizing a tin of sardines, and a few ships' biscuits and standing in any place where they could jam themselves against a wall. All the fires in the ship were out, and the cold was fearful. Then they would have a few calm days, but would barely get things ship shape before they would encounter another storm."

"One of the most exciting incidents of all was when a deck cargo of 50 gallon barrels of oil became loose in a storm and rolled from side to side of the deck, crashing into everything that got in their way. It was a miracle that some of them weren't killed, but eventually they got them all lashed down again, after some narrow escapes. Another time the engine room caught on fire, the flames getting perilously near the fuel tanks, but after strenuous efforts these were got under control."

"A great story," said Blinks.

"And a well told one," added Brenton. "If you fellows want a tip, take my advice and open up when he gives his next."

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The 200A type valve has a particular advantage over the 201A type when they are used as detectors. It has been proven by Alexander Senauke, M.B.E., R.E., radio engineer for "Popular Science" Institute of Standards that in detecting the very weakest signals the 200A type valve is three times more sensitive than the 201A type, and in detecting slightly less weak signals the 200A type is eight times more efficient than the 201A type valve. On the very loudest signals, such as local broadcasting, the 201A type valve is, however, about one-twelfth more powerful than the 200A type. But it is only on the very loudest signals that the 201A type can compare with the 200A, for even when signals can be classed as halfway between very weak and very loud the 200A type gives almost double the volume as compared with the 201A type valve.

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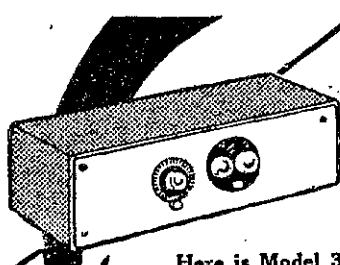
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All literary matter and contributions must be addressed to the Editor. If the return of M.S. is desired, enclose 1d. stamp.

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Rate of Subscription: Single copies, 3d.; Annual Subscription (if booked), 12/6, post free; normal rate, cash in advance, 10/6, post free.

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A. J. HEIGHWAY,

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

P.O. Box 1032,
WELLINGTON.

WELLINGTON, FRIDAY, OCTOBER 21.

The result of our crystal competition for the long-distance reception of 2YA throughout September has provided some very interesting records indeed. The winner proves to be a young man in the Wairoa district, who on equipment costing but eight shillings succeeded in receiving Wellington at a distance of approximately 375 miles. As a sheer matter of fact, reception at a greater distance than this was reported, but as all conditions were not complied with, the entry could not be counted. The winner's performance, good as it is, was by no means a runaway victory, for quite a number of reports of good reception came to hand from Auckland and its environs, while from Christchurch there is given the case of a pocket set with which Wellington can be received at any time of asking.

These results make very interesting reading. Some of the set owners report reception of Australian stations on the crystal, and there is no reason for doubting the claims made. We are very glad indeed that our competition has been the means of bringing to light such a number of interesting cases of distant reception. The high power of 2YA may thus be said to immensely widen the crystal range of broadcasting in the Dominion. While emphasising the big distances over which reception has been recorded, it is well to stress one important fact which to our mind stands out from practically all the records sent in. Every one of the competitors reported the possession of a good aerial. This is undoubtedly more than half the secret of success in distant crystal reception. The unknown quantity is of course the calibre of the crystal, but it is plain that with care in the initial work the lads of many country homes can secure the benefit of broadcasting at a minimum of expense.

SHORT-WAVE ITEMS

THE WEEK'S DOINGS

EMPIRE TEST FROM SYDNEY.

Mr. F. W. Sellens (Northland) supplies the following interesting items:—Last week was an average one for short-wave reception. On Sunday last, October 9, 2XAF was heard from 2.30 till 4.30 p.m., when they signed off, stating that "it is now 14 minutes past 12 o'clock." The programme consisted of studio items and a relay from a theatre. From 4.30 till 5.30 p.m. 2AQ, Taihape; 1AL, Hamilton, and 3AU, Rangiora, were putting gramophone items, etc., on the air. 2AQ was heard again in the evening.

On Monday evening 2AQ and 3AU were giving musical items and calling friends.

Radio-Belgique and PCJJ were heard early on Tuesday morning; the latter came in with good volume and modulation. In the evening RFN was on the air with more talk than music, as usual. 6AG was giving his usual test transmission from 9.30 p.m. He was also on the air on Wednesday evening.

On Thursday evening RFN was again on the air at splendid volume and tone, musical items and talk. PCJJ was not quite up to the usual standard this (Friday) morning.

On Friday evening I had 2ME through 2FC, Sydney, carrying out a test with England on 28.5 metres, from about 6.55 till 7.5 p.m., in preparation for an Empire programme to be transmitted from 4 till 5 a.m., Sydney standard time, on Monday morning, the 17th instant, Greenwich mean time 6.7 p.m. on Sunday.

The second programme will be on Monday afternoon (same day), 4.30-

5.30 p.m., Sydney standard time, which is 6.30 to 7.30 a.m. Greenwich mean time, Monday morning.

When 2ME was first heard they were relaying from Liverpool particulars of the shooting, but went back to the studio of 2FC, as induction noises on the relay line were so bad. They gave a gramophone item, "Barcarolle," and then the information outlined above.

The queried station on the list I gave you last week is the first harmonic of RFN, Russia. I have proved this by changing from one to the other at frequent intervals when it is always the same item on the air.

A GOOD LIST.

A. P. Morrison (Brooklyn): Here is my list of stations on the short-wave band. I suppose I was one of the first in New Zealand to listen for stations on the short wave, and my first success was logging station 2XAF (Schenectady, New York). That was in this year's Easter holidays last Good Friday. My second station to log was PCJJ, Rindhoven, Holland. I will now give you my list of short-wave stations, logged to date:—

	Metres
PCJJ (Rindhoven, Holland)	30.2
2NM (Gerald Marceuse)	33
4AC (Belgium)	32
RFN (Siberia, Russia)	60
GSS (Leipzig, Germany)	60
RCHS (Buenos Ayres)	45
2XAF (Schenectady, N.Y.)	32.77
2XAD (Schenectady, N.Y.)	22.02
WLW (Cincinnati, Ohio)	52
KDKA (East Pittsburgh)	63
2XG (New York), about	30
2AJ (Rangiora)	36
3LO (Melbourne)	30
2AU (Rangiora)	35
5GC (Adelaide)	31
6AG (Perth)	32.9
6AR (Victoria)	30
2AQ (Taihape), about	30
— (Hamilton), about	30
— Unidentified.	

SPORTING BROADCASTS

GREAT RECORD OF SERVICE

A SURPRISING REFUSAL.

Rugby football has concluded for the year 1927, and the sports announcers, as far as this game is concerned, have hung up their microphones. From a broadcasting point of view the season has been a very successful one. All the important matches played in the Dominion have been described in detail, and hundreds of letters and telegrams of appreciation have been received by the company and by the announcers.

From the point of view of the sport, greater interest than ever before has been aroused in New Zealand's national game. Broadcasting is the best publicity that can be given to anything. Never before has so much interest been taken in Rugby. Many people who have hitherto taken not the slightest interest in the sport now know, by name at any rate, a great many players. It is all for the good of the game.

The recent decision of the Auckland Trotting Club not to agree to the broadcasting of its October meeting has served to throw into striking relief the great boon that broadcasting has been to sport lovers. This club is the only sporting organisation which refuses permission to broadcast its fixtures. No reason has been given, simply an emphatic negative, and, after the thorough manner in which sport has been covered this winter, the decision comes as a painful surprise to the public, who have been accepting these broadcasts as a regular practice.

Welcomed by Sports.

Taken all round, the sporting fraternity of New Zealand was quick to consent, though begrudgingly at the outset, to football matches, racing, and other field events being broadcast to people who have to stay at home. But it has not harmed sporting in the least. Rather the reverse. The better a broadcast is, the better it is for the sport. No follower of a sport would stay at home just to listen to a description of a game or a race. He

CHILDREN'S SERVICE, 2YA

COMMENCING OCTOBER 23.

2YA, like Christchurch, is to have an early Sunday service for children. Commencing on Sunday next, October 23, the Rev. Ernest R. Weeks will conduct a special children's service in the studio from 6 o'clock.

would be disappointed with a poor description, and if he heard a thrilling account he would feel that he had missed an exciting event. He would look rather shamefaced when he had to confess to his mates next day that he had stopped at home and listened in, in order to save a shilling. There is no broadcast that can quite come up to seeing or hearing the real thing, and everyone who listens to a thrilling account cannot fail to think that the real thing must have been much more exciting. So, the more brilliant a description is, the better it is for the sport, because it enthralls people who are not very interested and incites them to attend the sport next time. Undoubtedly, the broadcasting of sporting descriptions has already become established in New Zealand.

What has been the achievement of the Broadcasting Company? In less than four months no fewer than 73 fixtures have been described in detail by the company's sporting announcers, and hundreds of appreciative letters and telegrams have been received by the announcers themselves and by the stations. The four stations broadcast 189½ hours of sport—not results only, but descriptive narratives.

It will therefore be seen what a power and effect broadcasting has in the sporting world in New Zealand, and a decision such as that reached by the Auckland Trotting Club causes surprise.

RADIO RECORD "ADAPTER"

T. R. Hogg, Wanika, Greymouth:—I noticed in last "Radio Record" where Mr. Pierce, Wellesley Club, had heard Argentina on September 25. I wonder if he is not mistaking it for RFN, Siberia, U.S.S.R. His time and description of the programme seem to tally with the one I received the same evening. The twice the announcer gave his call during the evening (25th) in very broken English, I caught the following: "Haloa, haloa—U.S.S.R." (given very slowly), "Broadcasting," and something which sounded like "Riva" and "Goot-bye." I receive him most evenings I happen to tune in. Last Sunday he was pretty strong. I took a complete log of their programmes on the following dates: September 24 and 25 and October 6. A feature of the programme is the long and tedious lectures, but the vocal items are good.

It might be of interest to mention that the set I use (with only minor alterations) is an adapter assembled after the adapter circuit you published in "Radio Record" (August), and I must say it is quite a success. This plugged into a Counterphase eight gives very good volume on the speaker. I find that using an illuminated dial is very convenient, not only in showing up the dial, but as a telltale on the unit, also a Rheo 20 ohm. My thanks are due to your paper for introducing the idea.

DANCING

LESSONS FROM 3YA

COMMENCING ON THURSDAY.

Commencing on Thursday, October 27, 3YA will broadcast a series of lessons on modern ballroom dancing. Mr. Cyril Poulton, the well-known Christchurch teacher, and an expert of wide experience, has been engaged. This gentleman holds certificates of English and American associations of teachers of dancing, and listeners-in may rest assured that they will be receiving first-class instruction, which will mean a great deal to all lovers of dancing.

"For several years," says Mr. Poulton, who gives an interesting outline of the many advantages which may be obtained by attentive reception of the broadcast lessons, "teachers of dancing in New Zealand have been working in an almost vain endeavour to let the public know right from wrong, as applied to the ballroom dancing of today.

"Students have enrolled at the studios, and in due course received their lessons—style, balance, mechanics of the feet, time, rhythm, and general deportment, all have been very fully explained to them, and upon the completion of their tuition they have been good dancers, and have left the studios to go out to help spread the gospel of correct ballroom dancing.

"But this in itself is not sufficient," says Mr. Poulton. "A large number of people still do not know what constitutes good style and correct dancing. Now, with the advent of radio broadcasting, and the enterprise of the Radio Broadcasting Company of New Zealand, faults, which for the past few years have retarded the growth of dancing, and which have prejudiced large numbers of people against this so-called



Webb, photo.

MR. CYRIL POULTON.

Mr Cyril Poulton, as he appears in one of his famous Spanish dances.

"jazz," can be explained fully, and the people can be enlightened as to the nature of the correct dancing and style.

"It is to be hoped that, as a result of this broadcasting of lessons and advice, the style of present dancers will improve, and that those just commencing their dancing will receive inspiration and help when it is most required. False impressions will, once and for all, be removed, and there will be nothing to stop our dancers competing with the world's best.

"The musical values of the different dances, and the relationship of music to dancing will also be fully explained. Dancers, here and in Australia, at the present time show an almost total disregard for the music: they are either ahead or behind the time throughout the dances. Of course, this does not apply to all dancers, but I maintain that the greater number of them meander round a ballroom completely oblivious of the band. One only has to visit a ballroom to test the truth of this statement. Another reason for complaint lies with the bands themselves. They imagine that there is only one dance in the world—the quick-time fox trot. Why cannot they introduce more variety into the programmes, and so give more pleasure to the dancers?

"I will explain all this during my series of lessons, as it has a most distinct bearing upon the ability of our dancers. In conclusion, allow me to earnestly entreat dancers, would-be dancers, and the public generally not only to 'listen-in' to the lessons, but to act upon the advice which will accompany each lesson, particularly that portion of it which deals with style and deportment, as only by attending to this portion of the lessons will dancers really improve themselves, and thus obtain the maximum amount of pleasure and health from their dancing, which, after all, is why we dance."

QUICK WORK

On Sunday last 2YA sent out a broadcast message to Malcolm Black, stating that his mother was very ill at Westport. This message was picked up by Mr. Frank Dawe, of Papatoetoe, and was delivered to Mr. Black within 20 minutes of 2YA's announcement.

ESPERANTO

In continuance of our instructional Esperanto course, Lesson XIII is presented to readers this week. The lesson, together with the explanation of Lesson XII, which was unavoidably delayed, will be explained from 2YA at the time and on the date mentioned below by the station Esperanto instructor, who has been providing students weekly, since the inception of the course, with a helpful and interesting explanation of each lesson following its publication.

Students who desire to extend their vocabulary and to explore the international language more deeply than they are enabled by means of the course, may do so by the aid of an Esperanto text book, a reliable and complete edition being obtainable from the instructor for 1s 6d., post free.

Communications relative to Esperanto and the course may be forwarded to "The Esperanto Instructor," N.Z. Broadcasting Co., Wellington, or care of this journal. Each inquiry must be accompanied by a stamped, addressed envelope, otherwise the instructor cannot guarantee a reply.

LESSON XIII.

(To be broadcast from 2YA on October 27, from 7.30 to 7.54 p.m.)

Sinjoroj kaj Sinjorinoj, Bonan vesperon!

In two previous lessons brief mention has been made of the accusative N. (Vide Lessons XI and XII.) It is now necessary to give full particulars in respect of the accusative, which is used as follows:—(1) To show the direct object of a verb:—(a) After transitive verbs: *Johano vidas la knabon*, John sees the boy. (b) After participles: *George estis ac'etinta c'evalon*, George had bought a horse. (c) When a verb is omitted (where an exclamation is used or a "wish," or "desire" is understood): *Helpo!* Help! *Bonan vesperon* Sinjoro, Good evening, Sir.

(2) To show motion towards something:—(a) Direction: *Li kuris en la gardenon*, He ran into the garden. (b) Adverbs: *Li iris hejmen*, sed mi restis hejme. He went home, but I remained at home. (3) To show that a preposition has been omitted:—(a) Duration of time: *Li venos lundo*, He will come on Monday. (La) 23an Marton 1927a, or, Je la 23a de Marto, 1927a, 23rd of March, 1927. (b) Price, weight, measure: *La libro kostis dek ŝilingoj*. The book cost ten shillings.

(4) General.—(a) Nouns and pronouns in apposition: *Vi ser'as la princon, Hamleton*, You seek the prince, Hamlet. (b) Proper nouns:—Add an apostrophe, or, if the word permits, an "O" before the N: *Smith iris Londonon*, kaj renkontis Arturon Brown, Smith went to London, and met Arthur Brown.

Bonan nokton al c'iu!

APPRECIATION

SUNDAY AFTERNOON SERVICE.

The anniversary services at the Cambridge Terrace Methodist Church Sunday School were recently broadcast by 3YA. An acknowledgment as follows has been received: All the week the mails have brought letters of appreciation from all over New Zealand from old scholars, friends and strangers, who stated that the reception was excellent. At Eketahuna they heard the fire engine go past the church.

Tower

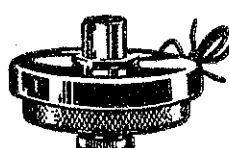
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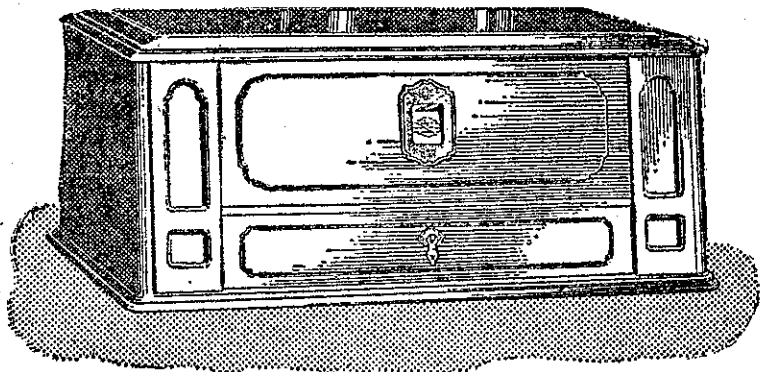
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No radio manufacturer has ever surpassed the Bremer-Tully record for quality. In parts, circuits and receivers, every B-T product has been a continued outstanding success.

The Counterphase-Eight combines every superior feature that can be safely recommended for the highest type of radio reception.

Nothing can be gained by deferring the purchase of a good radio, and to buy a receiver without investigating the Counterphase can only bring regret,

What Bremer Tully owners say of this Marvellous Set

Christchurch, May 20, 1927.

"The selectivity of the Bremer-Tully Counterphase-Eight was wonderful, while the rejector reduced the noise level due to the trams and statics considerably. The controls of the new machine are so simple that a child can operate. The tone and volume of the Counterphase was a revelation. I must say that you have in the Eight a machine which is a long way ahead of any machine I have yet tried. Built on sound engineering principles, the Counterphase Eight has no rival in any machine up to ten valves that I have yet seen. Thanking you again for the loan of the Bremer-Tully."—Yours faithfully—

Signed by prominent New Zealand Radio Engineer.

Christchurch, 24/5/27.

"You will be interested to hear that our last Counterphase Eight was sold to an Englishman, who has had some considerable experience in radio in England, and before purchasing our set had every first-grade set at his home and gave them a very exhaustive test. The Bremer-Tully Counterphase Eight was put side by side with a (mentions a well-known 8-valve set by name). We would locate an American station with the Counterphase, then the aerial and earth were transferred to the ———, and in every case we beat them hollow. In some cases we got a station that the ——— would not get, and in another case we would get reception twice the strength or more of the ———."

Signed by a Christchurch Radio Dealer.

Auckland, 5/1/27.

"I am pleased to say that everyone who has heard the Bremer-Tully Counterphase has quite definitely stated that the performances have been the best they have heard for quality and quantity."

These are a few copies of numerous unsolicited testimonials we have received from satisfied owners of a Bremer-Tully Counterphase-Eight. Why not join the rapidly-swelling ranks of satisfied owners—Bremer-Tully owners? We invite you to come and hear for yourself the wonderfully consistent reproduction which has made the Counterphase-Eight so deservedly popular. Any of the following Agents will be pleased to accord you a demonstration—

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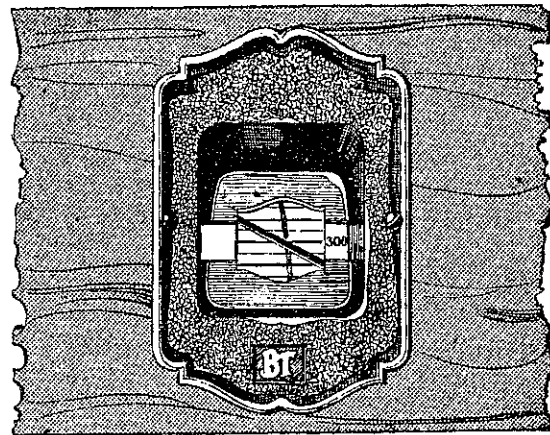
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Selecting stations is simplicity itself through the use of the exclusive patented B-T Indicator. Each set is individually calibrated at the factory and guaranteed accurate over the full scale. You simply turn to the wave-length you want.

Examine this set inside and out at any B-T Dealers, and you'll find additional features, as well as superiority in materials and workmanship that will surprise and delight you.

From the Woman's Point of View.

By VERITY.

TO-DAY AND TO-MORROW

A Happy Thought.

Californian kitchens boast of a "breakfast nook," which is just what the name implies. It is a thoroughly cosy little corner, partly partitioned off from the main part of the kitchen, where breakfast may be daintily served without the trouble of carrying everything into the dining-room. The seats are of the old-time settee style and together with the table are built in. The table has hinges at the end and only one huge wooden leg, so that it can be pushed up against the wall for sweeping.

Decorative Glass.

Decorative glass is irresistible in its appeal, possessing as it does, a rare elusive charm, borrowing and reflecting every ray of light. It is essentially a pleasure purely for the eye, therefore a luxury; but many beautiful specimens can justify their claim to utility by forming part of a dinner-table scheme, in holding fruit or sweets or even floating flowers. Bohemian glass is one of the many beautiful things of which the war deprived us temporarily, and even now the old pre-war standard is only gradually being recovered. Decorative glass is so much more an art than an industry that it takes years of practice to make a first class blower. There is a strangely "fairy-story" attribute of painted glass, for as in the case of painted china, a Cinderella-like metamorphosis takes place in the furnace and the colours emerge from the heat remotely changed.

The new process, known as "craquelé," seen in the new Bohemian glass lampshades look as though they have been shattered to bits and "remoulded nearer to the heart's desire." The minute network of gleaming cracks is made by a process of heating, quickly cooling and reheating the glass. A little fine glass goes far in the making of the success of a dinner table.

Early Morning.

Day-time is every man's time. The hours of noon-day, and afternoon, and the long golden hours of evening are yours and mine and a whole world's beside. But these early hours before the sun has mellowed the air's sharpness, while the little white mists still cling to the hollows, and the dew is broken only by the rabbits' feet—those clear-washed hours of morning that have never lost the purity of a world before the coming of man—these belong to no one human. Go out into the morning and bathe in the still magic of it and win its secret glory. Leave your indoor dreaming and step a march on life, before the daylight world comes rushing in to the solidities.

Visit of Mr. Amery.

Mr. Amery, the Secretary of State for the Dominions, is the first member of the British Cabinet to visit Australia for many years. This very important visit to Victoria begins on October 24, and 3LO Melbourne intends featuring him well. The object of his visit is to make personal inquiries into Australian conditions so that he will be able to acquire first-hand knowledge to assist him in dealing with Dominion problems when he returns. He has already been to South Africa.

He will be officially welcomed at Horsham and his reply will be broadcast all over Australia. He will journey on to Ballarat after the Horsham banquet, and once more his words will be caught. When he reaches Geelong it will be to find a microphone up against him, and even in Melbourne he will be unable to get away from it, for his reception by the Lord Mayor, scheduled for Wednesday, October 26, will also be broadcast.

Wireless in Schools.

Three thousand schools in Great Britain are now fitted with wireless. An article in the current number of "The Journal of Education" states that the time has now come for the British Broadcasting Company to arrange an all day programme for schools on a separate wave-length, and to use this wave-length for the benefit of more advanced students in various kinds of continuation schools at night. Mr. D. C. Temple, M.A., who writes this article which is entitled "Modern Inventions as Educational Aids," says:—"The poorest agricultural labourer can, and apparently does, afford his crystal set, thus coming into contact with the great world at his own fireside. And what of his children? Are they using the headphones also, and if so what do they hear? Has their schoolmaster grasped the potentialities of this new instrument, and has he yet installed a valve set and a loudspeaker in the village school?" The provision of this aid seems peculiarly a matter for those enlightened enthusiasts, who are fortunately to be found in all classes, who really care for the cause of education.

The Handkerchief Garter.

A new idea in garters, which performs the double duty of suspending the stocking and carrying the handkerchief is evolved from moire ribbon and dainty rosebud trimming. The rosebuds are reinforced with fine hat wire, attached at each end to the garter, forming a loop through which the

THE SONG OF THE WANDERING JEW

Though the Torrents from their fountains
Roar down many a craggy steep,
Yet they find among the mountains
Resting-places calm and deep.

Clouds that love through air to hasten,
Ere the storm its fury stills,
Helmets-like themselves will fasten
On the heads of towering hills.

What if through the frozen centre
Of the Alps the Chamois bound,
Yet he has a home to enter
In some nook of chosen ground;

And the Sea-horse, though the ocean
Yield him no domestic cave,
Slumbers without sense of motion,
Couched upon the rocking wave.

If on windy days the Raven
Gambol like a dancing skiff,
Not the less she loves her haven
In the bosom of the cliff.

The fleet Ostrich, till day closes,
Vagrant over desert sands,
Brooding on her eggs reposes
When chill night that care demands.

Day and night my toils redouble,
Never nearer to the goal;
Night and day I feel the trouble
Of the Wanderer in my soul.

—Wordsworth.

Yet More Raffia!

A gorgeous splash of colour in an otherwise drab or gloomy room is made by combining raffia with cretonne. A cushion cover of large bright patterned cretonne is embroidered over the pattern with raffia to tone, leaving the background perfectly plain. The flowers stand out most effectively. A bright note of colour is brought to the table in raffia napkin rings. Made on a foundation of pliable cane, they are ornamented with wee raffia flowers.

Community Singing.

Who says sentiment is dead? It still lives and flourishes, or why would thousands of people join so often in joyous hours of community singing when veritable reservoirs of tenderest sentiment are tapped to fill the air with the spirit of good-will and cheer. Community singing at 3LO Melbourne is a huge success. People in every walk of life—old men, young men, old women and girls, rich and poor alike—gather together at the studio every Tuesday to sing the good old songs their mothers taught them, and newer ones as well. They sing for their own enjoyment, little thinking, most of them, of the joy they give to the thou-

The Letters of Annabel Lee

My Dear Elizabeth,—

Isn't A. A. Milne delightful? I have bought at The Bristol an enchanting volume of his child verses set to music. Notable and charming nonsense. Here, for instance, is the chat of a small domestic climber—

Half-way up the stair is the stair where I sit.

There isn't any other stair quite like it! His hair, in fact, and just another version of home, sweet home! Again, set to music that tramp-tramps to bugle calls—

They're changing guard at Buckingham Palace,
Christopher Robin went down with Alice.

Alice is marrying one of the Guard;
A soldier's life is terribly hard, says Alice!

I'll send Margie a copy at Christmas-time, which period of distraction draws night, and already are to be purchased all manner of ingenious novelties of powder boxes with long-necked, ringlet-ladies on the lid, silken baglets of futurist design, scarves spotted, striped, and haphazardly impressionistic, all manner of beautiful trifles in that Garden of Temptation, except Lambton Quay. Alas that, in an imperfect world, the gifts I would fain send off on Christmas Eve to John and Jane and Christopher Robin are invariably beyond my poor powers of financing; the prices of the fascinating birds and beasts prowling in the jungle of the shop windows being on a par with their attractiveness. Books there are too of very definite lure; but of these I will tell you anon, when really in the throes of end-of-the-year shopping. Have you read "Crazy Pavements," by the way, that strange side-light on latter-day psychology, with its subtle suggestion of a decadence that is also present in the witty novels of Mr. Michael Arlen, for his facile and charming style.

One of his characters talks "orn and orn and orn," and so does an opulent acquaintance of mine. Very decorative was she when calling on me yesterday, in a gown of beige lace, upon the surface of which embroidered medallions fell in miraculously right places, a gleaming crystal disc in the foreground clasping odds and ends of fluttering georgette. This suited to perfection her bleached shingle and cameo profile, as she burred forth her monotonous

hankie is pulled and safely detained, sands of listeners all over Australia who join them in the singing. Invalids and the sick and little children and maimed soldiers in hospitals are in this great unseen community. The aged and infirm and the thousands of women who are for ever tied to their homes, and the people outback are also most appreciative.

Development in Australia.

Melbourne has commenced an educational programme on Thursday afternoons, which it is prepared to extend as the demand increases. The community as a whole is not yet prepared to spend on its schools what it spends across the bar, or on the race course, but in every community there are to be found people who believe that human progress is coming through the widening of human outlook, the quickening of imagination, the broadening of human sympathies by education. "We would be happy but for our pleasures," an Irish statesman is reported to have said. The only way of displacing the pleasures that waste time, money, physique and talent is by replacing them with others of better quality. This lifting of taste, and quickening and broadening of interest in life is the special task of the radio in education.

plitudes. Those of us who have passed thirty-five, and are still brown of hair and light of heart, she bitterly resents and suspects of being assisted by the serviceable Inecto, or perchance some less creditable channel of cheeriness. This is her conversational stock-in-trade, allied with her ancestry, in which she takes an innocent delight. "The two things that really assist one to get on in life are the grace of God and one's pedigree," said a witty woman once. Particularly the latter, it always seemed to me, being minus that social asset. But now the pendulum has swung. Birth and the grand manner have gone out of fashion, more's the pity, and money is the golden gate to success. In passing, I might mention that if you want to be up to the minute, do have those old crystal beads of yours refashioned into a bracelet for your pretty wrist, a clasp for the girdle round where the waist is now situated; or, better than all, a quite large monogram for the black hat that every self-respecting woman keeps in her wardrobe.

Elsie and I strolled along to the House one night to listen to the wisdom of our grave and reverend senators. Unfortunately, we could not hear a great deal, perched as we were far back in the women's dovecot, where the fluttering was quite considerable. Such a twittering and twittering and rustling of stitching as never I heard. "Don't they listen at all?" asked Elsie, in an awed whisper, with a horrified glance at a nonchalant lady who trimmed her finger-nails with care and thoroughness as she conversed more or less audibly with a friend. Being a well brought-up English girl, Elsie is accustomed to give courtesy where courtesy is due, and holds in high regard certain great names of British statesmen which are household words to her. The discussion was on the amended tariff, an absorbing question to the male mind, but somewhat beyond the scope of the feminine understanding. They all sounded convincing to me, some more than others, being of the species that prefers men to measures. Mr. Wilford was an alert and distinguished figure, his undeniable gift of the gab rendering more arresting his knowledge of the subject at issue; he being one of that small band of M.P.'s who can present their aspect of the question with dignity and impressiveness. The vicissitudes of trade is not exactly an inspiring theme; but had

New Graces in Nets and Laces.

Colour and yet more colour is the slogan of this season's window fabrics. Nets and laces have acquired fresh beauty, and artificial silks and cottons rejoice in the new opportunities afforded them by the Aniline dye. These new fillet lace nets are of fadeless beauty—they are "sunfast" and "washfast," and last, but not least, of British manufacture. There are the daintiest and most durable, the most adorable of coloured muslins for your windows. I have seen an enchanting shell-pink Madras muslin with borders and motifs in deeper pink, or grape hyacinth blue. Cotton nets have stripes, dainty flowers, or quaint motifs outlined on them in artificial silk, but two-way colour contrasts are the latest in nets and curtains, favourite colours being mulberry, beige, marigold, periwinkle, blue, and rose. Artificial silks are becoming more and more beautiful—they glimmer and gleam in the sunshine, remind one of the beauty of a dragon fly's wings outspread on a sunny summer day. Nottingham lace has leaped into favour. It has emerged in a new and wondrous form, more gorgeous in design and colour than has yet been achieved.

They Say:

That Miss Doris Hussey's interpretation of dream-daughter Margaret was easily the best in the cast of "Dear Brutus," presented last week by the pupils and under the direction of Miss Constance Theel. With her fine voice, good phrasing, and right conception, it is hoped Miss Hussey may some day be heard by a very big audience "over the air." Barrie's appealing play is somewhat beyond the scope of the amateur; but it was intelligently played, and the audience—amongst whom were to be noticed those critical and appreciative playwrights, Mr. and Mrs. Coleridge—interested and responsive.

That Mrs. Malcolm Ross, after touring England in comprehensive fashion, is leaving for Switzerland, and we can't help hoping to have the tale of her travels in another wander book, and some of her clever pictures.

That lots and lots of people have a fellow-feeling for Mr. G. K. Chesterton, who, in a recent delightful causerie, confesses to being quite ordinary and melodramatic in his tastes. He likes to see people knocked down in a picture play, nor would he be averse from it in real life if the people were chosen wisely and carefully! Which perhaps explains the erratic conduct of reckless motorists, to whom, by the way, an American exchange remarks curtly: "Pedestrians should be seen and not hurt!"

That Frances Alda, lately giving ravishing concerts in this Dominion, is not as fascinating off the stage as on, and is frankly rude to the enterprising journalist trying to pick up "pars," who wishes she would emulate that amiable songbird the great Galli-Curci, whose gracious personality remains in the memory.

Many a Slip!

One afternoon a motorist of the Jewish persuasion telegraphed to a certain insurance company and said: "I want to take out an insurance policy immediately against the theft of my car." "Certainly, sir," came the reply. "If you'll just oblige me with a few particulars straight away. Now, first tell me, what is the make of your car?" "Oh," replied the motorist unguardedly, "it was a Volcsley."

THE CHURCH AND BROADCASTING

A letter from the Archbishop of Canterbury to the managing director of the B.B.C. says:—

"Broadcasting is now a well-assured factor in our national life—a uniquely widespread influence. There is no stratum in our social life, no place of recreation, no educational centre into which the influence of broadcasting does not penetrate. It came so quickly. We awoke to find it in our midst and affecting us all, and as we awoke to its existence we realised with profound thankfulness that it was unquestionably working for good. . . . Provided we recognise that broadcast services do not serve, and are not intended to serve, as substitutes for the assembling of ourselves together in common worship of the one God and Father of us all, I for one am prepared to recognise and welcome their value. By means of the broadcast services much of the inspiration and consolation of the Gospel can reach the invalid who, to his or her constant distress, is cut off from joining in the fellowship of the Churches. By its means we extend the reach and range of leaders of religious thought, and the challenge of the Faith of Christ reaches many in the highways and by-ways who turn their backs upon churches and chapels, but who listen to the message when it thus takes them by surprise."

RADIO RECIPES

Tomato Toast.—2 tomatoes, 1 shallot, 1 egg, 1oz. butter, 1 teaspoon browned crumbs, 1 teaspoon chopped parsley. into slices, peel and cut shallot into rings, melt butter in a pan, fry tomato and shallot, add well-beaten egg, pepper and salt, and stir until it thickens. Pile on the rounds of toast, sprinkle chopped parsley and browned crumbs over the top. Serve hot.

Devonshire Pudding.—1 pint milk, 2 eggs, 2oz. sugar, 2 tablespoons apricot jam, 1oz. butter, 8 apples, 3oz. bread-crumbs, 2 oz. castor sugar.

Method: Put a layer of jam at the bottom of the dish, stew the apples with a little cinnamon, sugar and water. When cool put a layer on top of the jam. Boil the milk and butter, and when boiling add bread-crumbs and simmer slowly until it thickens. Add the sugar and yolks of eggs, pour over the apples, and bake till set. Make a meringue with the whites of eggs and 2oz. castor sugar. Pile on top of pudding, sprinkle a little icing sugar over, and put in slow oven till just coloured.



—Webb, photo.
MISS THELMA CUSACK, of 3YA,
a brilliant young violinist.

The Fascination of Felt.

In the American world of fashion and sport, vivid felts have found for themselves another use beside adorning shapely shingled heads. Of every imaginable shade, multi-coloured felt motifs have become the accepted thing. They are delightfully simple to use as decorative accessories for personal wear, household articles, cushions, and card-table covers. On frock or jumper or cardigan they proclaim the wearer's chosen sport. Waistcoats completely made of felt are the very latest style for between games or for actual play when the wind is chilly. They are available in a wide range of attractive colours, and the patchwork modernist designs on the pockets lend a new interest to a really serviceable garment.

Shorn Shoulders.

Paris exploits the slim silhouette above the hips since the skirt has become fuller. The torso is reduced to its least proportions. This is achieved by small armholes, narrow shoulders, and fitted sleeves, the underarm seams being lengthened as far as comfort will permit. Drapery and godets are increased in size on the skirt, making a sharp contrast between skirt and bodice. Not a becoming style unless shoulders and upper arm are unimpeachable,

Some Features of Next Week's Programmes

THE STORY OF THE APPLE

VIEWS OF A DISTINGUISHED EXPERT.

New Zealand orchardists, and, indeed, all who are interested in fruit-growing, should make a point of "listening-in" to 2YA at 7.35 on the evening of Thursday, October 20. Those who are fortunate enough to be able to do this will be privileged to hear Dr. Kidd, head of the Low Temperature Station, Cambridge, England, and a distinguished scientific authority, who has kindly consented to broadcast a lecture entitled "The Story of the Apple." Dr. Kidd, who is visiting New Zealand at the request of the Government, is here to investigate our cold storage facilities, particularly in regard to fruit and meat, and it is anticipated that the report he is to present will be of great value to the Dominion. Dr. Kidd expects to leave for Vancouver on the 25th instant.

2YA FEATURES

Mr. Douglas Tayler, whose instructive illustrated descriptions of various types of music are widely appreciated, speaks again from 2YA on Tuesday evening.

The vocalists on Tuesday evening at 2YA will be Miss Myra Sawyer, one of New Zealand's leading sopranos, and Mr. W. Boardman, a well-known bass singer, who will be heard in both solos and duets. Miss Myra Sawyer and Mr. Boardman require no further introduction. They sang to listeners on the occasion of the historic opening of 2YA, and have been heard with equal acceptance at subsequent concerts.

During Tuesday afternoon's session at 2YA, Mrs. Sinclair will give another of her interesting talks on electric cooking, and Dr. L. A. Line, under the auspices of the St. John's Ambulance Society, will have something further to say on "First Aid."

A lecture dealing with the early history of petroleum will be given by Mr. P. A. Bradshaw at 2YA on Tuesday evening.

Thursday, as usual, will be a band night, interspersed with a tasteful selection of vocal and elocutionary items. The band for the evening will be the Salvation Army's talented combination, under the baton of Ensign Goffin.

The vocalists on Thursday evening at 2YA will be the two popular favourites, Miss Nora Greene (contralto) and Mr. William Renshaw (tenor), and Madame Valvara Lund (soprano), a singer of proven merit, who is to make her initial appearance before the microphone of 2YA.

An outstanding feature of Tuesday's programme at 2YA will be the excerpts from Shakespeare, to be given by Mr. Byron Brown. Not only is Mr. Byron Brown one of the foremost authorities of the day on the work of the immortal bard, but he is a cultured elocutionist as well. By his previous recitals he has completely captured the favour of listeners of all classes of the community.

On Friday Mr. Kenneth Robert Rigby will sing. He is a baritone whose voice will be well remembered by listeners to 2YK. Mr. Rigby, who sang the prologue to the screening of "Ypres" at the Grand Opera House, has appeared successfully on concert platforms in Auckland, Christchurch, and Invercargill.

During the early evening session, Mr. D. G. Paris will deliver his second lecture on "Athletics," which will soon be in full swing throughout the Dominion.

Mrs. Alma Millward, who has a rich mezzo-soprano voice of beautiful quality, and has been heard from 2YK, will sing on Friday from 2YA. She is recognised as a thoroughly sound artist.

Miss Nora Burt is one of the city's best-known elocutionists. This will be her first appearance at 2YA, but she has frequently delighted listeners to the old station.

Mr. L. A. C. Warner, who is recognised as a thoroughly competent exponent of the violin, will make his first appearance before the microphone this evening (Friday).

Mr. Frank Bryant is a tenor of proved ability, and the possessor of a good radio voice. He has had extensive experience in choral and concert work, and may always be relied upon to please when "on the air."

The instrumental music for the evening will be provided by the Studio Orchestra.

At 9 p.m. the Editor-announcer will deliver his weekly talk on "Imperial Affairs."

The Saturday evening's concert programme will commence with a relay from the Town Hall of a brief address by the Hon. A. D. McLeod, who will have something interesting to say concerning the purpose underlying the Pageant of Industry. At the conclusion of the Minister's address a concert programme will, as usual, be broadcast from the studio. The performers will include Mr. Will J. Mason, who has a very fine baritone voice, exceptionally adapted for radio work. He

sings with good style, and his interpretation of both music and words is excellent.

Mrs. Flora Peyton and Miss Dorothy Tighe will contribute pianoforte duets. Their playing on the occasion of their last appearance at 2YA created a very favourable impression.

Banjo solos, presented by that clever instrumentalist Mr. Charles Brazier, will add a pleasing element of variety to the programme. Mr. Brazier is unquestionably one of the finest banjo soloists in the Dominion.

Mr. E. Leon-Brown, tenor, will be pleasantly remembered by listeners, to whom he sang with acceptance when he last appeared at 2YA. Mr. Leon-Brown has a pleasing light tenor voice of nice quality, which he uses to advantage.

The humorous element will be provided by Mr. Jack Wilkinson, an established favourite at 2YA. He "puts over" good, clean comedy, with a personality all his own.

Miss Phyllis Bates will continue her instructional talks on dancing, her subject being "Modern Dances and Tempos." Miss Bates will illustrate this lecture with appropriate musical numbers.

Special interest should attach to the lecture to be given during the early evening session by Mr. R. Fleming, of Cooper's Ltd., who is to talk on "Gardening—the Oldest and Most Honourable of Occupations." Mr. Fleming is an acknowledged authority on home gardening, and his advice should prove helpful to many listeners who at this time of the year are contemplating the making of a garden.

ESPERANTO LESSONS.

Mr. King, who, through 2YA, is giving to all interested an instructive series of lessons in Esperanto, has kindly consented to release his appointment for the evening of Thursday, October 20, in order that Dr. Kidd may have an opportunity to tell "The Story of the Apple," a story which should prove of particular interest to orchardists and all interested in fruit-growing. Mr. King will combine his lesson for the 20th with that for the 27th, and on the latter evening will devote twenty minutes to his subject.

3YA FEATURES

Mr. W. L. Symonds is coming from Lyttelton to sing for 3YA on Monday evening. Mr. Symonds is credited with having a splendid bass voice, and he has chosen some stirring songs for his items, such as "The Old Brigade" and "Davy Jones's Locker."

A young soprano who will make her first appearance at 3YA on Monday will be Miss Adela Jones.

Mr. Gregory Russell, the popular tenor at 3YA, has chosen two songs from the song cycle, "Lover in Damascus," for Wednesday evening.

Miss Mildred Russell, L.A.B., A.T.C.L., a sister of Mr. Gregory Russell, will sing at 3YA on Wednesday the song, "A Lullaby," with which she gained her A.T.C.L. On that occasion Miss Aileen Warren, the pianiste of the Christchurch Broadcasting Trio, was her accompanist.

Mr. Alec Dey, the droll humorist, of Christchurch, who is such a delight to all listeners, is down for two items at 3YA on Wednesday. One will be the play scene from C. J. Dennis's "Sentimental Bloke," as described in the picturesque and expressive language of a frequenter of the streets known as "Little Lons" and "Spadger's Lane."

Mr. Leo Hayward, of the Rink Taxis, who has been telling of the interesting and picturesque spots on the round trip through the Mount Cook and Southern Lakes district, will on Wednesday speak of "World's Tourist Fishermen I Have Met."

Our already well-used roads will have their traffic considerably augmented this summer by a host of new motorists. Listeners who have recently invested in a car, as well as old hands at the motoring game, also pedestrians, will be interested, and will learn much from an address by Mr. R. W. Robinson, traffic inspector for Riccarton, to be given at 3YA on Thursday evening. He will talk on rules of the road, with special reference to motorists.

"Vegetables and how to cook them" will be the tenor of Miss Shaw's address to the ladies at 3YA on Thursday afternoon.

Some very stirring songs are to be sung by Mr. F. R. Hawker, baritone, at 3YA on Thursday evening. Mr. Hawker was a prize winner at the recent Christchurch competitions, and has a fine radio voice. On the occasion of his previous appearance at 3YA someone at Trangie, 300 miles west of Sydney, New South Wales, reported to 3YA that he heard the item well.

Miss Sylvia Marshall, who has a particularly good soprano voice for broadcasting, will sing again at 3YA on Thursday.

SPORTING

RACING AT TRENTHAM

WELLINGTON R.C. MEETING.

October 24: Wellington R.C. spring meeting, second day—2YA. Re-broadcast by 3YA.

As on the previous Saturday, when the first day's racing will take place, Mr. A. R. Allardye, the Broadcasting Company's official sporting announcer, will be at the microphone.

The Rev. B. Dudley, F.R.A.S., whose lectures on astronomy are described by an Australian correspondent as "very interesting," will on Thursday give an explanation for the Aurora Borealis and Aurora Australis.

Who knows the song, "The Desert," by Emanuel? Some people will remember the great English baritone, A. H. Gee, singing it, but very seldom has it been attempted by anyone else. The song, which is of enormous range, is descriptive of being lost in the desert, with vultures hovering overhead waiting for their prey, but at length the tinkling bells of a passing caravan betoken that relief is at hand. The singer of this song will be Mr. T. D. Williams, a Welshman, who has sung with much success at Risteddodds, but is now settled in Christchurch as a draughtsman. Mr. Williams will also sing the "War Song," by Elgar.

Miss Aileen Warren, the pianiste of the Christchurch Broadcasting Trio, is to play two solo selections on Thursday: "Anno Domini, 1620," and "Valse Piquant." Miss Warren was recently congratulated by Madame Alda, the New Zealand prima donna, now on a visit to Christchurch, for her ability as an accompanist.



Gold medalist at competitions in both North and South Islands. Miss Alice Vinsen has sung under engagement to many musical societies in oratorio and other works. She is a very popular contralto singer on the concert platform, and also at 3YA.

Miss Irene Morris, the violinist of the Christchurch Broadcasting Trio, will play two solos on Friday.

The Maori concert at 3YA on Saturday should be a treat to all who love Native voices. Eight of the best singers at Port Levy will broadcast a whole lot of enjoyment. The artists belong to the Tutehuarewa and Te Whaeke tribes, and the programme will include solos and choruses.

Friday will see the new Christchurch Broadcasting Quartet make its first appearance before the microphone, and it will be a great acquisition to the musical side of the programmes from 3YA. The members of the quartet are: Misses Frances Hamerton (soprano) and Belle Renaut (contralto), and Messrs. R. Sumner (tenor) and T. D. Williams (bass baritone). The voices blend beautifully, and the engagement of this quartet will prove a great delight to listeners.

Two quartets and two duets will be sung on Friday. The quartets will be "The Sea Hath Its Pearls" and "I Saw Lovely Phyllis."

Misses Hamerton and Renaut will sing "I Loved a Lass," and the gentlemen of the quartet will sing "Love and War," one of the old-time duets.

AVOID DISAPPOINTMENT

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Weekly programmes, hints and constructional data.

DUNEDIN FEATURES

The church service to be broadcast on Sunday is from St. Paul's Cathedral; the Rev. Canon Neville will be the preacher. A studio concert will be broadcast at the close of the service.

Tuesday's programme from 4YA will be provided by six of Dunedin's leading vocalists and instrumentalists. Mr. Les Dalley, who was successful in securing many first places in the Dunedin Competitions, will be heard in three numbers. Miss Mollie Andrews, who has a great many successes to her credit in the competitions, will be heard in four songs. Madame Marjorie Cadman, well known Dunedin vocal teacher and a possessor of a beautiful rich voice, will contribute several items, and Mr. Arthur Langley, who is acknowledged as one of the leading baritones in the southern city, will render two brackets of songs.

A well-known cellist, Mr. Phil Palmer, will make his first broadcast appearance at 4YA on Tuesday with "Pierne's Serenade," "Becker's Minuet," and "Squires' Mazurka." Miss Helen Wilson, pianiste of outstanding ability, will present three classical numbers.

During Tuesday's concert, Pastor W. D. More will entertain listeners with a humorous address, entitled "People Who Ought to be Dead."

A few weeks ago at 4YA, Mr. T. R. Fleming, ex-senior inspector of schools, delivered an address which he called "Humour of School Life." This received such a popular reception that Mr. Fleming has consented to continue the talk with a second series of episodes. This will be heard at 7.45 p.m. on Thursday.

One of the best-known dance orchestras in Dunedin is Paul Austin's, and this combination, together with several professional instrumentalists and vocalists, will provide the programme on Saturday evening. This promises to be of a very entertaining nature.

During Saturday evening's programme at 4YA, Mr. A. E. Wilson, of the Government Tourist Department, will give another lecture on the "Tourist Resorts of the South Island."

THE BOY SCOUTS.

At 8 o'clock on Thursday evening a very important function is taking place at the Burns Hall, Dunedin, when three Boy Scouts, in the presence of a large gathering of Dunedin Citizens and Scouts, will be presented with silver crosses and certificates of merit. The Boy Scouts' silver cross is a Scout award, and is awarded under the same conditions as prevail for the Royal Humane Society's award for gallantry.

The District Commissioner of Boy Scouts, Mr. W. F. Meek, will open the proceedings. Later on will be heard an address by Mr. F. Milner, M.A., C.M.G., rector of Waitaki Boys' High School. Then, at 9 o'clock, Dr. W. Marshall Macdonald will present the awards: (1) The silver cross, to second Thomas Rennie, 1st Dunedin Rovers; (2) silver cross, to Patrol Leader James Melnaski, Green Island Troop; (3) certificate of merit, to Patrol Leader G. M. Dodds, Mosgiel Troop.

The addresses and presentations will be relayed from Burns Hall.

At intervals throughout the evening items by well-known Dunedin artists will be heard from the studio. These include vocal solos by Mr. Paul Couchman (baritone), Mr. Billy Gayman (comedian), Miss Marie Tucker (mezzo-soprano). Miss Tucker will also play several piano solos and a piano duet with Miss Marie Rodger. Cornet solos will be heard by Mr. D. J. Robertson.

RADIO FOR POLICE

Wireless has now become a necessary auxiliary in a modern police force, and the New South Wales police force, not to be lagging in this respect, has lately had installed additional and more modern equipment to assist its members. A 2000-watt transmitter, consisting of transmitting panel and rectifier panel, has been installed by Amalgamated Wireless (Australasia) Ltd. at Pennant Hills wireless station. This apparatus is "remote controlled," for while the equipment is at Pennant Hills, the control apparatus is situated at police headquarters in Phillip Street, Sydney, and consists of speech amplifier, microphone, monitoring receiver, and Morse key. There is also a private telephone line between police headquarters and Pennant Hills wireless station. By means of this apparatus it is possible for the Police Department, which maintains its own staff of operators, to transmit messages either in Morse code or speech to the police patrol motor-cars which are wireless equipped. The Victorian police have already been using wireless extensively in connection with the motor patrols.

Now that the windy season is approaching, listeners should take care to see that their masts are firmly and efficiently stayed. Summer gales are frequently accompanied by heavy down-pours and much rain, and it is not pleasant to have to re-erect a mast in violent wind and rain squalls. A stitch in time saves nine.

CLASSICAL MUSIC

SIGNOR CESARONI'S PUPILS.

GRAND CONCERT ON MONDAY.

It is not an uncommon experience to meet people who do not hesitate to proclaim themselves unsatisfied with classical music. "It leaves me cold," one lover of lighter melody was recently heard to exclaim. Others less drastic would probably be content to say that "high class" music leaves them in a doubtful and somewhat disappointed frame of mind.

This, however, is no new complaint. It has been voiced since first the Great Masters of the art gave the world their inspired compositions. As all must realise, melodious music gives immense pleasure; but, to quote Signor Cesaroni, "We must also consider that this form of music is written in such a way as to give its pleasing tones quite unaffected by the difficult and complicated instrumentalizations which, when interwoven into the melody by a master brain, imparts to it a greater and more interesting charm."

With light ballad music the listener, after hearing a composition a few times, is apt to wish for something new; but into classical music there is wrought by great minds that which enables us to receive from it not only true musical education, but permanent enjoyment as well.

This latter is the class of music which Signor Cesaroni has been giving, and will continue to give, per medium of 2YA, to many thousands of delighted listeners who love to hear correctly interpreted the music of Beethoven, Myerbeer, Mozart, Puccini, Donizetti, Thomas, Saint Saens, Appoloni, Greig, Handel, and Verdi.

The students taking part in the Signor's next broadcast recital on Monday, October 21, are Misses A. Fredrickson, E. Higgins and R. T. Standers (sopranos), Miss V. Stewart (contralto), Miss M. Pender (mezzo-contralto), and Messrs. R. Porteous (tenor), E. D. McLellan and R. Madigan (bass), M. Ardrey and G. Gray (baritone). The accompanist and solo pianiste for the evening will be Miss Mavis Dillon and Miss C. Conlon.

1YA FEATURES

On Monday a comprehensive and interesting programme will be given, the principal performers being Mr. H. Barry Coney (piano solo), Mr. Fred Bowes (cornet solo), Miss Edna Peace (contralto), Miss D. Bayne (soprano), Mr. Fred Bowes (cornet), and Mr. Hal MacLennan with the flute. In addition Mr. Schroder will contribute baritone solos, while Mr. Alfred Warbrick with his popular bass-baritone voice will be heard in Hill's "Waiata Maori." The range of the evening's items is notable, and a very enjoyable high-class programme should result.

Mr. Norman Kerr's popular talks on Physical Culture will be continued on Tuesday evening at 7.30.

The St. Andrew's Quartet will be heard from 1YA on Tuesday evening in several outstanding numbers. In addition there will be relays from the Strand Theatre Orchestra (conducted by Eve Bentley) and a general programme of high merit.

Mr. Leonard Griffiths' introductory lecture on "Flower Legends" from Grecian History, was very well received, and the further section to be given on Thursday will be eagerly awaited. The programme of the evening contains many names of special interest to listeners. The Bohemian Duo will be heard in popular numbers.

Miss Dorothy Youd and her party will provide the main programme for Friday evening, which is a sufficient guarantee of a bright evening.

The event of Saturday's programme from 1YA will be the relay of the Auckland Municipal Band Concert (Mr. Christopher Smith, conductor), from the Town Hall from 8 o'clock to 9.30. This event is always welcomed by listeners. Thereafter dance music will be on the air from the Click Clack Cabaret Band till 11 o'clock.

WARNING TO LISTENERS

RADIO AND TELEPHONES.

The Secretary of the General Post Office, Wellington, advises that under no circumstances is the telephone or earth wire attached to a telephone instrument permitted to be used as an earth connection for a radio receiving set. It is also advisable to warn listeners that no earth connection through an electric light socket is advisable owing to the potential danger to users of the radio apparatus unless a special device made for the purpose is used. This device is perfectly safe to use, being certified tested up to 2500 volts. It consumes no current, and does not affect the electric light in any way. But unless such an appliance is employed it is highly dangerous to make any connection to an electric lighting installation.

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NEWS AND NOTES

(By "Switch.")

Too much amperage drawn from an accumulator is apt to damage it. The maximum current which can be taken from an accumulator is one-tenth its total amp-hour capacity. Therefore, a 60-amp hour (continuous use) battery can stand the drain of 6 amperes without damage being caused.

A powerful one-valve amplifier for use with a crystal set can be made by inserting the B battery between the loudspeaker and the plate of the valve, with one side of the loudspeaker connected to the plus of the A battery. Thus, one side of the loudspeaker is connected to the minus side of the B battery and the other terminal of the loudspeaker is attached to the plus of the A battery.

A wireless quarrel is shattering the night air for the European radio fans. The Soviets at Moscow every evening for some time have been broadcasting in Esperanto, but at the first phrases a strong French station has cut into spoil what the French evidently think is propaganda. Moscow, experts say, frequently changes wave-length to find a hole in the air, but the French station, whose identity is kept secret, follows the Russians up and down the scale, and so far has prevented Moscow from getting out to France at least more than a few phrases.

Have you noticed the tremendous improvement in the transmission by 3AR, Melbourne? The other evening this station was heard consistently louder and clearer than 2FC, Sydney, which has held the championship, so far as reception in Wellington applies.

If you are in doubt as to the condition of your dry B batteries disconnect the aerial and earth from your set, and if you hear rustling or crackling sounds your B batteries have dropped too low in voltage. The batteries are then of no use, and can be thrown away.

What factors make for the greatest efficiency of a receiving aerial? (1) The height of the aerial. (2) The length of the aerial. (3) The efficiency of the insulation. (4) Freedom from any screening effects.

Generally speaking, a short aerial gives greater selectivity to a set, but reception will not be so strong as when a long aerial is employed. An ideal length of an aerial for ordinary broadcast reception is about 145 feet, including the lead-in. The earth wire should not be longer than 12 feet, but the shorter it is the better, and heavy gauge wire should be used.

Short-circuiting an accumulator causes serious damage to it unless the circuit is very brief. It is far better not to test your battery by short-circuiting it to make a spark, as this does more or less harm. The internal resistance of a battery is so low that an enormous current flows through it when it is short-circuited, and this results in backing, disintegration, and the baneful sulphating of the plates.

Glass has come into high favour as an insulator at many of the American experimental short-wave stations owned by commercial concerns. At KDKA (Pittsburg, Pennsylvania) it is used to insulate the heavy copper turns of the inductances; brass-tipped glass knobs support various condensers on the panels, and glass-air insulation has replaced older through-the-wall types. The glass-air insulator consists of filled pyrex bell-jars placed on both sides of a circular aperture in the window glass. By bolting the bells together, with the bolts centring in the aperture and the bells separated from the window glass by rubber gaskets, an effectively insulated binding post is obtained.

The words "primary" and "secondary" as applied to radio batteries have grown into disuse. A primary battery embraces all dry cell batteries, and a secondary battery covers all types of wet batteries or accumulators, whether A or B.

Sometimes crystals seem to lose their sensitivity. To restore its usefulness chip off a portion of the crystal to bare a fresh surface. Then wash the crystal with pure alcohol or carbon disulphide.

In any of our New Zealand cities a whole lot of listening-in should be indulged in by the tramway authorities. They would find a host of wheels with flats on their tires, bad motors, half-contacting overhead switches, and other other disturbing factors.

Following are the wave-lengths of the British broadcast stations:—

Station	Wave-lengths
Daventry	1,604.3
Aberdeen	500
Bournemouth	491.8
Glasgow	405.4
Plymouth	400
Manchester	384.6
London	361.4
Cardiff	353
Birmingham	326.1
Newcastle	312.5
Belfast	306.1
Liverpool	297
Hull	294.1
Stoke	294.1
Swansea	294.1
Dundee	294.1
Edinburgh	288.5
Leeds	277.8
Nottingham	275.2
Sheffield	272.7
Bradford	252.1

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.

4.45: 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.R.C.O.
8.0: Studio concert.
9.0: Close down.

Monday, October 24th

1YA AUCKLAND.—SILENT.

2YA WELLINGTON (420 METRES)—MONDAY, OCTOBER 24.

3 p.m.: Gramophone recital
3.30: Sporting results.
3.31: Lecture—Miss Britten, "Fashions."
3.43: Gramophone recital and relay of Manuel Hyman's Exhibition Band from the Adelphi Cabaret.
4.0: Lecture—Dr. L. A. Line, "First Aid."
4.11: Gramophone recital and relay of Manuel Hyman's Exhibition Band from the Adelphi Cabaret.
4.59: Sporting results.
5.0: Close down.

6.0: Children's session—Aunt Jo and party.
7.0: News session and market reports.
7.40: Lecture—Mr. W. Honey, "New Zealand Industries."
8.0: Chimes of the General Post Office clock, Wellington.
Studio concert of operatic numbers by the pupils of Signor Lucien Cesaroni.

8.1: Chorus—Male students, "Hymn to God" from "Africana," Meyerbeer (Ricordi).
8.5: Soprano solo—Miss A. Frederickson, ariette: "Vedrai Carino" from "Don Juan," Mozart (Ricordi).
8.9: Baritone solo—Mr. M. Ardrey, "Se coull Ballare" from "Marriage of Figaro," Mozart (Ricordi).
8.13: Soprano solo—Miss Eva Higgins, "One Fine Day" from "Madame Butterfly," Puccini (Ricordi).
8.17: Bass solo—Mr. R. Madigan, aria: "Ruins of Athens," Beethoven (Ricordi).

8.21: Vocal duet—Miss E. Standen and Mr. G. Gray, "Gone is the Glory" from "Ruins of Athens," Beethoven (Ricordi).
8.25: Bass solo—Mr. R. Madigan, with chorus and students, "Great Muse" from "Ruins of Athens," Beethoven (Ricordi).
8.30: Piano solo—Miss Mavis Dillon, "Prelude," Debussy (Duran).
8.35: Tenor solo—Mr. R. Porteous, "Serenade" from "Don Pasquale," Donizetti (Ricordi).

8.40: Mezzo-soprano solo—Miss M. Pender, "Gavotte" from "Mignon," Thomas (Ricordi).
8.44: Bass solo—Mr. E. D. McLellan, "Berceuse" from "Mignon," Thomas (Ricordi).

8.48: Soprano solo—Miss E. Standen, "Non so pui cisa son" from "Marriage of Figaro," Mozart (Ricordi).
8.52: Baritone solo—Mr. M. Ardrey, "Non pui andrai" from "Marriage of Figaro," Mozart.
8.56: Contralto solo—Miss V. Stewart, "Softly Awakes My Heart" from "Samson and Delilah," Saint-Saens (Durand).

9.0: Elocutionary—Mr. Stanley Warwick, (a) "Como," Miller; (b) "The House With Nobody In It."
9.11: Vocal duet—Messrs. R. Porteous and R. Madigan, "Be Mine the Delight," Gounod (Ricordi).
9.16: Baritone solo—Mr. G. Gray, "Si Queriore" from "Elceiro," Appoloni (Ricordi).

9.20: Piano solo—Miss C. Conlon, "March of the Dwarfs," Grieg (Augener).
9.25: Soprano solo—Miss Eva Higgins, "Ave Natis Intermezzo" from "Cavalleria Rusticana," Mascagni (Ricordi).
9.29: Bass solo—Mr. R. Madigan, "Infelice" from "Ernani," Verdi (Ricordi).
9.33: Mezzo-soprano solo—Miss E. Standen, "Voi che sapete" from "Marriage of Figaro," Mozart (Ricordi).

9.37: Tenor solo—Mr. R. Porteous, "On With the Motley" from "T'Pagliacci," Leoncavallo (Ricordi).
9.42: Lyric soprano solo—Miss A. Frederickson, ariette: "Un moto di gioia" from "Marriage of Figaro," Mozart (Ricordi).

9.46: Contralto solo—Miss V. Stewart, "Leave My Anguish" from "Rinolo," Handel (Ricordi).
2.50: Instrumental—Studio Orchestra, selected.

3YA CHRISTCHURCH (306 METRES)—MONDAY, OCTOBER 24.

11.30 a.m.: Rebroadcast of 2YA, Wellington—Wellington Racing Club's spring meeting.
6.0: Children's session, by Uncle Jack.
7.15: News and reports.

8.0: Chimes. Studio concert, by Derry's Military Band, under conductorship of Mr. E. C. Derry and assisting 3YA artists.
8.1: March—Band, "Amidst Thunder of Cannon," Lake.
8.5: Bass solo—Mr. W. L. Symonds, "The Old Brigade," Barri.

8.9: Bell gavotte—Band, "Les Cloches de St. Malo," Morelli.
8.15: Soprano solo—Miss Adela Innes, "Snowflakes," Mallinson.
8.19: Novelty fox trot—Band, "In An Oriental Garden," Hayes.
8.24: Banjolin solo—Mr. Sydney Gibson, selected.

8.28: Selection—Band, "H.M.S. Pinafore," Sullivan.
8.40: Talk—Mr. Raynor White, F.L.C.M., "Geology."
8.55: Waltz—Band, "Donnan Wellen," Ivanovia.

9.2: Relay of orchestral selections from Strand Picture Theatre Orchestra, under Mr. Harry Ellwood.
9.12: Bass solo—Mr. W. L. Symonds, "The Mighty Deep," Jude.
9.16: Morceau—Band, "The Turkish Patrol," Michaelis.

9.21: Soprano solos—Miss Adela Innes, (a) "Thy Beaming Eyes"; (b) "I am Longing for the Spring," Norris.
9.25: Cornet solo—Bandsman W. C. Joughin, "The Maid of Malabar," Adams.
9.31: Marimba solo—Mr. Sydney Gibson, selected.

9.35: Selection—Band, "Sunny," Kern.
9.45: Bass solo—Mr. W. L. Symonds, "Davy Jones's Locker," Petrie.
9.49: Fox trot—Band, "Take in the Sun, Hang Out the Moon," Woods.

9.54: Soprano solo—Miss Adela Innes, "Blue Bells," Phillips.
9.58: Banjolin solo—Mr. Sydney Gibson, selected.
10.2: March—Band, "Flag Day," Scramm.

God Save the King. Close down.

4YA DUNEDIN.—SILENT.

Tuesday, October 25th

1YA AUCKLAND (333 METRES)—TUESDAY, OCTOBER 25.

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 session.
8.0: Chimes.

8.1: Relay of orchestral overture from Majestic Theatre, by Majestic New Orchestra. Mr. J. Whiteford-Waugh, conductor.

8.9: Baritone solo—Mr. Morris Schroder, (a) "Friend o' Mine," Sanderson (Boosey); (b) "My Dear Soul," Sanderson (Boosey).
8.17: Cornet solo—Mr. Fred Bowes, "Silver Threads Among the Gold," fantasia, Wright and Round (Rimmer).

8.22: Contralto solo—Miss Edna Peace, (a) "Irish Folk Song," Foote (Boosey); (b) "Salaam," Lamb (Elkin).
8.30: Piano solo—Mr. H. Barry Coney, "The Sea," Schubert-Liszt (Peters).
8.35: Bass-baritone solo—Mr. Alfred Warbrick, "Waiaata Maori," Hill (Chappell).

8.40: Flute solo—Mr. Hal MacLennan, (a) "By the Brook," Wetzler (Fischer); (b) "Valse Rejoice," Kohler.
8.49: Soprano solo—Miss Doris Bayne, "Mountain Lovers," Squire (Boosey).
8.53: Relay of orchestral interlude from Majestic Theatre.

9.0: Weather report.
9.1: Baritone solo—Mr. M. Schroder, "An Emblem," Thompson (Enoch).
9.5: Cornet solo—Mr. Fred Bowes, "Wendouree," Code (Allan).

9.11: Contralto solo—Miss E. Peace, (a) "Come, Gentle Night," Elgar (Boosey).
9.16: Piano solos—Mr. Barry Coney, (a) "Gavotte and Musette," d'Albert (Ashdown); (b) "Four Waltzes," Brahms (Lengnick).

9.24: Relay of musical extracts from Majestic Theatre.
9.34: Bass-baritone solos—Mr. A. Warbrick, (a) "Cloze Props," Charles (Chappell); (b) "Santa Barbara," Russell (Boosey).

9.42: Piccolo solo—Mr. H. McLellan, selected.
9.47: Soprano solos—Miss D. Bayne, (a) "Vale," Russell (Boosey); (b) "Rose of My Heart," Lohr (Boosey).

9.55: Cornet solo—Mr. Fred Bowes, "Serenade and Allegro" from "Don Pasquale," arr. Hartmann (Hawke).
10.0: A thought.
10.1: Close down.

2YA WELLINGTON (420 METRES)—TUESDAY, OCTOBER 25.

3 p.m.: Gramophone recital.
3.30: Sporting results to hand.
3.31: Lecture—Mrs. Sinclair, "Electric Cooking."

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

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- 4.15: Lecturette—Dr. L. A. Line, "First Aid."
 4.30: Gramophone recital and relay of Manuel Hyman's Exhibition Band from the Adelphi Cabaret.
 4.59: Sporting results to hand.
 5.0: Close down.
 6.0: Children's session—Uncle Jasper and party.
 7.0: News session and market reports.
 7.35: Lecturette—Mr. E. A. Bradshaw, "A Short History of Petroleum."
 8.0: Chimes of the General Post Office clock, Wellington.
 8.1: Opening speech, by His Worship the Mayor.
 8.6: Speech by the Right Hon. J. G. Coates, P.C.
 8.16: Description of scene depicting Maori life before the arrival of the pakeha, followed by a description of a scene depicting arrival of first white settlers in New Zealand.
 8.25: Description of a parade of mannequins, representing the following firms—Wellington Woollen Co., Ltd., Macky, Logan, and Caldwell, Ltd., Whitehead and Pears, Bond's Hosiery, New Zealand Hosiery, A. Tossman and Co., Ltd., A. Cathie and Co., Ltd., St. Crispin Shoe Co. Bond's Hosiery, A. Tossman and Co., and New Zealand Hosiery will also provide ballets, which will be described.
 Suitable music for the parade and ballets will be rendered by an orchestra, under the conductorship of Mr. Frank Thomas.
 9.5: Selections by orchestra, under conductorship of Mr. Frank Thomas. Studio concert.
 9.15: Lecturette—Mr. Douglas Taylor.
 9.30: Soprano solo—Miss Myra Sawyer, "Waltz Song" ("Tom Jones"), German (Chappell and Co.).
 9.34: Instrumental—Studio Orchestra, selected.
 9.40: Bass solo—Mr. W. Boardman, "When the King Went Forth to War," Koenman (J. and W. Chester).
 9.44: Vocal duet—Miss Myra Sawyer and Mr. W. Boardman, "The Syren and Friar," Emanuel (Barley and Ferguson).
 9.48: Instrumental—Studio Orchestra, selected.
 9.54: Soprano solo—Miss Myra Sawyer, "Spring's Awakening," Sanderson (Boosey).
 9.58: Bass solo—Mr. W. Boardman, "Ho, Jolly Jenkins" from "Ivanhoe," Sullivan (Chappell).
 10.2: Instrumental—Studio Orchestra, selected.

3YA CHRISTCHURCH—SILENT.

4YA DUNEDIN (463 METRES)—TUESDAY, OCTOBER 25.

- 3 p.m.: Town Hall chimes.
 3.1: His Master's Voice recital.
 3.30: Social notes and news.
 3.40: Studio music.
 4.0: Book talk, by Mr. H. Greenwood, of the Athenaeum.
 4.15: His Master's Voice recital.
 4.30: Close down.
 7.0: Town Hall chimes.
 7.1: Children's session—Big Brother Bill.
 7.45: Address by Sir George Fenwick, "Animal Welfare Week."
 8.0: Town Hall chimes.
 8.1: Orchestral items, under the baton of Mr. L. D. Austin, relayed from the Octagon Theatre.
 8.10: Vocal solo—Mr. Les. Dalley, "Your Tiny Hand is Frozen" from "La Boheme," Puccini.
 8.14: Pianoforte solo—Miss Mollie Andrews, "Liebeslied," Liszt.
 8.19: Soprano solos—Miss Mollie Andrews, (a) "Waltz Song" from "Tom Jones," German; (b) "All Through the Night," Somerville.
 8.24: Cello solo—Mr. Phil Palmer, "Serenade," Piere.
 8.28: Baritone solos—Mr. Arthur Lungley, (a) "The Sword of Ferara"; (b) "Obstination," Massenet.
 8.34: Orchestral items from the Octagon Theatre.
 8.45: Address—Pastor W. D. More, "People Who Ought to be Dead."
 9.0: Mezzo-soprano solos—Madame Marjorie Cadman, (a) and (b) selected.
 9.7: Pianoforte solo—Miss H. Wilson, "Au Printemps," Greig.
 9.12: Vocal solos—Mr. Arthur Lungley, (a) "My Friend"; (b) "Youth," Allitsen.
 9.18: Cello solo—Mr. Phil Palmer, "Minuet," Becker.
 9.22: Soprano solos—Miss Mollie Andrews, (a) "Golden Dancing Days," Clarke; (b) "We'd Better Bide a Wee."
 9.28: Pianoforte solo—Miss Helen Wilson, "Polonaise," Chopin.
 9.33: Tenor solos—Mr. Les Dalley, (a) "Silent Noon," Vaughan Williams; (b) "I Know of Two Bright Eyes," Clutsam.
 9.40: Cello solo—Mr. Phil Palmer, "Mazurka," Squire.
 9.44: Mezzo-soprano solos—Madame Marjorie Cadman, (a) and (b) selected.
 9.50: Orchestral items from the Octagon Theatre.
 10.0: Close down.

Wednesday, October 26th

1YA AUCKLAND (333 METRES)—WEDNESDAY, OCTOBER 26.

- 3 to 4.30 p.m.: Afternoon session—Selected studio items.
 7.15: News and reports.

- 7.30 to 7.45: Talk on "Physical Culture," by Mr. Norman Kerr.
 8.0: Chimes.
 8.1: Relay of orchestral overture from Strand Theatre—Eve Bentley conducting.
 8.9: Quartet—St. Andrew's Quartet, "Come to the Show," Oliver (Larway).
 8.14: Cello solo—Miss W. Moore, "Harlequinade," Squire.
 8.18: Soprano solo—Miss Adelaide Taylor, "A Woodland Madrigal," Wilson.
 8.22: Trio—Miss Taylor and Messrs. Peter and Colledge, "Shall a Clown?" Bennett (Novello).
 8.27: Piano solos—Mr. Geoffrey Colledge, (a) "Csikos et Bohemeune," Bohm (Lengnick); (b) "Frühlingslied," Merkel (Paxton).
 8.35: Bass solo—Mr. Arthur Colledge, "Honour and Arms," Handel (Novello).
 8.40: Elocutionary—Miss Gladys Gammon, selected.
 8.45: Relay of musical interlude from Strand Theatre.
 8.54: Quartet—St. Andrew's Quartet, "Evening and Morning."
 9.0: Weather report.
 9.1: Tenor solo—Mr. Robert Peter, "Beloved, It Is Morn."
 9.6: Cello solo—Miss W. Moore, "Serenade," Toselli.
 9.10: Soprano solo—Miss A. Taylor, "Thoughts Have Wings," Lehmann (Boosey).
 9.15: Quartet—St. Andrew's Quartet, "Wake With a Smile, O Month of May," Bennett (Novello).
 9.21: Elocution—Miss G. Gammon, selected.
 9.26: Contralto solo—Miss Phyllis Gribben, "O, Love from Thy Power," Saint Saens (Durand).
 9.32: Relay of musical entr'acte from Strand Theatre.
 9.42: Duet—Messrs. Peter and Colledge, "Army and Navy," Cooke.
 9.48: Piano solo—Mr. G. Colledge, "Wanderstunden," Heller (Paxton).
 9.53: Quartet—St. Andrew's Quartet, "A Roundelay," Oliver (Larway).
 9.59: A thought.
 10.0: Close down.

2YA WELLINGTON—SILENT.

3YA CHRISTCHURCH (306 METRES)—WEDNESDAY, OCTOBER 26.

- 3 p.m.: Afternoon concert session.
 6.0: Children's session, by Uncle Sam.
 7.15: Addington stock market reports.
 7.30: News.
 8.0: Chimes. Relay of orchestral selections from Grand Picture Theatre Orchestra, under conductorship of Mrs. Black.
 8.15: Tenor solo—Mr. Gregory Russell, "An African Love Song," Nevin.
 8.19: Contralto solo—Miss Mildred Russell, L.A.B., A.T.C.L., "A Litany," Hurlstone.
 8.23: Humorous lecture—Mr. Alec Dey, "Mary Had a Little Lamb," Chevalier.
 8.27: Cello solos—Mr. Harold Beck, (a) "Barcarolle," Sitt (b) "Hungarian Folk Melody," traditional.
 8.33: Tenor solo—Mr. Gregory Russell, "Pleading," Elgar.
 8.36: Contralto solo—Miss Mildred Russell, "Thou Art Risen, My Beloved," Taylor.
 8.40: Instrumental trio—Christchurch Broadcasting Trio, "Adagio and Allegretto, Scherzando" from "Trio, Opus 181," Gurlett.
 8.48: Australian poem in lingo—Mr. Alec Dey, "The Play" in "Sentimental Bloke," Dennis.
 8.54: Cello solos—Mr. Harold Beck, (a) "Old French Dance," Marias; (b) "Minuetto," Becker.
 9.0: Relay from Grand Picture Theatre.
 9.15: Talk—Mr. Leo Hayward, "World's Tourist Fishermen I Have Met in New Zealand."
 9.35: Tenor solos—Mr. Gregory Russell, (a) "Where the Abana Flows," Finden; (b) "Allah! Be With Us," from song cycle, "A Lover in Damascus."
 9.40: Instrumental trio—Christchurch Broadcasting Trio, "March" and "Habenera" from opera "Carmen," Bizet.
 9.47: Contralto solo—Miss Mildred Russell, "Yesterday and To-day," Spross.
 9.51: Vocal duet—Miss Mildred and Mr. Gregory Russell, "Somewhere a Voice is Calling," Tate.
 9.54: Instrumental trio—Christchurch Broadcasting Trio, (a) "The Red Sarafan," Verlamov; (b) "Fascination Waltz," Bush.
 God Save the King. Close down.

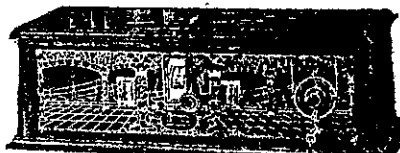
4YA DUNEDIN—SILENT.

Thursday, October 27th

1YA AUCKLAND (333 METRES)—THURSDAY, OCTOBER 27.

- 3 to 4.30 p.m.: Afternoon session—Selected studio items.
 7.15 to 7.45: News and reports.
 8.0: Chimes.
 8.1: Relay of orchestral overture from Rialto Theatre. Henry C. Engel, conductor.
 8.9: Contralto solos—Miss Nellie Lingard, (a) "Soul of Mine," Barnes (Chappell); (b) "Dry Those Tears," Del Reigo (Chappell).
 8.17: Piano solo—Mrs. Hugh Morton, "Fox Trot Medley."
 8.22: Baritone solos—Mr. Walter Brough, (a) "Inter Nos"; (b) "Border Ballad," Cowen.
 8.31: Violin solo—Mr. Powell Rogers, "Liebestraume," Liszt.

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RADIO LITERATURE

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Engineers of a South Carolina traction company have discovered that it is possible to detect mechanical defects, such as flat wheels, poor motors, etc., of street cars by erecting a radio antenna alongside trolley wires, and listening-in with an ordinary receiver. It is said the idea was conceived when listeners complained of interference in their sets caused by passing cars.

An indoor "loop" or "frame" aerial should not be used with a neutrodyne set, but for any other circuit it is quite practicable. A square loop aerial for all-round broadcast reception can be made as follows:—Length of each side, 3ft.; number of turns, 8; spacing between wires, 4in.

Wire for an indoor "loop" aerial may be from 22 to 14 gauge. When the wire is wound tightly there are dielectric losses which raise the resistance. When spaced several diameters apart it is immaterial whether the wire is insulated or bare.

When used in a room the proximity of an indoor "loop" aerial to the walls or ceiling has the effect of raising the effective resistance. The difference in resistance when the "loop" is 5ft. away from the wall is 20 or 25 per cent., as compared with that when near.

If your audio-frequency valves have a tendency to howl, separate all wiring as far as possible to reduce inductive effects. Place the transformers further apart and arrange their windings at right angles if possible. Also try reversing the connections to one or more of the primary windings of the audio transformers, and also experiment with connections from the iron cores of the transformers, either to earth or to the positive of the high-tension battery.

Through permitting an accumulator (wet battery) to stand too long in a discharged condition the plates will become encrusted with sulphation, which causes trouble unless removed. This coating reduces the active surface of the plates. In some cases sulphation can be removed by giving the battery a very long charge at a low rate, after adding a pinch of Glauber's Salt to each cell. Next, empty out the acid, wash out the cells with distilled water, refill with fresh acid, and again charge the battery, this time at the normal rate.

Sediment will sometimes be seen in the bottom of wet batteries. This should be removed. Charge the battery first, wash it out with distilled water, refill with acid, and finally give the battery a short charge. Sediment in the bottom of a wet battery generally indicates that it is being charged or discharged too rapidly.

Some novices wonder how the broadcast waves get on to their aerial when it is insulated with enamel. Electromagnetic waves pass easily through all insulating substances.

The cords connecting an indoor "loop" aerial to a receiving set should not be more than 3 feet in length. The cords should be kept well apart.

A satisfactory "earth" connection for a portable receiver can be made by connecting to an insulated wire stretched on the ground, instead of to a poor or metallic ground, such as a rod driven into a wet spot.

The best test for a new valve is to put it in a regenerative receiving set or oscillator and determine whether or not it will oscillate. This is true, because a valve that will oscillate will also detect and amplify (the two other functions of a valve). This is the test often used by manufacturers and dealers. A valve that will not oscillate is practically worthless for any use but rectifying.



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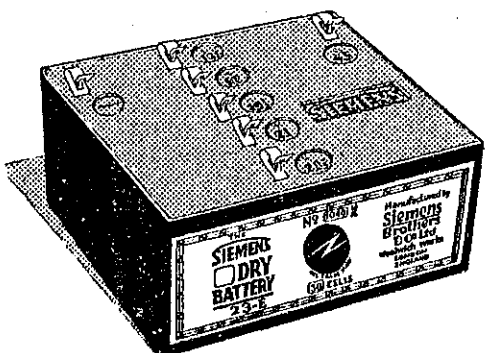
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Programmes Continued

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- 8.35: Soprano solos—Miss Peggy Cutting, (a) "The Little Brown Owl," Sanderson (Boosey); (b) "Sometimes in Summer," Bennett.
8.43: Duo—Bohemian Duo, popular numbers.
8.51: Tenor solo—Mr. Geo. Barnes, "An Evening Song," Blumenthal.
8.55: Relay of musical interlude from Rialto Theatre.
9.0: Weather report.
9.1: Talk on "Flower Legends" from "Grecian History," with an elocutionary prologue by Mr. Leonard Griffiths.
9.16: Contralto solo—Miss N. Lingard, "The Long Avenue," Molloy (Boosey).
9.20: Piano solos—Mrs. H. Morton, (a) "Hexentanz," McDowell; (b) selected fox trots.
9.27: Baritone solo—Mr. W. Brough, "Will o' the Wisp," Spröss.
9.32: Violin solo—Mr. P. Rogers, (a) selections from "Rigoletto," arr. Tavan; (b) selected novelty items.
9.40: Soprano solo—Miss P. Cutting, "Ave Maria," Mascagni (Ascherberg).
9.44: Relay of musical entr'acte from Rialto Theatre.
9.48: Duo—Bohemian Duo, popular numbers.
9.54: Tenor solos—Mr. Geo. Barnes, (a) "Only the River Running By," Hopkins; (b) selected.
10.0: A thought.
10.1: Close down.

2YA WELLINGTON (420 METRES)—THURSDAY, OCTOBER 27.

- 3 p.m.: Gramophone recital and relay of Manuel Hyman's Exhibition Band from the Adelphi Cabaret.
3.30: Sporting results to hand.
3.31: Gramophone recital and relay of Manuel Hyman's Exhibition Band from the Adelphi Cabaret.
4.59: Sporting results to hand.
5.0: Close down.
7.0: News session and market reports.
7.40: Lecture—Mr. W. King, "Esperanto," lesson No. 13.
8.0: Chimes of the General Post Office clock, Wellington.
8.1: Relay from Pageant of Industry, Town Hall.
Address—Mr. W. Veitch, M.P.
8.11: Band—Salvation Army, march: "Valour Crown," arr. Bandsman Herd.
8.18: Soprano solo—Mdm. Valvara Lund, "Ah! fors de lui" from "Traviata," Verdi (Boosey).
8.22: Band—Salvation Army, selection: "Over Jordan," arr. Adjutant Coles (Salvation Army, London).
8.30: Tenor solo—Mr. Wm. Renshaw, "Onaway, Awake, Beloved," Cowen (Metzler).
8.34: Band—Salvation Army, selection: "English Melodies," arr. by Hill (Salvation Army, London).
8.40: Contralto solo—Miss Nora Greene, "What the Chimney Sang," Griswold (Boosey).
8.44: Band—Salvation Army, march: "Boston," arr. by Broughton (Salvation Army, London).
8.51: Soprano solo—Mdm. Valvara Lund, "Ernani involami" from "Ernani," Verdi (Boosey).
8.55: Male voices—Bandsmen of Salvation Army Band, "West Indian Melodies," traditional.
9.2: Elocutionary—Mr. Byron Brown, excerpts from Shakespeare.
9.17: Cornet solo—Bandsman Giffin, "Happy Day," Bandmaster Liedzen (Salvation Army, London).
9.23: Band—Salvation Army, air varie: "My Homeward Journey," Bandmaster Swanson (Salvation Army, London).
9.33: Tenor solos—Mr. Wm. Renshaw, (a) "Ma Little Banjo," Dickmont; (b) "Clorinda," Morgan (Chappell-Enoch).
9.38: Band—Salvation Army, "Songs of Scotland," arr. Slater (Salvation Army, London).
9.48: Contralto solo—Miss Nora Greene, "Before You Came," Wilson (Cramer).
9.52: Band—Salvation Army, "Active Services," Coles (Salvation Army, London).

3YA CHRISTCHURCH (306 METRES)—THURSDAY, OCTOBER 27.

- 3 p.m.: Afternoon concert session.
4.15: Talk—Miss M. J. Shaw, of Home Economics Association, "Our Vegetable Foods and How to Cook Them."
6.0: Children's session, by Uncle Jack.
7.15: News and reports.
7.30: Talk—Mr. R. W. Robinson, "Rules of the Road and Motor Control."
8.0: Chimes. Relay of orchestral selections from Everybody's Picture Theatre Orchestra, under conductorship of Mr. Albert Bidgood.
8.19: Baritone solo—Mr. F. R. Hawker, "King Charles," White.
8.23: Soprano solo—Miss Sylvia Marshall, "Advice," Carew.
8.27: Pianoforte solos—Miss Aileen Warren, "A.D. 1620" (from "Sea Pieces"), Macdowell.
8.31: Talk—Rev. B. Dudley, F.R.A.S., "The Polar Lights and Their Meaning."

PAGEANT OF INDUSTRY

UNIQUE RELAY BY 2YA.

On Tuesday, October 25, there will be broadcast on relay from 2YA a programme which should prove both novel and interesting. This will be an entertaining and instructive report of the opening proceedings at the Wellington Town Hall of the great "Pageant of Industry," for which the organisers have been preparing for many weeks.

The first item will be presented by the Pageant Orchestra, under the conductorship of Mr. Frank Thomas, after which a short introductory speech will be delivered by the Mayor of Wellington, who is always well worth hearing. Then will follow an inaugural speech by the Prime Minister, the Rt. Hon. J. G. Coates, whose theme should have in it a strong appeal to the sympathetic hearing of listeners throughout the Dominion.

Then, very appropriately, will come a description of a spectacular scene depicting Maori life before the arrival of the Pakeha, followed by the description of another picturesque scene illustrating the arrival of the first white settlers in New Zealand.

Then, so to speak, the pageant will get down to business, and ladies especially will be interested in the description of the parade of mannequins presenting the products of some of the city's leading manufacturers. Next to seeing this delightful spectacle will be the pleasure of hearing all about it, and, incidentally, metally visualising the exquisite creations in dress, footwear, etc., "made in New Zealand for New Zealanders." In connection with this interesting feature of the programme, Bonds' Hosiery, Tossman and Co. (furriers) and New Zealand Hosiery will stage specially arranged ballets, which will also be described for the benefit of listeners. From 9.5 to 9.15 the Pageant Orchestra will play a number of melodious selections, after which 2YA will switch back to the studio to broadcast direct the second portion of the evening's programme.

ALL ABOUT STAMPS

LECTURES FROM 3YA.

Stamp collectors, both old and young, will be pleased to learn that lectures on this absorbing pastime are to be given from 3YA. The Christchurch Philatelic Society is taking up the proposal enthusiastically, and will supply the lecturers for eight talks.

Stamp collecting, besides being so interesting, is a profitable pastime, but there is a lot to be learned before one can get the best results. Soon, however, some experts will be speaking from 3YA and telling how to start collecting and all about mounting, and watermarks, and perforations, and how to classify and learn the values of stamps.

NOTES AND COMMENTS

(By "Switch.")

Recently 5CL, Adelaide, broadcast to listeners the sound of the heart-beats of several persons who were invited to be present in the studio. What must surely be the most unusual broadcast took place on the evening of Thursday, September 22. Recently it came to 5CL's notice that a calf had been born in South Australia with its heart situated in its throat. Veterinary surgeons agreed that this was a most remarkable and unusual freak of nature, and considerable interest was taken in the animal. By means of the super-sensitive microphone developed by the engineering staff, 5CL broadcast the heart-beat of the animal.

At an extra long cord is connected to a loudspeaker in some instances it will howl. This can generally be stopped by connecting fixed condensers of .002 or .003 mfd across both ends of the loudspeaker cord.

A receiving or transmitting valve that will not oscillate any more can be made to serve as a rectifier valve as long as the plate or grid are not shorted to the filament. The socket springs connecting to the grid and plate of the valve should be wired together, so that the valve will carry more current.

When transformers are sold in couples they are of different ratios. The smaller ratio transformer should be inserted in the second stage. The plan of selling transformers in pairs is now widely adopted by the manufacturers. As the transformers have much to do with the tone of reception, it is inadvisable to buy any but those of the highest grade.

Improvement in audio transformers is conspicuous during the past year. It has been found that if the iron core is large it is not apt to become "saturated." Thicker wire in the transformers reduces the danger of burning out under a heavy voltage. There are several makes of sets, which require as much as 135 volts on the last valve, with over 100 volts on the previous valve.

When a 33½ volt dry B battery has dropped to 17 or even 18 volts the battery should be discarded. The proper time to test the batteries with a voltmeter is when they are connected up to the set and the valves are alight.

- 8.40: Instrumental trio—Christchurch Broadcasting Trio, "Minuet" from "Trio, Op. 32," Godard.
8.44: Baritone solo—Mr. F. R. Hawker, "Kings of the Road," Bevan.
8.51: Soprano solo—Miss Sylvia Marshall, "In the Dusk," Tate.
9.0: Relay from Everybody's Picture Theatre.
9.15: Baritone solo—Mr. F. R. Hawker, "Bedouin Love Song," Pinsuff.
9.19: Instrumental trio—Christchurch Broadcasting Trio, "Entr'acte to Act II" from opera "Carmen," Bizet.
9.23: Soprano solo—Miss Sylvia Marshall, "That Hour With You," Tate.
9.27: Pianoforte solo—Miss Aileen Warren, "Valse Piquant," Peel.
9.31: Baritone solo—Mr. F. R. Hawker, "The Song of Hybris, the Cretan," Elliott.
9.35: Soprano solo—Miss Sylvia Marshall, "By the Waters of Minnetonka," Lieurance.
9.40: Instrumental trio—Christchurch Broadcasting Trio, (a) "Nocturne in E Flat," Chopin; (b) "Hungarian Dance in G Minor," Brahms.
9.44: Dancing lessons—Mr. Cyril Poulton, lessons on dancing.
Close down.

4YA DUNEDIN (463 METRES)—THURSDAY, OCTOBER 27.

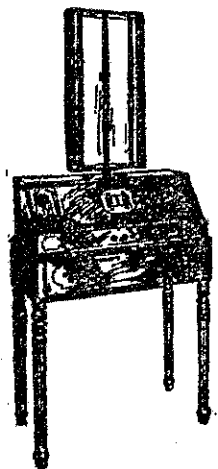
- 7 p.m.: Town Hall chimes.
7.1: Request gramophone concert.
7.45: Address by Mr. T. R. Fleming, ex-Senior Inspector of Schools, "Humour of School Life" (second series).
8.0: Town Hall chimes.
Studio concert and relay of presentation of awards to Boy Scouts for gallant acts of bravery from Burns Hall.
8.1: Opening remarks by District Commissioner of Boy Scouts, Mr. W. F. Meek.
8.8: Baritone solos—Mr. Paul Couchman, (a) "The Devout Lover," White; (b) "Red Devon by the Sea."
8.14: Pianoforte solo—Miss Marie Tucker, "Sonata, Adagio Molto," Beethoven.
8.20: Address to Boy Scouts by Mr. F. Milner, M.A., C.M.G., Rector of Waitaki Boys' High School.
8.50: Cornet solo—Mr. D. J. Robertson, "Absent," Metcalf.
8.54: Light vocal—Mr. Billy Gay, with ukulele accompaniment by himself and Mr. A. Bradley, (a) "Drifting and Dreaming"; (b) "Don't Sing Aloha When I Go."
9.0: Presentation of awards by Dr. W. Marshall Macdonald—(1) The Silver Cross, to Second Thomas Reppie, 1st Dunedin Rovers; (2) Silver Cross, to Patrol Leader James Mehalski, Green Island Troop; (3) Certificate of Merit, to Patrol Leader G. M. Dodds, Mosgiel Troop.
9.15: Pianoforte duet—Misses M. Tucker and M. Rodger, "Valse des Fleurs," Tschalkowsky.
9.20: Baritone solos—Mr. Paul Couchman, (a) "I Am Fate"; (b) "Little Irish Girl," Lohr.
9.26: Cornet solo—Mr. D. J. Robertson, selected.
9.30: Orchestral selections, under Mr. Chas. Parnell, relayed from the Empire Theatre.
9.40: Mezzo-soprano solo—Miss M. Tucker, "Pale Moon," Logan.
9.43: Light vocal—Mr. Billy Gay, (a) "Just Wait Till You See"; (b) "Cecilia."
9.55: Pianoforte solo—Miss Marie Tucker, "Butterfly Study," Chopin.
10.0: Close down.

Friday, October 28th

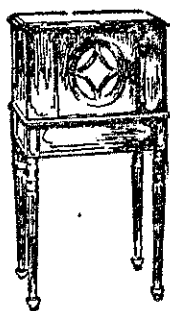
1YA AUCKLAND (333 METRES)—FRIDAY, OCTOBER 28.

- 3 to 4.30 p.m.: Afternoon session—Selected studio items.
6.30: 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, Ltd.
8.31: Piano solo—Mr. Eric Bell, "To the Spring," Grieg.
8.34: Soprano solos—Miss Dorothy Yould, (a) "Robin Adair"; (b) "Piper June," Carew.
8.42: Baritone solo—Mr. Dudley Wrathall, "Onaway, Awake, Beloved," Coleridge-Taylor.
8.47: Violin solo—Mr. Paul Bretnall, "Mazurka," Chopin.
8.51: Contralto solos—Miss Martha Williamson, (a) "Sorrow," I. Bingham; (b) "Auld Robin Gray," Levees.
9.0: Weather report.
9.1: Duet—Miss Yould and Mr. Wrathall, "Sing, Sing, Birds on the Wing."
9.6: Mezzo solo—Miss Cecilia Duncan, "Here in the Quiet Hills," Carne.
9.10: Piano solo—Mr. E. Bell, "Ballad in A Flat," Chopin.
9.15: Baritone solo—Mr. D. Wrathall, "Pagan," Lohr.
9.19: Duet—Misses Williamson and Yould, "O, Lovely Night," Ronald.
9.24: Violin solos—Mr. P. Bretnall, (a) "Minute Waltz," Chopin; (b) "Nachstück," Schumann.
9.29: Mezzo solos—Miss C. Duncan, (a) "Annie Laurie," Lehmann; (b) "Danny Boy," old Irish.
9.37: Contralto solo—Miss M. Williamson, "When I'm a Grown-up Lady," Fisher.
9.41: Baritone solo—Mr. D. Wrathall, "King Charles," White.
9.45: Piano solo—Mr. E. Bell, "Minuet in G," Paderewski.
9.49: Soprano solo—Miss D. Yould, "Gloriana," Mallinson.
9.53: Violin solo—Mr. P. Bretnall, "Minuet," Mozart.
9.56: Trio—Misses Williamson and Yould and Mr. Wrathall, selected.
10.0: A thought.
10.1: Close down.
Concert arranged by Miss D. Yould.

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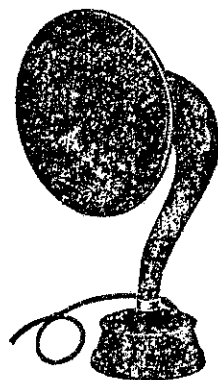
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Programmes Continued

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2YA WELLINGTON (420 METRES)—FRIDAY, OCTOBER 28.

- 3 p.m.: Gramophone recital and relay of Manuel Hyman's Exhibition Band from the Adelphi Cabaret.
- 3.30: Sporting results to hand.
- 3.31: Lecturette—Miss Marion Christian, "Gas Cooking."
- 3.46: Gramophone recital and relay of Manuel Hyman's Exhibition Band from the Adelphi Cabaret.
- 4.59: Sporting results to hand.
- 5.0: Close down.
- 7.0: News session and market reports.
- 7.40: Lecturette—Mr. D. G. Paris, "Athletics."
- 8.0: Relay from Pageant of Industry, Town Hall, of an address given by Mr. G. W. Forbes, M.P., on "New Zealand Industries."
- 8.11: Instrumental—Studio Orchestra, selected.
- 8.21: Soprano solo, Mrs. Alma Millward, "The Almond Tree," Schumann (Boosey).
- 8.25: Violin solo—Mr. L. A. C. Warner, "Premiere Mazurka," Drdla.
- 8.29: Baritone solo—Mr. K. Rigby, "Friend o' Mine," Sanderson (Boosey).
- 8.33: Instrumental—Studio Orchestra, selected.
- 8.38: Elocutionary—Miss Nora Burt, "Fractions."
- 8.42: Tenor solo—Mr. Frank Bryant, "Eleanore," Coleridge-Taylor.
- 8.46: Instrumental—Studio Orchestra, selected.
- 8.56: Contralto solo—Mrs. H. Blacker, "Angus Macdonald," Moeckel (Chappell).
- 9.0: Weather report.
- 9.1: Lecturette—Editor-Announcer, "Imperial Affairs."
- 9.16: Relay of Manuel Hyman's Exhibition Band from the Adelphi Cabaret.
- 9.21: Soprano solo—Mrs. Alma Millward, "Unmindful of the Roses," Coleridge-Taylor (Boosey).
- 9.25: Violin solos—Mr. L. A. C. Warner, (a) "Hungarian Dance," Drdla; (b) "By the Waters of Minnetonka," Lieurance (Schott).
- 9.30: Relay of Manuel Hyman's Exhibition Band from the Adelphi Cabaret.
- 9.35: Baritone solo—Mr. K. Rigby, "Mate o' Mine," Scott (Boosey).
- 9.40: Relay of Manuel Hyman's Exhibition Band from the Adelphi Cabaret.
- 9.45: Elocutionary—Miss Nora Burt, "The New Zealander's National Anthem," anon.
- 9.49: Tenor solos—Mr. Frank Bryant, (a) "Drink to Me Only," Quilter; (b) "The Birth of Morn," Leoni (Chappell-Allen).
- 9.54: Contralto solo—Mrs. H. Blacker, "The Glory of the Sea," Sanderson (Boosey).
- 9.59: Instrumental—Studio Orchestra, selected.

3YA CHRISTCHURCH (306 METRES)—FRIDAY, OCTOBER 28.

- 3 p.m.: Afternoon concert session.
- 7.15: News and reports.
- 8.0: Chimes. Relay of orchestral selections from Liberty Picture Theatre Orchestra, under direction of Mr. Ernest Jamieson.
- 8.15: Bass solo—Mr. T. D. Williams, "War Song," Elgar (Boosey).
- 8.19: Soprano solo—Miss Frances Hamerton, "The Blackbird's Song," Scott.
- 8.23: Violin solo—Miss Irene Morris, "Cantilene," Bohm.
- 8.28: Tenor solo—Mr. Russell Sumner, "Red Devon by the Sea," Clarke.
- 8.32: Contralto solo—Miss Belle Renaut, "Ferry Me Across the Water," Homer.
- 8.36: Instrumental trio—Christchurch Broadcasting Trio, "Rosamond," ballet music, Schubert.
- 8.42: Mixed vocal quartet—Christchurch Broadcasting Quartet, "The Sea Hath its Pearls," Pinsuti.
- 8.46: Bass solo—Mr. T. D. Williams, "The Desert," Emmanuel.
- 8.50: Soprano solo—Miss Frances Hamerton, "Over the Mountains," Quilter.
- 8.54: Vocal quartet—Misses F. Hamerton and Belle Renaut, "I Loved a Lass," Williams.
- 9.0: Relay from Liberty Picture Theatre.
- 9.15: Tenor solo—Mr. Russell Sumner, "I Know of Two Bright Eyes," Cadman.
- 9.19: Contralto solo—Miss Belle Renaut, "In Summer Fields," Brahms.
- 9.23: Violin solo—Miss Irene Morris, "Tempo di Minuetto," Pugnani-Kreisler.
- 9.27: Bass solo—Mr. T. D. Williams, "Devonshire Cream and Cider," Sanderson.
- 9.31: Soprano solo—Miss Frances Hamerton, "How the Holly Got its Thorns," Besley.
- 9.35: Instrumental trio—Christchurch Broadcasting Trio, "Micaela's Song" and "Gipsy Song" from opera "Carmen," Bizet.
- 9.39: Vocal duet—Messrs. Russell Sumner and T. D. Williams, "Love and War," Cooke.
- 9.44: Tenor solo—Mr. Russell Sumner, "When My Ships Come Sailing Home," Dorel.
- 9.48: Contralto solo—Miss Belle Renaut, "An Indian Lullaby," Morgan.
- 9.52: Vocal quartet—Christchurch Broadcasting Quartet, "I Saw Lovely Phyllis," Bevan.
- 9.56: Instrumental trios—Christchurch Broadcasting Trio, (a) "The Answer" (arr. Bellingham), Wolstenholme; (b) "Waltz" from "The Sleeping Beauty," Tchaikowsky.
- Close down.

4YA DUNEDIN (463 METRES)—FRIDAY, OCTOBER 28.

- 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.
- 4.0: Music from the Savoy.
- 4.15: His Master's Voice recital.
- 4.30: Close down.
- 7.0: Town Hall chimes.
- 7.1: Children's session—Big Brother Bill.
- 7.40: News and market session.
- 8.0: Town Hall chimes.
- 8.1: Studio concert.
- 9.0: Dance music by Ern Beecham and His Orchestra, relayed from the Savoy.
- 10.0: Close down.

Saturday October 29th

1YA AUCKLAND (333 METRES)—SATURDAY, OCTOBER 29.

- 7.15 p.m.: News and sports results.
- 7.45: Close down.
- 8.0: Chimes.
- 8.1: Relay of Municipal Band from Town Hall. Mr. Christopher Smith, conductor.
- 9.30: Relay of dance music from Click-Clack Cabaret by the Click-Clack Radio Orchestra, under Mr. Walter Smith.
- 11.0: A thought.
- 11.1: Close down.
- 2YA WELLINGTON (420 METRES)—SATURDAY, OCTOBER 29.
- 3-5 p.m.: Gramophone Nos., Adelphi Cabaret, and Sporting, at 3.30 and 4.50.
- 7 p.m.: News session and market reports.
- 7.40: Lecturette, Mr. R. Fleming, of Cooper's, Ltd., "Gardening—the oldest and most honoured of occupations."
- 8.0: Chimes of the General Post Office clock, Wellington.
- 8.1: Relay from Pageant of Industry, Town Hall, of an address given by the Hon. A. D. McLeod.
- 8.11: Instrumental Studio Orchestra, selected.
- 8.16: Tenor, Mr. E. Seon-Brown, "I Love the Moon" (Rubens), "Jennesse" (Barry).
- 8.20: Banjo, Mr. Charles Brazier, "Gold Diggers," Morley.
- 8.24: Humorous song, Mr. Jack Wilkinson, "Bachelors," Shand.

POPULAR OPERAS

"CARMEN" SELECTIONS

FEATURE FOR 3YA.

The Christchurch Broadcasting Trio proposes to include in its programmes from time to time excerpts from some of the popular operas. This should become a very attractive feature at 3YA.

The first opera from which selections will be broadcast will be "Carmen." Scarcely any opera is better stocked with good tunes than "Carmen." Although the dramatic thread of the music and of the action is continuous throughout the opera, the music is very largely broken up into separate numbers, each self-contained, with a definite beginning and ending.

The overture is based on a march of bull-fighters, and the well-known Toreador's song. For the information of our readers we will give the following brief outline of the play, which will interpret the spirit of the music, to be given from time to time.

Act I.

In a city square the guard is being relieved. Zuniga is officer of the guard. Don Jose is a sergeant. Micaela is a girl who comes with a message to Don Jose from his mother, but, finding him at first absent, retires. At noon the girls arrive from the cigarette factory, among them Carmen, a pretty and fickle gipsy. She sings the "Habanera," flinging a rose to Jose. The girls return to their work, and Micaela comes again and delivers her message. Presently there is a disturbance, and the girls rush out of the factory. Carmen has stabbed another girl in a quarrel. She is arrested by Zuniga, but so bewitches Jose that he contrives her escape.

Act 2.

When Act 2 opens, Carmen has returned to her gipsy friends and is singing and dancing with them in a tavern. Soon the arrival of a Toreador, Escamillo is acclaimed, and he sings the now famous "Toreador's Song." Carmen now turns her attention to him. However, everyone leaves the tavern except Carmen and her gipsy-smuggler friends. After a while Jose comes, and, in a long scene, Carmen tries, unsuccessfully, to persuade him to desert the army and join them. An officer, Zuniga, next enters, and when he orders Jose on swords are drawn. The gipsies escape to the mountains with Jose.

Act 3.

The scene of this Act is the haunt of the smugglers in the hills. Against the background of conventional smuggling business develops the drama of Carmen, Don Jose, and Escamillo. First Carmen, with her gipsy friends, Frasquita and Mercedes, Don Jose (who is acting with the smugglers), and El Remendado and El Dancaïro, leaders of the smugglers, sing about their life. All the smugglers join in. El Dancaïro leads his men away. Don Jose speaks pensively of his mother, whom he has left at his native village. Carmen mockingly replies that this is no place for him. Seeing danger in his eyes, she says, "Thou wilt kill me, perhaps? Ah, well, the cards have often told me that we shall end our careers together." This leads to a card-reading trio, in which Frasquita and Mercedes are lucky, but Carmen draws the fateful spade.

The smugglers and the gipsy girls now depart, leaving Jose on guard. Micaela appears (not yet seen by Jose) and sings of her fears in coming to this place.

Jose soon sees someone approaching, and fires a shot. It is Escamillo, who seeks Carmen. Jose challenges him, and they fight. Just when Jose has the advantage, Carmen and all the smugglers rush in and separate them. Escamillo leaves, telling Jose they may meet again, and exchanging significant glances with Carmen.

Micaela is discovered hiding; she is brought forward, and begs Jose to return with her to his mother. Carmen, softly, tauntingly, bids him do so. At first he madly refuses to leave Carmen, but when he hears that his mother is dying he goes with Micaela, saying to Carmen, "Be content, I go—but I'll meet thee one day!" Escamillo is heard gaily singing in the distance.

Act 4.

The curtain rises on scenes of great festivity. All Seville is crowding to the bull-ring to see their champion, Escamillo, fight. Among them is Don Jose. At last the Toreador appears, accompanied by Carmen. Carmen's friends warn her that Jose is here, but she refuses to heed them. Everyone goes into the bull-ring except Carmen and Jose.

Jose then entreats Carmen to flee from the place with him; but she answers only that their love is past. Jose becomes more and more frantic as Carmen remains unmoved.

Shouts of victory come from the bull-ring.

Carmen tries to run thither, but Jose prevents her, and at last stabs her. The crowd comes out of the bull-ring, acclaiming Escamillo. Jose surrenders himself to them, and throws himself on Carmen's body.

- 8.28: Piano duet, Mrs. Flora Peyton and Miss Dorothy Tighe, "March Héroïque," Kowalaki.
- 8.32: Baritone, Mr. Will J. Mason, "Young Tom O'Devon," Kennedy Russell.
- 8.38: Banjo, Mr. Chas. Brazier, "Listen to This," Grimshaw.
- 8.42: Instrumental Studio Orchestra, selected.
- 8.47: Tenor, Mr. E. Seon-Brown, "That's How the World Was Made," Nicholls.
- 8.51: Piano duet, Mrs. Flora Peyton and Miss Dorothy Tighe, "Zaragonza March," Ortega, "L'Irrisistible," (Polka Francaise), Kremser.
- 8.56: Humorous song, Mr. Jack Wilkinson, "The Underworld of London After Dark," Weston and Lee.
- 9.0: Lecturette, Miss Phyllis Bates, "The Modern Dances and Tempos."
- 9.10: Instrumental Studio Orchestra, selected.
- 9.15: Relay of Charles Dalton's Columbian Solo Six Dance Orchestra, from the Columbian Cabaret, Kilbirnie.

3YA CHRISTCHURCH (306 METRES)—SATURDAY, OCTOBER 29.

- 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 Crystal Palace Picture Theatre Orchestra, under conductorship of Mr. A. J. Bunz.
- 8.15: Piano solo—Mrs. Tainui, selected.
- 8.19: Hymn—Company, "Waipounamu."
- 8.23: Girl's Vocal solo—Miss Manihera, "Somewhere a Voice is Calling."
- 8.27: Chorus—Maori Company, Maori medley.
- 8.31: Instrumental trio—Christchurch Broadcasting Trio, "Valse of the Flowers," Tchaikowsky.
- 8.35: Boy's vocal solo—Master Williams Tainui, "Marguerite," White.
- 8.39: Vocal solo—Mr. Cuch, "Kamate, Kamate," Te Rangi Hikiroa.
- 8.43: Chorus—Maori Company, Hawaiian medley.
- 8.47: Instrumental trio—Christchurch Broadcasting Trio, "Toreador's Song" from opera "Carmen," Bizet.
- 8.51: Vocal solo and chorus—Mrs. Tainui and family, "Josephine."
- 8.55: Vocal solo and chorus—Miss Manihera and Maori Company, "Waiaata Maori."
- 8.59: Final chorus, Maori Company, "Arohanui."
- 9.3: Instrumental trios—Christchurch Broadcasting Trio, (a) "Intermezzo," Mascagni; (b) "Spanish Dance," Moskowski.
- Relay from Crystal Palace Theatre.
- Rebroadcast 2YA, Wellington.
- 10.30: Close down.

4YA DUNEDIN (463 METRES)—SATURDAY, OCTOBER 29.

- 7.15 p.m.: News session.
- 8.0: Town Hall chimes.
- 8.1: Band—Fox trots, (a) "Dancing Fool," Snyder; (b) "Eliza," Floritis.
- 8.6: Xylophone duet—Messrs. Coxon and Woods, selected.
- 8.10: Vocal solos—Mrs. D. Carty, (a) "Ye Banks and Braes"; (b) "Danny Boy," Weatherley.
- 8.17: Cornet solos—Mr. C. Morgan, selected.
- 8.21: Piano solo—Mr. A. Golding, "Jazz Medley," arr. Golding.
- 8.26: Band—Waltzes, (a) "Silver Sands of Waikiki"; (b) "The Midnight Waltz."
- 8.32: Saxophone solo—Mr. M. Fagan, selected.
- 8.36: Vocal solos—Mr. J. Alexander, selected.
- 8.43: Address—Mr. A. E. Wilson, of the Tourist Department, "Tourist Travels in Otago."
- 8.58: Trombone solo—Mr. R. Couglan, "On With the Motley," Pagliacci.
- 9.4: Piano duet—Messrs. Forwell and Golding, "Hello, Swanee, Hello," Coslon.
- 8.8: Band—Selection, "Doge's March" from "Merchant of Venice," Rosse.
- 9.13: Piano solo—Mr. A. Golding, "Kitten on the Keys," Confrey.
- 9.18: Vocal solos—Mrs. D. Carty, (a) "We'd Better Bide a Wee"; (b) "Vale," Russell.
- 9.24: Cornet solo—Mr. C. Morgan, selected.
- 9.28: Saxophone—Mr. M. Fagan, selected.
- 9.33: Band—Fox trots, (a) "Drifting and Dreaming," Van Alstan; (b) "My Cutey's Due," Robin.
- 9.39: Piano solo—Messrs. Forwell and Golding, "Mamma's Gone Young, Papa's Gone Old," Newton.
- 9.42: Vocal—Mr. J. Alexander, selected.
- 9.48: Band—Fox trots, (a) "So Blue," De Sylva; (b) "I Never See Maggie Alone."
- 9.58: God Save the King.
- 10.0: Close down.

Sunday, October 30th

1YA AUCKLAND (333 METRES)—SUNDAY, OCTOBER 30.

- 6.55 p.m.: Relay of church service from St. Mary's Cathedral. Preacher, Canon P. James. Organist, Mr. E. Randall.
- 8.30: Relay of municipal organ recital from Town Hall. Mr. Maughan Barnett, organist.
- 9.30: Close down.

2YA WELLINGTON (420 METRES)—SUNDAY, OCTOBER 30.

- 6 p.m.: Children's session, Rev. E. R. Weeks, in the studio.
- 6.55: Relay of evening service of The Terrace Congregational Church; preacher, Rev. Ernest R. Weeks; musical director, Mr. Len. Barnes; organist, Mr. H. Brusey.
- 8.15: Relay of Port Nicholson Silver Band Concert from the Grand Opera House; conductor, Mr. J. J. Drew.

3YA CHRISTCHURCH (306 METRES)—SUNDAY, OCTOBER 30.

- 5.45 p.m.: Children's song session, by Uncle Sam.
- 6.30: Relay of special Sunday school anniversary service from East Belt Wesley Church.
- 8.30: Rebroadcast of 2YA, Wellington.
- 9.0: Close down.

4YA DUNEDIN (463 METRES)—SUNDAY, OCTOBER 30.

- 6.30 p.m.: Relay of service from First Church of Otago. Preacher, Dr. E. N. Merrington. Organist, Dr. V. E. Galway.
- 8.0: Studio concert.
- 9.0: Close down.

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A Further Analysis of Fading Reports

This week, in connection with the fading test, we publish four graphs from different parts of the Dominion—Port Waikato, Te Aroha, an island in the Hauraki Gulf, and Invercargill. These graphs were prepared by the set owners with a view to being of assistance in the test, and they prove to be of great interest. The first graph is given just as originally set out on squared paper, but the next two, not being to the same scale, have been carefully redrawn in order to make comparison easier. The last one, from Invercargill, is given as originally set out, the length being correct, though the amplitude, or movement up and down, is on a smaller scale. The main point to notice is the position of groups of irregularity of reception in each one, also making a slight time allowance of up to a minute either way, owing to quite possible discrepancies in timing. It should be noted that at present only the first day of test, September 26, is being dealt with.

THE GRAPHS COMPARED.

It was unfortunate for the station that during the first few minutes transmission "went to the pack," and fading was evident here in Wellington just prior to the second break. Many listeners making records had not tuned in at this time, and so did not record the breaks, whilst others have only regarded them as fades. In three of the graphs printed herewith the breaks are clearly shown. It will be noticed that the graphs are fairly unanimous in noting excessive volume, which seems to have occurred in bursts during the evening, and if controls could have been used this could have been made normal, although in excess of that at the commencement of the session. Volume was greater, and fading less, during the second half of the programme, generally speaking, as is shown by a great many reports. Whilst graphs 3 and 4 show a fade at 8.8, this is unnoted in 1 and 2. Reception appears to have been generally bad or indifferent until after 8.11, when matters improved. Around 8.25 was a bad period, and appears as such in a large number of reports. There is a deep sag here on all four graphs, but Invercargill, being further away by nearly two hundred miles, felt it sooner than the others, apparently feeling the first sign of weakening. The curves are, with the exception of No. 3, unanimous in a general steady-going just before 8.50, and with a great many distant listeners this steadier and stronger reception continued until 10 o'clock. From the general survey of reports already made it is probable that graph No. 1 represents a fairly average curve for distant reception of 2YA on this particular night. Graphs 3 and 4 show considerable fluctuation from 9.0 to 10.0, but they are probably quite correct chartings of reception at the position they represent. It is quite possible that these two receivers are rather more selective than Nos. 1 and 2, and would, therefore, be more susceptible to any interference with the transmitted wave that had any tendency to cause alteration in frequency.

A good graph was sent in from Napier, but as it only gives the first half of session on the 26th, it was not included with those illustrated, but will, no doubt prove useful for comparison. The first half, as recorded, shows the first break to inaudibility at 8.6½, 8.15½, bad modulation, at 8.22 a drop in volume, as shown in No. 1, at 8.28 shown on Nos. 1 and 2. At 8.35 there is a drop to about half volume, as on No. 1, and a similar drop at 8.39½, as on No. 4; then at 8.47½ a sudden drop, as in

In a further review of the valuable data secured from listeners in connection with the fading investigation, "Megohm" discusses some of the features noticed, and presents an interesting set of graphs from four different points.

No. 1, returning to normal one minute before 9 o'clock.

HOW RECEPTION VARIES.

A survey of the charts received certainly gives an impression that distant reception in the same locality may be either good or bad. A settler, say, 350 miles from 2YA, may be getting enjoyable concert married by very little fading, while his neighbour, only a few miles away, gets results that are at best nothing more than indifferent. In such cases distance gives no advantage to the one over the other. Then one begins to seek for possible other differences, height and direction of aerial, its insulation, the efficiency of the receiver itself, and possible difference in operating. Then local geography, the position of hills, their composition, areas of bush, may all be potential contributors to the general disturbance of uninterrupted reception. In connection with the foregoing remarks, the following sentence contained in a report from the Far North shows a typical example. Enclosing a chart showing only a few fades, all slight, the report states: "I do not attribute fading to the stations, as a listener friend of mine a couple of miles away rarely suffers fading." This is

from a place 160 miles north of Auckland, where the person reporting is troubled with fading to a certain extent from all stations, 1YA in particular.

Reception of 2YA in the Far North is on the whole good, and fading comparatively slight, and on looking at the map we see an apparent reason for this. Taking an air-line from 2YA to Dargaville, the wireless waves travel the whole of the distance, 360 miles, over water, with the exception of about 60 miles across Taranaki. Going southward, the position is very much the same, so far as southern coast towns are concerned, for waves from 2YA to Dunedin have only to cross a few miles of land on the Banks Peninsula, the remainder of the route being all over water. There are set owners in Nelson district troubled with more fading than are others two or three hundred miles further away in either island. One of the objects of this test is to endeavour to find out whether or not there are certain zones where fading is more prevalent than in others, but it will take some little time to arrive at a conclusion of this kind. The whole matter is one for calm thinking and continual comparison of reports.

Further diagrams will be published next week, showing other aspects of the question.

LOCAL INTERFERENCE.

Some of the reports from populated districts contain a great number of slight fades indicated, much more than the average for that place. In such a case one of two causes will probably be responsible. The receiver is either ultra-selective, but possibly not very sensitive, and so responds to slight differences of frequency that would be unnoticed in a broadly-tuning set, or else reception is being marred by a nearby radiating set.

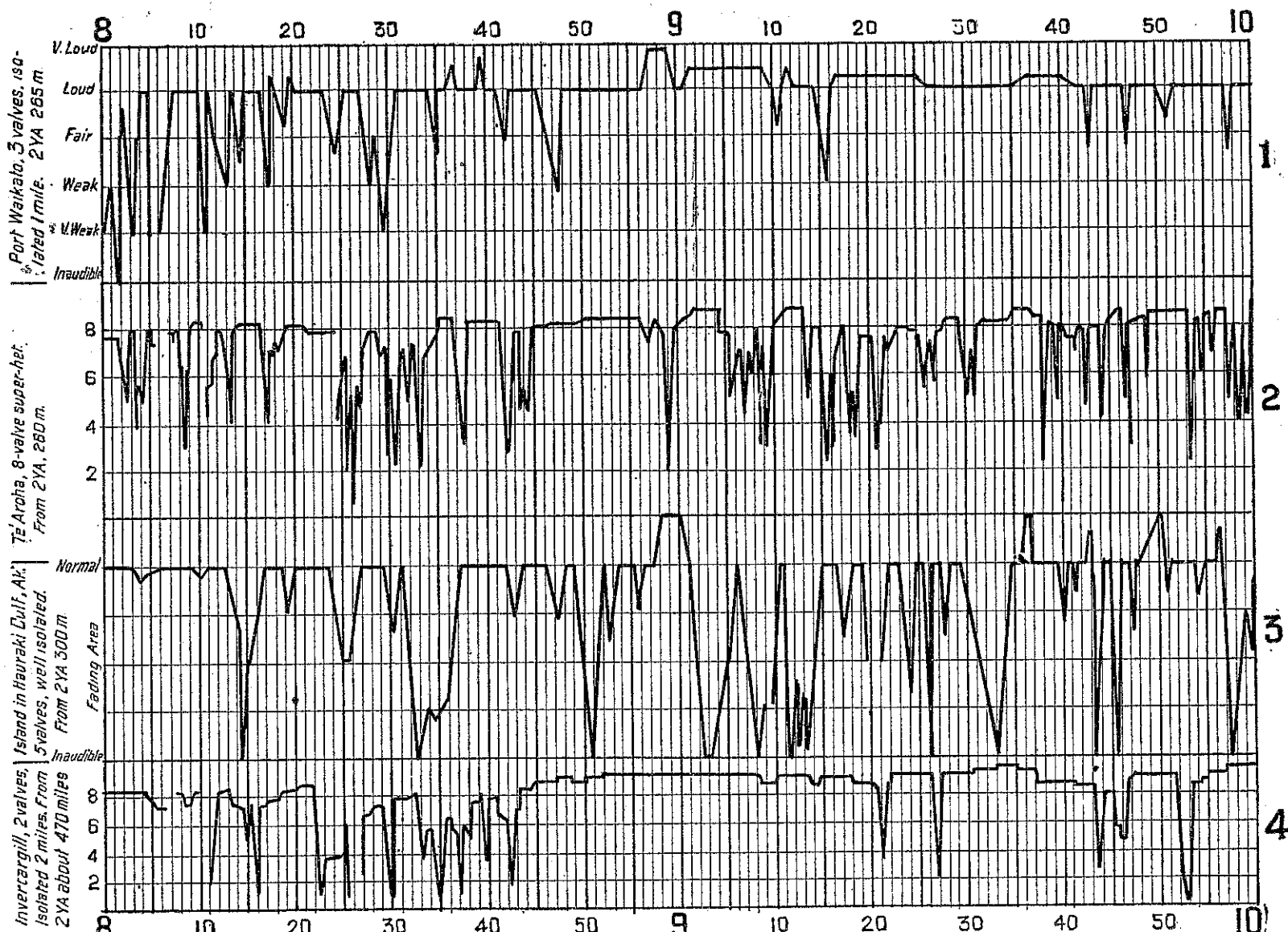
There are many contributory causes of radiation from receivers which, however, it is not necessary to more than mention here. Reports show that the five-valve neodyne is an extremely popular circuit, and if such a set is properly neutralised, reasonable handling will cause no trouble or interference. Some types of neutralised circuit require reneutralisation when a new radio-frequency valve is put in, and unless this is attended to, radiation will occur. Owners of small sets without a proper knowledge of tuning-in may cause much trouble if they persist in attempting to bring in a station that is beyond the capabilities of the set. Such attempts are generally accompanied by violent oscillation, which has a varying effect upon the reception by other sets

on the same wave-length. Howling and distortion of signals is the usual result, but it is often accompanied by a "blanketing" effect upon neighbouring sets which is equivalent to fading, and may reduce the volume in other receivers to half, or cut out strong signals altogether. Experienced listeners can usually tell when fading is caused by local interference, but not so the novice. Quite likely steps will have to be taken to suppress undue or continued radiation, which at times is apt to be an intolerable nuisance.

DAYLIGHT RECEPTION.

There is not very much mention of daylight reception in the reports, but where reference is made, it is stated to be better than evening reception, and usually free from fading. The reason for this is that the wireless waves can only travel effectively near the earth in the day-time, so that they are not distorted by meeting waves reflected from the heavy layer, such reflected waves frequently not synchronising with the ground waves on rejoining them, and thus complicated blurring and distortion is caused. A report from Helensville states that good speaker reception is obtained in the afternoons with a three-valve set. This appears to be good reception for a distance of 320 miles in daylight, and speaks well for the carrying power of 2YA apart from the fading trouble.

At this stage any ideas expressed must not be taken as final conclusions, as they may have to be modified as the investigation continues.



SHORT-WAVE HINTS

TO SECURE OSCILLATION.

It is often the case with a short wave receiver that when the grid circuit is tuned to some particular wave-length the set refuses to oscillate. Such an effect is produced when the aerial and the grid coils are tuned to the same frequency. To get over this, use a small two-point switch. Connect the aerial to the movable arm of the switch, and from the contact point to the aerial of the receiver. Then connect a fixed condenser with a capacity of 0.0002 mfd. across the points of the switch.

When the point where the set refuses to oscillate is reached, open the switch, and the fixed condenser will be placed in series with the aerial, thus shifting the "dead spot" to some other frequency where it will not be troublesome.

It is a common idea amongst many persons that on the short wave-lengths a correspondingly short aerial should be used. This is not so, as experiments have proved. It was found that for five metre reception the longest aerial possible, but no earth connection, proved to be the best possible method of pick-up. For reception on wave-lengths from 15 metres up to 100 metres an aerial with an overall length of 250 feet is advisable. This will give a greater pickup of R.F. currents.

REACHING OUT FOR DX

AN AMERICAN'S CLAIMS.

"An American contemporary in its correspondence columns gives the following DX claim which was sent in by a reader. After stating that since reading a report of Australia being received on a crystal set, he feels impelled to give a brief account of his own DX successes, and goes on to say:—

"My set was built from a hook-up furnished by one of your competitors and the parts were obtained from a local dime store. The initial cost was but four and a half dollars, but I must admit that the upkeep was something terrible.

"Simplicity and efficiency plus were obtained by using the local telegraph line as an aerial and the Delaware River as a ground. San Francisco, Shanghai and Ilasa came in easily; although I must admit that the broadcasting of Babylon and Damascus could be improved upon immensely.

"Not content with these notable contributions to DX literature, I added several more tubes and condensers and with some suspense twirled a few of the dials.

"After an agonising pause the most unearthly howlings that I ever heard proceeded from the loudspeaker, followed by the distinct sentence: 'A little more coal boys!' An eminent English clergyman who was standing nearby (the very soul of truth, by the way) immediately recognised this broadcasting as proceeding from Station L, Gehenna. 'Those howls,' he remarked simply, 'are undoubtedly the anguished cries of deceased DX hounds who are paying the penalty of their misdeeds and misrepresentations on earth.'

"It would appear boastful were I to tell of receiving certain celestial

harmonies that were never produced on earth and the daily weather reports from Mars. However, I believe that I have said enough to convince the wildest DX enthusiast that he has a formidable rival."

FAST WORK

THE RAPIDITY OF RADIO.

Radio communication, says "Nature," is proving of great value to isolated communities on various parts of the earth's surface. For example, the lonely Parsan Islands in the Red Sea, which are about 400 miles north of Aden and the same distance south-east of Port Sudan, are being examined for oil by the Red Sea Petroleum Company. The prospectors are equipped with an ordinary Marconi ship's transmitter. Through the neighbouring ports, or through any of the large number of ships within radio range passing up and down the Red Sea, they can easily link up with main telegraph circuits, and also secure, if necessary, medical advice and other assistance.

The new short-wave beam stations enable news to be transmitted to the Dominions much more rapidly than by ordinary radio services. Last year it took sixty seconds to transmit the name of the winner of the Derby to the Melbourne central telegraph office. This year the name of the winner was transmitted in three seconds, and in fourteen seconds after the finish of the race the full result was known in all the principal newspaper offices in Australia. This result was equalled on Budget day this year, only a few days after the beam stations had been handed over to the General Post Office. A thirteen-word "empiradio" message, giving the first news of the Budget, was transmitted to Australia in thirty seconds.

A BEAM BROADCAST

3LO, MELBOURNE, TO ENTERTAIN ENGLAND.

The management of broadcast station 3LO, Melbourne, has made an application to the Amalgamated Wireless (A'sia) Ltd. for the use of the Beam station for broadcasting to England from 7 a.m. to 8 a.m. one morning, so that the programme will be received in England at night, when it will be generally heard. Small additional equipment is necessary, and when this is carried out the station will be equivalent to a broadcasting station of a million watts owing to the concentrated energy of the beam, and this should ensure more satisfactory transmission than anything previously attempted in any part of the world. This will be the first time that the Beam has ever been used for broadcasting purposes.

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A bit cheaper;
In short "a job"!

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HARTLE & GRAY

Customs Street, Auckland.

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AIRZONE COIL KITS
SHORT WAVE KITS

CRYSTAL SLIDERS
TALKING TAPE
MURDOCK HEADPHONES

Sole Distributors for "PILOT" and "MUTER" Radio Parts, "RAY-O-VAC" Batteries, etc., etc.

UNITED DISTRIBUTORS, LIMITED,
CR. JERVOIS QUAY AND HARRIS STREET, WELLINGTON.

Our Mail Bag Christchurch Carnival Week to be Specially Featured

Special Preparations made by 3YA

Sunday Afternoon Appreciated.

G.C.H. (Masterton): As one who has "agitated" for a Sunday afternoon session, I would like to express my appreciation of the church service relayed by 3YA yesterday afternoon. Reception was perfect, and the session was much enjoyed. There has been a noticeable increase in the volume of 4YA lately, and continuing at this rate this station should soon reach the standard of the other New Zealand stations. Just a word of congratulation to the announcer of 3YA on his having broken away from the rigid "sameness" of New Zealand broadcasting by introducing a musical prologue to the evening session. This innovation is to be warmly commended, as it is refreshing to hear something original from a New Zealand station. The writer makes a practice of tuning in 2BL at 9.30 p.m. to hear their "Topical Chorus," and will now make a point also of tuning in 3YA at 8 p.m.

Church Services.

Radio Fan: You have asked for our opinion re broadcasting church services, and I can only say before I came to the country to live I did not belong to any of the denominations that are broadcasting, yet we always find something good on Sunday evenings. If one service is not quite clear, or just what we prefer we can always switch on somewhere else. Though we have only had the set some months, we have quite a lot listening-in, and often making a big effort to come, and almost all people who never attend the church in the district. It is seldom anyone speaks during the service, and it is never encouraged. The time of the service suits us splendidly. We always enjoy "Uncle Sam." Our only trouble is the hymns. Might I suggest we have a special book or hymn sheet; many do not know the hymns, and it is so much nicer if we can all join in the singing. I do not think anyone living in town can realise at all what it means to some of us who have hardly heard anything helpful for years to have the Sunday services, and I do pray they may be continued.

A Box for the Collection.

Mrs. R. T. Waters (Johnsonville): I have been reading the letter written by Mr. Watkinson in this week's "Radio Record" in the "Church and Broadcasting." I think if we are true Christians we might ask, "What would Jesus have said if He were on earth?" The answer would be, "Go preach the Gospel." Now comes the all-important side—the financial side. May I suggest that as each license is issued a box be given suitable for the church, sealed with either a number or his or her name and address of the licensee written on, to be given up when the license is renewed, stating the amount that was in the last year's box on the renewed box so many people would give a gift after listening to a service which they have enjoyed, and it would then make it a "free-will offering," which is what gifts to the church should be. Let us as Christians pray for the continuing of the services being broadcast—ask the clergy to think of the invalids and those on the farms and away in the back-blocks.

Sunday Afternoon Session Wanted.

G. C. Coleman (Nelson): Now that 2YA and the "Radio Record" are well established, and various listeners-in and subscribers have said their little piece, I would like to add my little bit. Both the Broadcast Company and the "Record" deserve heartfelt congratulations for their efforts at keeping listeners entertained. In my opinion the programmes put over by the company are first-class. 1YA and 3YA are inclined to fade somewhat, but 2YA on my set (five-valve) comes in perfectly. There is only one thing I would like to see altered, and that is a gramophone concert from 2YA on Sunday afternoon.

Taranaki and 2YA.

H.D. (Awatuna): I see a good deal in your paper as regards 2YA fading in different parts of New Zealand. I would like to say that 2YA is easily our strongest station, although by reports it fades around New Plymouth. I live only a few miles away and only 4 miles from the foot of Mt. Egmont, and I have never noticed any trace of fading. I think some of the folks that complain about your programmes should put a station of their own up and then they would see what a hard job it is to please everybody. Could you say which broadcasting station in Australia broadcasts the boxing tournaments on Saturday night?

[We know of no Australian station that regularly broadcasts the boxing on Saturday nights. 2LO, Melbourne, broadcasts wrestling on Saturday nights.]

Congratulations on Island Match.

W. Lawson (Tautuku): I would like to congratulate your announcer on the splendid description he gave of the inter-island football match last Saturday. There was not a dull moment from the start to the finish of the game. One could practically see the match going on, as he knew the players so well. His side talk was also very good, especially the quiet way he congratulated his Canterbury friends when South Island was in the lead and at the same time giving his Auckland friend a rub. Am pleased to know that he was able to carry on after smoking that cigar that a friend or an enemy gave him. The reception was also very good from 2YA.

Reaction to Church Service.

H.O. (Waiata), dealing with humorous items, says: Could not some of Harry Lauder's songs be put on? I don't think the public would object to hearing gramophone records at night, too. The "Casey" and "Uncle Josh" records, perhaps would provide the desired humour—something with a laugh in it. I am not in favour of humorous items after church service on Sunday, although there are some who like it. On Sunday, 9th, we heard a splendid

Carnival Week in Christchurch—November 5 to November 12—will be noteworthy in more ways than one. This is usually a great time in Christchurch, but this year it will be made still more memorable. The enjoyments and attractions will be spread further afield than Christchurch. In plain language, they will be broadcast. If people cannot come to Christchurch, Christchurch will be brought to them, for the Broadcasting Company intends to relay, broadcast, and rebroadcast all that it is possible to do.

There will be no less than seven days of racing (trots and gallops) described and broadcast by the Company's official sports announcer, Mr. A. R. Allardyce.

From the studio itself will radiate brightness and gaiety, for special programmes will be broadcast. The programmes will be very suitable to the spirit of a carnival week, and will conclude on the Saturday evening with a dance programme, which will last from 8 to 11 p.m.



—Webb, photo.

MR. DONALD GRANT, M.A.

A very popular lecturer at 3YA on conditions of post-war Europe, golf (he was a plus one man at Edinburgh), and other subjects.

Donald Grant, M.A., who has been broadcasting a series of talks about post-war Europe, has had unique opportunities for becoming acquainted with conditions, social and political, national and international, in Europe. Mr. Grant served from the beginning of 1920 until close to the end of 1925 as organiser of the European student relief work of the World's Student Christian Federation. This work made it necessary for him to travel extensively in Europe, and brought him directly into co-operation with governments, universities, League of Nations, the Nansen Mission to Russia, and other organisations. For four and a half years Mr. Grant made Vienna his centre, and from there visited and worked in Hungary, Poland, Jugo-Slavia, Rumania, Czechoslovakia, Germany, Russia, and some other countries; he thereafter spent over a year in Geneva at the headquarters of the student relief work, where he came a good deal into touch with the League of Nations and the International Labour Organisation as well as other international movements. At the end of 1925 Mr. Grant came to New Zealand to be general secretary of the N.Z. Students Christian movement, which is a movement affiliated with the World's Student Christian Federation. Mr. Grant is a graduate of Edinburgh University, where economics, history and modern languages were his chief subjects, and he found these extremely useful during his work in Europe.

service from the Town Hall, Auckland. The Rev. L. Fletcher hit straight from the shoulder and the singing was splendid too. Hitherto I have not objected to concerts after service; but after that one I felt that it would be sacrilege to listen to a band concert or humorous items; but happening to stay connected with 1YA, I heard the announcer put on a tenor song from the Messiah, and the Hallelujah Chorus. Did they feel it too? I may say I have not heard a sermon for 35 years, being, as several of your correspondents are, deaf; but with the 'phones I can hear every word, except, of course, when it fades.

Reception Better.

W. J. Ormandy (Fairlie): Just a line to congratulate you on your weekly paper. Wireless without your weekly would not be complete. I also wish to express my thanks for the variety of items put on the air by 2YA. There is just one thing, to my mind, that spoils your own orchestra's reception, and that is, that the 'cello or bass violin are too close to the microphone, at least that is what it appears to me as the music is flattened, especially in the forte passages. Reception from 2YA has improved lately, fading not being nearly so noticeable. I have a five tube neodyne set and I only use 4 tubes and 2YA can be heard clearly one hundred yards away.

Reception Experiences.

P. Williamson (Whangamata): In your issue of September 30, I was interested to read a letter from Mr. Robt. Davidson, of Tauranga, regarding reception from 1YA. I am situated about the same distance from Auckland as your correspondent, being 62 miles in a straight line, but am on the East Coast. I work with a Polar Twin 3 valve receiver and find that, as a rule, reception at night time from 1YA is most unsatisfactory, and as a consequence seldom work with that station. 3YA, on the contrary, gives splendid reception as a rule, and so would 2YA were it not for fading. I may mention that in daylight, however, 1YA gives me much better reception than any other station, and it would be interesting to know if this is the case with others similarly situated.

ated. My experience seems to bear out very forcibly what was mentioned in the article on fading on the front page of the "Radio Record" of September 30.

Good Crystal Work.

W. Allen (Helensville South): I picked up a home-made crystal set (coil only) from an old gumdigger who died up here, and on trying it out on October 16 was surprised to receive Auckland 1YA, Wellington 2YA, and 2FC, Sydney, quite distinctly with two pairs 'phones attached. Next evening, October 7, we tuned in also and got Auckland, who closed down, and Wellington; then ran on a bit later, and heard them close down, and I then picked up 2FC, Sydney, with two pairs 'phones, and we also put on a large

AMERICANISED.

A Californian writes to 3YA as follows:—

"I would be tickled pink if I could have a studio picture of 3YA. It helps to get other DX fans all worked up.

"The man who plays the big pipe organ for 3YA is the one that puts your station up here with a mean wallop!"

Clarion loudspeaker, on which we had 30ft. flex attached, which also came out at about ear-phone strength, and listened in to "The Chocolate Soldier," which was being broadcast by that station. I may say I have a good earth and a good aerial 65ft. high, and for earth I have a solid copper plate 30lb. and 100ft. aerial. I may say it was ideal receiving weather, but it was not a case of picking it up from other sets, as I could tune out Auckland and Wellington and get Sydney, or vice versa, from half-past nine on. I think this might be interesting regarding crystal set reception for distance.

Australia on Crystal.

Mrs. P. B. (Otahuhu): My son, age 12 years, has just made a new crystal set at the cost of 3s. 6d. The coil is wound on a phonograph record and continued on the box. Last Sunday evening we heard 1YA close down, then 2YA. At 10.30 and up to 11 we got very clear church music, especially the Psalms. Do you think it could possibly be an Australian station? We used the tapping just a few rings further on than 2YA.

[Yes; no other New Zealand station would be operating then. See crystal article for similar reception of Australia.—Ed.]

Some Praise for Performers.

B.T.W. (Christchurch): Friday night was the most wonderful night ever I heard. I got Sydney at 9.30, New Zealand time, without aerial, very loud and clear—never got it before at that time. I heard the clock strike eight and a mouthorgan band very clear. Wellington and Christchurch were on the air, and all the Australian stations followed later, extraordinarily loud and clear. 3YA programmes were good all three nights. Sunday, too much static, but still good. 2YA is always good, but it was extraordinarily good all three nights. The studio orchestra excelled themselves on Friday night. Allan's Orchestra on Saturday was grand. Mr. Jack Roworth in "The Blacksmith's Good-bye" was a song of songs—not only a catchy, taking song, but clearly and evenly sung. "Songs at the Piano," by Mr. Billy Hart, were beautifully rendered—evenly sung, words clearly spoken and accompaniment to the tick. Too much cannot be said about these two singers; they are born radio singers and have got the secret of singing to the microphone. As usual, there is always a fly in the ointment. 3YA on Sunday was not over-good—too much bubbling and interferences. I had to go to 2YA direct. The Wellington Municipal Tramway Band was simply a treat, or rather a musical banquet: the items were well chosen and splendidly rendered. I am living over again the old days amongst the Yorkshire and Lancashire bands. It was 50 per cent. better than relay through 3YA, and I want 3YA to be the best in New Zealand for the sake of my crystal pals.

"Weather Forecast."

C. B. Conn (Wairoa): As you are aware, we farmers rise very early in the morning, and naturally like to get to bed early, and 9 p.m. is rather late for us to wait for the forecast sometimes. We attach great importance to the forecast, which will be invaluable at shearing time, and I would suggest that you issue it earlier, if possible, say when the children's sessions open, and at alternate times on the different stations, for instance, say, 6 p.m. from 1YA, 6.30 p.m. from 2YA, 7 p.m. from 3YA, or at times convenient to fit in. It is important that the forecast should be broadcast at the times allocated so that we would not



—Webb, photo.

MR. G. H. HOLFORD, B.Sc. (Agric.)

It is the privilege of farmers of the country to be able to listen to many addresses on matters pertaining to the land, and in no small degree 3YA has helped to maintain the rural population's acknowledged record for efficiency. One of the best known authorities whose advice they listen to is Mr. G. H. Holford, who, apart from being the South Island editor of the "N.Z. Farmer," frequently speaks direct to the farmer in his home—a heart to heart talk, as it were. A graduate of Lincoln and Canterbury Colleges, Mr. Holford has been chairman of the Canterbury Progress League since the formation of that organisation some eight years ago. Essentially interested in all matters affecting the land, he has been connected with a number of schemes dealing with agricultural education and rural development in Canterbury. He has also edited a number of publications dealing with farming. Mr. Holford has occupied positions on the Council of the Canterbury Philosophical Institute, Board of Governors of the Christchurch Technical College, and several other local bodies.

miss it. This suggestion may mean the saving of the lives of thousands of shorn sheep at shearing time. Hoping you can see your way to arrange this.

[It necessarily takes some time for the meteorological office to prepare its forecasts, and these reach the station on the average about 8.45 (sometimes a little earlier), so that there is not much margin before 9 o'clock. Dr. Kidson, the officer in charge, is desirous of giving

ing the fullest possible service, and has consented to make forecasts available on Saturdays and Sundays. The possibility of an earlier announcement will be gone into.—Ed.]

The Dunedin Station.

S. T. (Dunedin) writes in connection with Mr. A. R. Harris's statement regarding radio matters in Dunedin and Otago, and denies that good broadcasting has been given from Dunedin. Although situated only 50 miles away and not troubled by fading, reception here is so poor that we practically never listen to Dunedin, which should be our best station. This is not because of the lack of volume so much as poor quality, musical items having no musical value at all. It is most disappointing to learn that that plant is not to be renewed, but simply the power raised to 500 watts. I think that Dunedin and Otago are entitled to a modern broadcasting station, similar to 3YA and 1YA, especially after having waited so long. Mr. Harris's reference to the excellent service here at the time of the Exhibition is absurd. It may not have been the fault of the company, but everyone knows that the Exhibition broadcasting was very poor and did more harm to radio than good. The broadcasting company will spoil its excellent record of service in the other three stations if it does not install a modern plant at Dunedin now.

[An excellent service was given during the Exhibition, but only a few hundred people in Otago availed themselves of it. It was not the service, but the response of the public that was disappointing, and fully justified the company in directing its attention to Auckland, Christchurch, and Wellington. Some new plant is being obtained for the Dunedin station, and the power will be brought up to that of 1YA and 3YA, so that Otago will be as well served as are the other provinces. Already the time-table has been extended to include Saturday evenings, and concerts supplied by some of the best talent in Dunedin are broadcast.—Ed.]

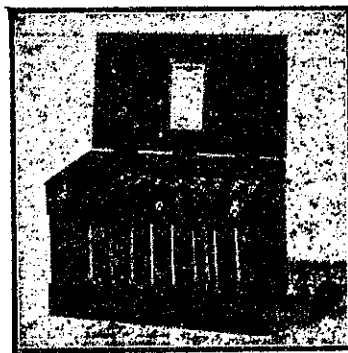
Two-Valve in Defence.

C. T. (Dunedin): I have been reading the comments on "Howlers" for some time now, and I feel like saying aloud to the "growlers" that they don't know all a 2-valve set can do. I read lately, in a good radio journal, that "all receiving sets are low power transmitters," and, if not properly equipped and manipulated, they are quite capable of causing interference to neighbours. A test from Station 4YA to 2-valve set owners was as follows, if you want to know whether your set is "howling" or not, touch the aerial terminal with the finger, and if it pops, the set is howling and causing annoyance. What test do the larger sets require, seeing all are low power transmitters? M. I. R. H. does well to qualify his statements re 3-valve sets and under. I wonder how many of the "growlers" have possessed a 2-valve set. I've had 4QG, 2BL, 3LO, and 5CL all on a 2-valve 3-coil regenerative set. No straining after these stations, and some evenings they were very brisk indeed, a pleasure to listen to on the phones. Occasionally 4QG and 3LO were good loudspeaker strength, clear and distinct. I don't say we never had distortion, but whisper, some large sets can have that, too. They can also squeal and howl on a "grand scale," too, sometimes. The Government advises a neutralised stage of radio frequency added to the 2-valve regenerative sets. It is worth while, if an extra audio stage is added at the same time to give volume.

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BY "MEGOHM"

A FULL-WAVE B BATTERY ELIMINATOR FOR HOME CONSTRUCTION

A CONSTANT AND PLENTIFUL SUPPLY OF HIGH TENSION AT LOW RUNNING COST

(Second Instalment.)

The description of this full-wave B eliminator commenced last week with a description of making the bobbin of transformer and winding the same with the three necessary different windings. Illustrations of the former on which the bobbin is formed are given below, and also a sketch of a rough stand about seven inches long with two sides in which are slots to take spindle of spool when winding.

Before going further it is necessary to call attention to the circuit diagram published last week. Through the wrong continuation of a line, the detector and L.F. outputs appeared to be connected together. There is a 2 mfd condenser joined to the detector output, and the line continuing up above the right-angle turn to the detector terminal is to be marked out. Look up the diagram and mark this.

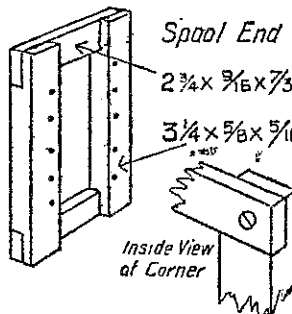
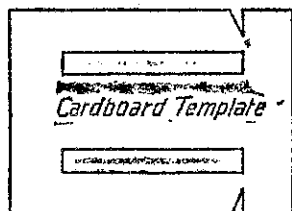
THE LAMINATED CORE.

The cutting of the laminations can now be proceeded with, and for their construction six sheets of ordinary tinplate 20 by 28 inches are required. Give each side of the sheets a good coat of shellac before cutting up. When this is dry, mark out as shown, which plan gets fourteen pieces out of one sheet without waste. These could be cut up by the tinsmith on his guillotine and all would then be even in size. The laminations consist of T's and U's, one of each being made from each 7 by 5 1/2 in. piece as shown in the diagram, the two strips which come out of the "windows" being waste. The cutting of the laminations should not be done until the transformer winding has been completed and finished off. The exact size of the lamina-

is ample to fill the 1 1/2 in. thickness, and probably there will be a few over. The ordinary tin runs about 80 sheets to the inch, and the shellac coating will make up the difference. All laminations have to be electrically insulated from each other, and shellac forms the handiest method.

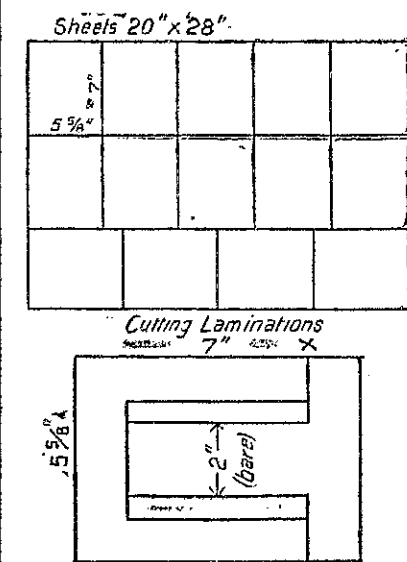
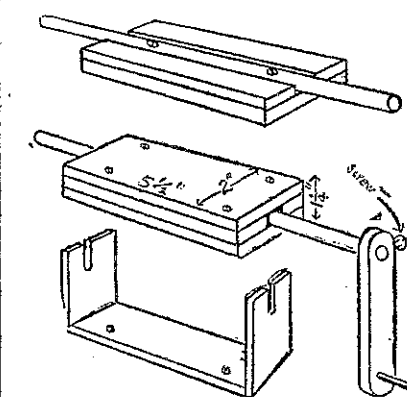
ASSEMBLING LAMINATIONS AND TESTING WINDINGS.

The laminations are now ready for assembling. Each layer consists of a T and a U, each placed the opposite way round to those in the last layer,



so that the joints do not come opposite. These should be assembled in a flat position. When most of them have been put in, and they begin to feel tight, the windings of the transformer can be tested.

Care must be taken that everything is well arranged for this test, as a "short" of the high-tension winding might prove disastrous. The two



wires HT1 and HT2 centre tap are to be properly connected to a 40 or 60-watt 230-volt lamp and then the in and out primary ends are to be connected to the main supply of 230 volts a.c. The second wire is only to be touched on momentarily at first,

and if the lamp lights up at nearly full brilliancy everything is correct, and the lamp may be lit again for a moment. Then cut off the main supply and connect the lamp to HT2 instead of HT1, leaving the centre tap connected. Now connect up the primary to main supply, and if the lamp lights up, all is well with the high-tension and primary windings. On no account be tempted to connect anything across the HT1 and HT2 taps, as their combined output is over 400 volts, and not safe to take any liberties with. The filament winding can now be tested, an old 6-volt valve being suitable. This should be connected across the two taps marked 45 turns, which give six to seven volts, according to the load. To save fusing the filament, a short piece of resistance wire could be put in the circuit. Now connect primary to the mains, and the valve should light up. If you have a voltmeter, the voltages across each pair of taps can be tested. All being correct, the remaining laminations can be put in. The sharp corners should be cut off the leg of the remaining T's at a sharp angle so that they will not cut the inside casing when being forced in. Use care and patience in this work and get in as many as possible. The wood clamps can then be put on and screwed up with 1/2 in. brass bolts 2 in. long, a small square 22's brass plate being placed under the head of each bolt, and a similar plate under each nut in order to protect the wood from damage. These clamps, four in number, are 9 in. long, 1 1/2 in. wide, 3/4 in. thick. Quarter-inch holes, centres drilled about 7 1/2 in. apart to allow bolts to clear laminations. When bolts are in they must be covered with tape to prevent touching and connecting the ends of laminations.

FINISHING THE TRANSFORMER.

The last item for the transformer is the small panel containing the a.c. and high-tension fuses. This panel, of ebonite, measures 3 1/2 in. by 1 1/2 in., and is supported by being screwed through the centre to a strip of wood, in turn screwed to the top clamps of transformer in the position shown. All the fuse contacts in this are spaced one inch apart, centre to centre, in both directions. Each hole is drilled 1/2 in. and is fitted with 1/2 in. bolt with a washer and nut on the top surface of panel. The fuses are slipped under the washers. For the a.c., 40's copper wire, or thinner if handy, will answer well. For the high-tension special fuses are required, the same being used on the front panel for outputs. The making of these fuses has already been described, but to make the article complete the description must be given again. The fuses are made by pasting a strip of cigarette tinfoil upon a piece of writing-paper, and then cutting this into the finest shreds with sharp scissors. The best cuttings about an inch or three-quarters long can be stuck with secotine to a strip of strong paper, trimmed to size, and the ends slipped under the washers. The fuses will act so long as they contain a place where the tinfoil is narrow.

(To be continued.)

ANSWERS TO CORRESPONDENTS

EXTENDING NEUTRODYNE.

In reply to D.B. last week connected with the addition of four stages of radio and a third audio stage to a five-valve neutrodyne, it was intended to state that in No. 7 of the "Record" there is a diagram by Mr. Billing of a neutrodyne circuit that might prove helpful so far as the radio side is concerned. Every effort should be made to get the present five valves to the highest efficiency before adding further to the set.

F.J.H. (Wellington) has had for a moment too much current through one filament of a valve, presumably a dull emitter. The valve now refuses to give results, although the filament is intact. This filament has lost its power of emission of electrons at the temperature at which it is intended to work. Sometimes this trouble can be cured, but it depends to some extent upon the make of valve. Some of the .06 type are not always curable. There is no harm in trying, and the method is to run the valve at the correct voltage for an hour without any H.T. on the plate. This brings some of the special chemicals to the surface of the filament, and normal electron emission may then result.

Another method is known as "flashing," but is decidedly risky. It consists in connecting one filament leg of the valve to one side of the H.T. battery, and just brushing the other H.T. connection on the other filament leg. A safe way of doing this is to charge a 2 mfd. fixed condenser by connecting it across the H.T., and then disconnecting and putting the filament legs across the condenser, which will discharge through the filament, but there is no danger of applying the current for too long a period. The H.T. used for either method should be 100 volts or so. The thoriated-tungsten type of filament responds best to rejuvenation methods. If a dull emitter is frequently run at a somewhat higher temperature than that specified by the makers, the thorium at the surface is dissipated more rapidly than it can be replaced by diffusion from the interior.

SEEKING PURE REPRODUCTION

WHAT ARE THE CAUSES OF BAD TONE?

The radio constructor and experimenter, whatever stage of development and experience he may have arrived at, must never consider that he has reached finality in wireless matters. A new receiver may have been constructed, brimful of little tips and radical improvements, the result of several years of experience. Or a constructive aspirant may have completed his first set, which seems to its owner and producer to be something really fine and wonderful. In either case it must be remembered that radio matters are always on the move—new methods, new accessories, improvements of every kind are constantly making themselves evident. And the enthusiast will usually be the first to seize upon and try out new ideas.

One branch of radio reception that is now receiving increasing attention is that of pure reproduction, which is an aim to obtain from a receiving set a faithful duplication of the items broadcast from the local station particularly, and also from others at a greater distance.

A number of factors are responsible for bad tone—overloading of detector and audio stages being the most common, and frequently the loudspeaker is also an offender.

DON'T PUSH THE DETECTOR.

It is an easy matter to push the detector filament, even slightly in excess of its rated voltage, and go the limit with the high-tension supply. But what is the result? Plenty of "volume," no doubt, but very little more to an ear that appreciates music. Although there is plenty of volume, it is only the noisy volume of distorted signals on account of the ruthless "pushing" of the detector valve with both filament and plate voltages. If such signals are passed along to be amplified, even though the amplifiers do not add to the distortion, they add considerably to the volume, and as they are receiving more or less "push" to deal with, they can only put out such mush in magnified form. Most listeners will be quite familiar with the harsh, scratchy, irritating tone of a set that is being wrongly operated and thus overloaded. From this it is clear that if distortion is produced by overloading the detector, it is useless to expect good tonal output from the set, however good the audio amplifiers may be. Therefore the lesson must be learnt and remembered—"that it does not pay to get too much from the detector"—its filament and plate voltages must be kept down if good tone is desired. More reduction than is, in a proportional sense, should be made in the plate voltage than in the filament, as too little on the latter may introduce scratchy tone.

Good tone may be obtained from a set with poor components, and unsuitable valves, provided the volume of output is kept down, but it might happen that such a set would only give fair 'phone strength without distortion, even with four or five valves. Yet perhaps all that would be required to effect a surprising change would be the replacing of audio transformers by a better type, with valves to suit, and possibly the substitution of valves in other parts

of the circuit. Even the substitution of valves alone may make marked improvement in a set. Some valves give harsh tone as detectors, though made for the purpose, whilst others, properly handled, give mellow tone. In the audio department there is a very particular relationship between the primary winding of each transformer and the valve that precedes it. If the transformer primary has a high impedance, the detector or first audio valve preceding it must have a similar, but not exactly the same impedance. If the primary impedance is low, that of the preceding valve must be low also. Actual test with several valves of suitable impedance will soon show which actually gives the best results.

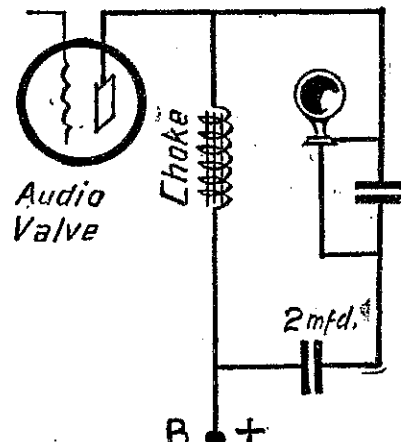
POWER VALVE IN LAST AUDIO.

It is impossible to get both good volume and good tone with two stages of transformer-coupled audio with an ordinary general purpose valve in the last stage. If the previous stages throughout the receiver are working efficiently and doing their share in boosting up the signals, the output current of three or four valves can only be handled without distortion by a power-valve, preferably one of the larger type, and of low impedance. Such a valve will handle large volume without distortion, but it is not at all essential that even here the high-tension voltage should be pushed to the limit given in the manufacturer's table of particulars.

USES OF AN OUTPUT FILTER.

Overloading of the speaker windings is a frequent cause of distortion, which may be adding to that already caused in the set. The fine wire of which there is a good quantity on the magnets of the speaker, is not capable of carrying a comparatively large direct current such as the output of a four or five-valve set, and the best way to improve matters in this portion of the circuit is to instal what is known as an "output filter," by means of which the loudspeaker is coupled to the set in such a way as to receive only impulses of voltage, or only the modulated current instead of the full plate current, increasing thereby the useful load that may be given to the speaker, and at the same time protecting its windings from the possibility of a burn-out. This filter coupling is used for the head-phones as well, and has the added advantage of not demagnetising their magnets or those of the speaker, whichever way they may be connected.

The choke filter consists only of a 2 mfd fixed condenser and a choke coil of from 20 to 50 henries, which may be made by replacing the windings of a small audio transformer with 34's or 36's enamelled wire wound in one continuous length, irregularly, but with a layer of tissue paper now and then, turning up slightly at the inside ends of bobbin, to prevent turns sinking to the layer below. Too high an inductance (henries) should not be allowed in the choke, as tone would suffer accordingly, and therefore a choke of 100 henries or more should not be adopted except after thoroughly satisfactory trial. The diagram shows this arrangement, also including the fixed condenser across the output, without which the tone of any receiver is liable to be harsh.



REGARDING THE LOUDSPEAKER.

If the speaker is used at a good many yards distance from the set and is connected by twisted flexible leads, tone may suffer on this account, but not

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necessarily. It would be worth while to test with straight wires run separately to see if any difference could be detected. It is a good plan to put a pair of say 22's enamel wire permanently along under carpets, the wires being separated a few inches, and connect these to short flex in the room where the speaker is to be used. A long twisted flex connection will sometimes cause a continuous whistle in the speaker. No horn type of loud speaker gives a faithful reproduction of the lower notes of music, even though they are not suppressed by the audio transformers, so it must not be expected that the low, humming bass notes that give so much body to musical pieces will be heard to any advantage unless a cone speaker is employed. Horn speakers with throats that are too narrow at the narrowest part are the worst suppressors of the bass parts of music. The notes are there to some extent if listened for, but are distorted, and have lost their musical tone. On the other hand, a horn speaker with too wide a throat will not respond well to weak signals. The diameter of throat should not be judged from the outside, for the metal may be one-eighth inch thick or more. The horn should be taken off and the inside diameter noted, and unless intended for use with a small set, should not be less than three-quarters of an inch. There are horns with a minimum inside diameter of only half an inch, but from the outside appearance it might easily be supposed to be considerably more. But it should be remembered that the size of speaker should be to some extent proportional to the output of the set it is to work with. At the present stage of development, the loudspeaker is only a compromise at the best, and it is more wasteful of energy than any other piece of apparatus in use. Generally speaking, cone speakers do not give as much volume on a given output as do the horns, but the cones give strength to the lower audible frequencies or bass notes, but tend to weaken any high-pitched melody of treble or soprano parts. There are now on the market a few cone speakers with improved mechanism enabling them to overcome the two worst defects to a great extent. A constructor should not purchase too small a speaker at the outset, because although only two valves might at first be in use, additions will soon be made to increase the output of the set, and this increase will be well carried by a speaker that is not too small. Overloading of the loudspeaker is a very prevalent sin, and one which may easily ruin the reputation of a set that is capable of delivering almost faultless output at a reasonable volume. Extra volume with quality is best obtained by using both a cone and a horn speaker connected in parallel, for then the two windings are each taking a share of the output, and extra volume is obtained without overloading either speaker to the point of distortion, whilst the high and low audible frequencies are both properly cared for.

THE IMPORTANCE OF GRID BIAS.

Constant mention is being made of the importance of the use of grid bias in the audio amplifier, and its employment is a big factor in securing quality reproduction. Not only does it improve tone, but reduces the consumption of high tension current in the amplifying valves—an important consideration where a dry B battery is in use. An ordinary valve used in the first stage may only require a few volts of negative bias such as may be supplied by a small flashlight unit of perhaps 4½ volts. No actual current is taken from a grid bias battery, and it lasts just as long in the set as it might upon the shelf in the shop. When we come to the power valve in the last stage, however, grid bias becomes more of a necessity, and the battery to supply it becomes a more formidable accessory, as any voltage up to about 40 may be required on this valve, so that a tapped B battery of 45 volts would be used, and from this the smaller voltage required by the first audio valve would also be taken. Grid bias is worth while on the audio side of any set, and well worth its cost. Grid bias can be applied to the radio-frequency stages, but is not so necessary, and in some circuits may even be detrimental in the direction of tending to cause instability. Too high a grid bias voltage will cause distortion, and loss of signal strength, so that experimenters should provide a means of varying it easily. New batteries should be used, and should be tested from time to time, and this latter remark applies to bought sets also, in which the grid bias battery is often stowed away in a corner and forgotten, but lacks voltage, and spoils tone. Grid bias required by any particular valve is now always listed in the accompanying circular.

FIXED CONDENSERS.

Three fixed condensers influencing tone are the grid condenser, one across the primary of the first audio transformer, and another across the output, whether a filter is employed or not. Constructors must experiment with different values in each of these positions, and in the case of the two latter, fairly large capacity may be found to be an im-

RECTIFYING AND CHARGING

A FEW HINTS ON TRICKLE-CHARGING

When employing a trickle-charger to keep the A battery well up, it is not advisable for the A battery to be of large capacity. The usual trickle-charger supplies a current somewhere around half an ampere, and if a large battery is in use and once gets down, such a comparatively small current would never recharge the battery, because charging time between sessions of listening-in would not be long enough for the charger to gain. In such a case the battery might be in an almost discharged state for some considerable time before the trouble was noticed, and on that account deteriorating rapidly, with at least a tendency to sulphating. With an A battery of from 15 to 20 ampere hours capacity such a position would be less likely to happen. The trickle-charger must, theoretically, put back into the battery the amount of energy that has just been used by the valve filaments, but as the time of listening will vary, and different valves of a greater or less number will be used at times, the only safe plan is to have a trickle-charger that puts back a little more than is likely to be used in one day, as it is really a 24-hour cycle that is to be reckoned upon. Overcharging, not carried to any extreme, will not harm a battery like undercharging does, and if the battery is fully charged every twenty-four hours, it can be relied upon to give full filament voltage at any time. Anybody installing a trickle-charger should keep a close eye on the battery voltage and specific gravity during the first few weeks in order to make sure that the charge is keeping pace with current consumption. A very small shortage in the daily charge will gradually get the battery down unless a careful watch is kept.

CHEMICAL RECTIFIERS.

When a chemical rectifier has been constructed and its output has to be suited to charge at a suitable ampere rate and voltage, it should be borne in mind that the amount of current passed depends upon the size of the electrodes. To pass the current required for a small B battery the aluminium electrode may be very small, and may be reduced either by cutting or by covering with rubber tape, as already mentioned in this column. The lead electrode need not be any larger than the aluminium.

In most cases a resistance will be introduced with the circuit, generally by means of a lamp, and this reduces both amperes and volts. The addition of further resistance may cut the voltage down so far as to leave no working margin, but if amperage alone is to be reduced, it is done by reducing active surface of the electrodes, and this has no effect upon the voltage. Although ammonium phosphate is the most reliable rectifying solution ordinarily used, either borax or baking soda (sodium bicarbonate) may be used. A recommended solution is half-and-half of sodium phosphate and potassium phosphate. These three alternative solutions should be strong, but not quite up to saturation point.

Improvement. In some sets a smaller capacity than the usual .00025 will be found an advantage. In condensers controlling tone, large capacity tends to mellowness and too large to woolliness, especially noticeable on speech.

Another fixed condenser that can have a great influence upon tone is one of small value, say .0003 mfd. This is placed across the plate and grid terminals of the first audio transformer. The correct value of this condenser can only be found by careful trial, judging the tone, changing the condenser, trying on speech as well as music. The right capacity will be found, that cleans up a good deal of noise, gives bright music, and no woolliness on speech. The addition of this condenser, where suited, will just add the touch of mellowness so often desired but not found.

AUDIO TRANSFORMERS.

Much has been said in favour of resistance coupling of audio valves, and where it has displaced poor quality transformers, no doubt a good improvement has taken place. But possibly in many cases the substitution of high-grade, large-sized transformers would have given still more marked improvement. Small transformers will not give good tone and volume too, and the sooner such are replaced by the best that can be procured, the better.

Distortion can be caused in the radio-frequency side by extreme selectivity resulting in the cutting out of more than the correct amount of side-band amplitude, but in practice there is not much to fear from this source in the case of the average home-constructed receiver.

The Children's Corner

By "ARIEL"

Dear Radio Children,—What do you think of our "Squealer"? I think if he paused for breath and took a little time off to eat a good square meal, his figure would be much improved! He was drawn by Will Hodgson, Box 24, Picton. This is our fifth animal and the "Surprise" will make number six. When he has been collected and put in his cage, the zoo will close for the summer months, for long winter evenings and wet days are the best times for drawing.

Now that spring is here, there are so many wonderful things to do out-of-doors. Won't it be lovely, too, to have a whole extra hour of daylight to play in? Aren't the spring days lovely? If you stand quite still away out in the country, far, far from the towns, on a day in spring, when the hill sides and valleys are flooded with new, clean sunshine, and just hold your breath, and listen—you will get a terribly thrilling feeling! It is almost as if you can hear things stirring in the paddocks and streams, and on the bushes and trees. For there certainly is a stir everywhere at this time of year. Buds are pushing out their tiny bundles of packed leaflets; early moths are creeping out of their winter cradles—and won't there be a lot of them bye-and-bye, to come flipperty-flopping through the open windows after dark when the lights are on! Bees will soon be busily buzzing, and the birds, too, are getting busy.

Have any of you ever seen a Rookery? A long, long time ago there used to be one near our house, and we used to spend hours and hours watching the Rooks at nesting time. Such a terrific noise, too, they made, with their "Caw-caw-ing" and fussing every year when they came back to the same old elm-trees. Mr. and Mrs. Rook were so funny. Mr. Rook, when he was looking for his wife would try to "show off" before her, strutting up and down along the ground, bowing and waltzing. Sometimes he even tried to sing in a horrid hoarse voice, but I think it must have sounded beautiful to Mrs. Rook, for she looked quite pleased! Then he would bring her a present of a tit-bit or some choice morsel, and she would accept it if he pleased her. Then that meant that they would soon be setting up house together. And then what a fuss and clattering there was about choosing the most comfortable branch and the very nicest twigs for the new house. Sometimes—if they were rather lazy—they would repair an old nest from last year, instead of building a new one, but I must say they were very very particular about spring cleaning it thoroughly to make it ready for the eggs.

Rooks always live in a kind of colony, and no matter what they do all day, they always come home in a flock at sundown and gossip loudly together about the day's events.

Oh, I almost forgot to congratulate George Best, of New Plymouth, on his success in the Story-writing Competition. Didn't he grow a wonderful Radish?

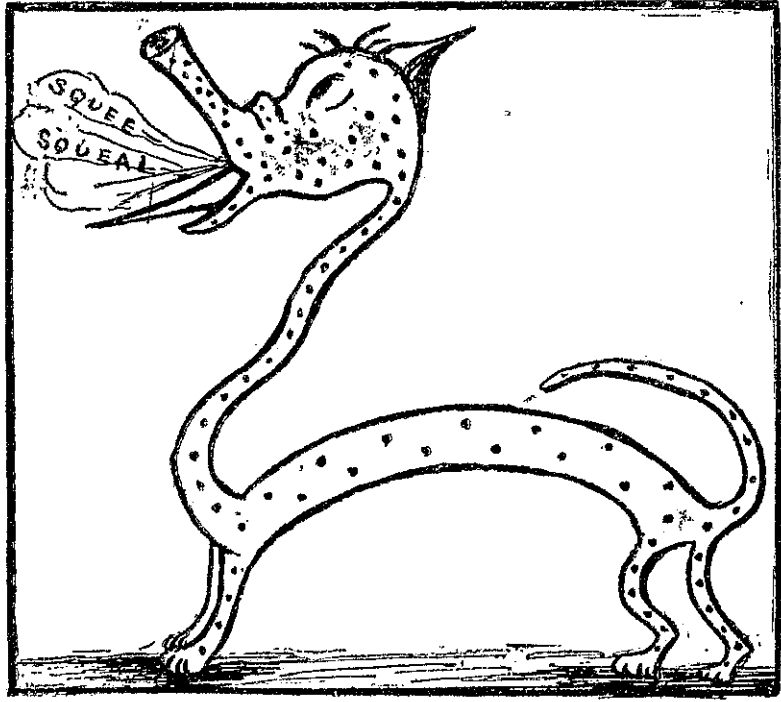
My love to all of you, ARIEL.

COMPETITION RESULTS.

- 1. Our Wireless Zoo, No. 5 "The Squealer." Prize-winner: WILL HODGSON, Box 24, Picton.
- 2. The Best Story.—Prize-winner:—GEORGE BEST, 310, Courtenay Place, New Plymouth.

OUR WIRELESS ZOO.—No. 5: "THE SQUEALER"

This is the Squealer we have caught for our Zoo. He was sent in by Will Hodgson, Box 24, Picton, aged 11 years, who is lucky enough to get the prize.



THE SQUEALER

THE PRIZE-WINNER.
The Squealer is an animal
We all invite to go;
His going's sometimes fairly quick,
But often, oh! so slow.
He comes in every evening,
He also comes at night;
The only way to shut him out
Is to turn the dials on sight.
—Will Hodgson, Picton.

ANOTHER "SQUEALER"

There was a young man named Peeler,
Who wanted to buy a "Squealer"
No boots on his feet,
He ran down the street,
And found a Radio Dealer.
The Dealer was tactful and wise,
And looked at the lad in surprise,
"A 'Squealer,'" he said—
"You'll wish you were dead!
Get one that will neutralise."
—Frank Willis, Wellington.

"UNCLE SAM" SONGS

LITTLE ORPHANT ANNIE.

Little Orphant Annie's come to our house to stay,
An' wash the cups and saucers up, and brush the crumbs away,
An' shoo the chickens off the porch, an' dust the hearth an' sweep,
An' make the fire, an' bake the bread, an' earn her board and keep;
An' all of us other children, when the supper things is done,
We sit around the kitchen fire an' has the mostest fun,
A-list'nin' to the witch tales 'at Annie tells about,
An' the gobble-uns 'at gits you
Ef you don't watch out!

On't there was a little boy wouldn't say his prayers,
An' when he went to bed 'at night, away upstairs,
His mammy heard him holler, an' his daddy heard him bawl,
An' when they turn't the kivers down he wasn't there at all!
An' they seeked him in the rafter room an' cubby holes an' press,
An' seeked him up the chimney-flue, an' ever'where, I guess;
But all they ever found was thist his pants an' round-about!
An' the gobble-uns 'll git you
Ef you don't watch out!

An' little Orphant Annie says, when the breeze is blue,
An' the lampwick sputters, an' the wind goes woo-oo,
An' you hear the crickets quit, an' the moon is grey,
An' the ladybirds in dew is all quenched away;
You better mind yer parents, and yer teachers, fond and dear,
An' cherish them 'at loves you, an' dry the orphan's tear,
An' ho'p the pore an' needy ones 'at clusters all about,
An' the gobble-uns 'll git you
Ef you don't watch out!
—James Whitcomb Riley.

THE BEST STORY

The prize is given for the best story written about any advertisement from any paper. George Best has carried it off for his little tale of a Radish, from Ryder's seed list. Here it is:—

A RADISH.

In my plot peeped out of the ground some radish plants, to see the surrounding country, to hear the birds sing their cheerful songs, and to feel the warmth of the spring sun. Their green tops began to spread out, and wonderful tap-roots, some long, some round like little turnips, began to find food in the air and soil. As they grew, one by one, I pulled them out for tea.

In the middle grew two large ones, which I left to see how big they would grow. At last they began to push one another about, as there was not enough room.

Two months had passed before I pulled one of them out. "One will make a whole meal," I said to mother, but to my great dismay I saw that it was not fit to eat. Next day I found a bare patch in the rockery, so I planted my remaining one in it. Up from the middle grew a long, straight stem, which opened out into many buds and branches. From the buds flittered out pure white flowers, four-petalled and yellow-hearted. At last the whole radish was hidden by snowy flowers.

A little later the bush was still handsome, but this time being covered with bright red and green pods hanging everywhere. "That was a wonderful radish!" exclaimed my mother.

HOW THE KNIGHT ESCAPED FROM PRISON.

This is a pretty little story sent in by Joan Kelly, aged 7.

There was once a knight who was captured and taken prisoner. He was put in the top of a tower to await his death. Now there was a Raven who, pitying the poor knight, made friends with him. The window was open just enough for her to squeeze through. After a few days the knight said, "Dear Raven, can you let me out of prison?" "Yes!" said the Raven, "I am going now. Goodbye!" and the Raven flew away. Three days and three nights passed by, but there was no sign of the Raven. Poor knight! he thought the Raven must be dead. But on the fourth day he saw a bird coming nearer and nearer. It was the Raven. In its claws it carried a pebble. The Raven touched the chains that were on the knight's hands with the pebble, and then he gave it to the knight, who touched the door, which at once flew open. So the knight escaped, taking the Raven home with him, and he tried to show his gratitude to the bird by taking care of it ever after.

MISSING WORDS.

This is the solution to last week's verse about the fisherman:—
A man of parts had caught a sprat
And it was windy weather,
"Give me my strap," he cried, "to fix
My fish and traps together."

FOUND ON A PENNY.

How many of the objects did you find on a penny? These are they:—
1. A place of worship—temple.
2. Part of a bottle—neck.
3. Part of a hill—brow.
4. A personal pronoun—I (eye).
5. Part of a trunk—lid (of eye).
6. Part of a whip—lash.
7. A protection against thieves—lock.
8. A river crossing—bridge.
9. A badge of royalty—crown.
10. A receptacle for corn—ear.

BROTHER BILL'S LIMERICKS

"Big Brother Bill" at 4YA, Dunedin, has recently been conducting a "Limerick Competition," and it is surprising the enormous interest it has created amongst both young listeners and old.

The postman, who delivers bundles of letters in connection with the competition three times daily to 4YA, has decided that "Big Brother Bill" is a very popular chap.

One night recently, when the time limit of the competition had expired, "Big Brother Bill" read "over the air" every limerick which had been received, and gave each one a number.

He asked his listeners to allot points in order of merit to the three they considered best. The young listeners' decisions rolled in thick and fast.

On Friday night, October 14, during the Children's Session, "Big Brother Bill" announced the winner, who will receive a prize of 5s.

It is the intention of "Big Brother Bill" to entertain the children in an instructive way, and he possesses a most original style in this matter. In addition to this, each month there will be a competition and a prize for the winner.

The October competition will no doubt create a lot of interest and amusement, and it is a laughing competition. Details of this will be announced later.

BETTY WRATHER,

109 Norfolk Street, St. Clair, Dunedin.

THE WINNING EFFORT.

Said the boy who lived on the hill,
To his noisy young brother named Phil,
Don't make such a din,
For I'm listening in,
And it's time to get Big Brother Bill.

A SQUEALER VERSE.

A Squealer is a funny bird,
At night he sometimes can be heard,
On super-hot or crystal,
He comes and goes, he's never still,
I wish he'd die from poisoned pill,
From a meat-axe or a pistol!
—Leslie Crossgrove.

Listen-In to Australia!

When your Crystal Set ceases to satisfy you, and you wish to "reach out," instal a "POLAR TWIN." With this little 2-valve set you can tune in on 2FC, 2BL (Sydney), 3LO (Melbourne), or 4QG (Brisbane). Economical to run.

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Price 3d.

VOL. I, NO. 14.

WELLINGTON, N.Z., FRIDAY, OCTOBER 21, 1927.

Per Annum, Post Free, 10/-; Booked 12/6.

PART VII.—HETERODYNING.

The cause of the annoying whistle can be easily explained. We have got two transmitting stations, the legitimate one and the oscillator, sending out waves of nearly the same frequency. The effect on a third set can be explained as follows:—

Imagine a bicycle pump fitted with two plungers, as shown in Fig. 1, with little third one midway between them and perpendicular to the tube. Let A be the broadcasting station, B the oscillator, and C some other listener. If A is transmitting, and B is behaving himself, then both A and C will respond to the to-and-fro motion of A. Suppose, now, B uses too much reaction, then he will begin to move to and fro independently of A. To make things easier to explain, suppose A is on the air, but no one is speaking, then A is sending out a high-frequency wave of constant amplitude. B is doing the same, but the frequency is slightly different, say, slightly greater than A. At a certain instant both plungers will move inwards together and cause an increase of current in C's aerial. A little while later B will be moving outwards when A is moving inwards, so that the movement of C is decreased. The effect on C, therefore, is that instead of responding to A alone, and moving in and out a constant distance, he will find that his plunger is first rising, then falling, in amplitude—exactly the same as if someone were playing the flute in A's studio and causing the waves to increase and decrease in amplitude. The number of these increases and decreases in the rectified current of C's set will be seen to be equal to the difference in frequency between A and B. So that B can alter the note by moving his variable condenser, and so altering his tuning.

We have, therefore, an easy way of telling when we are the culprits. If we vary our variable condensers and the note changes in pitch, then we are the offenders, whereas if the note merely weakens, but does not rise and fall, then someone else is to blame.

One method of tuning is to make the set oscillate, and then search about (by moving the dials) for a whistle. The dials are then turned till the note gets lower and lower, till it becomes inaudible. When this state of affairs is reached, then the receiving set is oscillating at the same frequency as the transmitter. Damp-

age is being done, however, because the quality of the reception is very much reduced, and also the B batteries are being run down quickly, because it is from them that all this extra power comes.

This, however, explains many of the freak crystal receptions about which one hears. If a crystal set is being operated close to an oscillator, then the oscillator, in acting like a small transmitter, will re-radiate part of the waves which he is receiving, and the crystal user says he got a station several hundred miles away.

The older types of valve receiver had movable or hinged coils, so that the reaction could be varied by moving them to and fro till oscillation stopped. While quite useful and comparatively harmless in the hands of an experienced user, these sets were a curse when manipulated by a tyro, and any set capable of oscillating is now rigidly illegal in New Zealand. Notice that reaction is not illegal—it is used deliberately in practically all valve sets which have a high-frequency valve; but it must not be pushed to the point of causing the set to oscillate.

NEUTRALISATION.

The modern set, therefore, differs from the earlier models in having some form of device which prevents reaction from causing oscillations. A set with this construction is said to be neutralised.

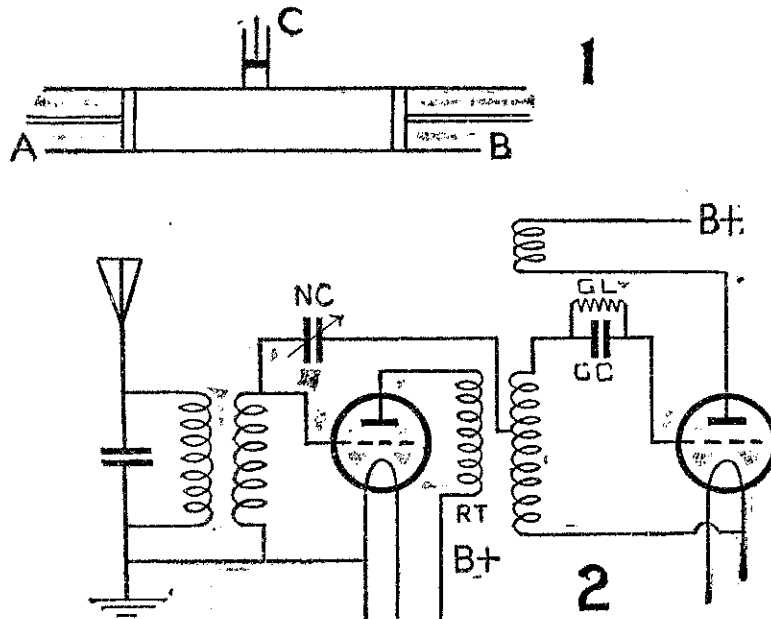
In a neutralised set the first valve has a connection from the plate to its grid, but in such a direction as to prevent oscillation. This is shown in Fig. 2. The first valve is connected in the usual way, but its plate is connected to the primary of a radio frequency transformer. The advantage of the transformer method of coupling two valves together was explained last week, since the voltage of the secondary can be made to be greater than the primary. The second valve is connected up with the secondary across the filament and grid, as be-

fore. The new departure is, however, a wire is brought from the transformer secondary through a small variable condenser, and thence to the grid of the first valve.

It was mentioned in the second article of this series that when we had a transformer the induced current always flowed in the opposite direction to the primary current, and so by connecting the grid of the first valve to the transformer secondary, the result will be to put a "brake" on the tendency to oscillate. The reason for the neutralising condenser is to vary the amount of this neutralising feed back until the set just ceases to oscillate. When the adjustment is made the neutralising condenser should then be left severely alone. Reaction is made use of in the second, or detector, valve, but the neutralising

device on the first will effectually prevent any trouble being caused.

Some people, especially those with home-made sets, may have had trouble with oscillation, although they do not use reaction consciously. The reason is that we do not need two coils to have reaction. Two straight wires, one from the grid and one from the plate, if they are allowed to run parallel, and close to each other, will cause trouble. This is especially the case when a small panel is used, consequently the components are cramped for room. If any of the modern sets are examined it will be found that the high-frequency valves are placed alternately with the low-frequency ones, so as to have them as far as possible away from each other. Also, the mounting of the coils themselves is most interesting, as it will



be seen in many to be impossible for the magnetism of any coil from passing through either of the other two.

DUAL AMPLIFICATION.

The diverse uses of the three electrode tube are not yet complete, as the next intriguing application is to make it do two things at the same time. It is possible for us to receive signals in the aerial, amplify them by means of a valve, then pass them through a crystal to rectify them, and then bring them back and amplify them again by passing them through the same valve. A set arranged in this way is called a reflex set, and can produce great amplification for a single valve.

Two main methods are possible, one with a high frequency transformer and the other with a low frequency transformer. The first is shown in Fig. 3, and should be fairly clear to those who have followed these notes from the beginning. The high frequency currents enter the aerial and operate the grid in the usual way. The little condenser "a" in the aerial will not, of course, affect these high frequency currents in any way. The amplified currents flow from the plate, as before, through the tuning condenser and coil, and on through the condenser "b" through the B battery, and thence back to the filament. These currents induce corresponding currents in the secondary of the transformer. These currents are rectified by the crystal, and from now are low frequency currents unable to flow through condensers, but able to pass round coils. These low frequency currents cannot pass through condenser "a," so have to flow backwards up the aerial coil and into the grid. The corresponding amplified current flows from the plate through the transformer primary, and, being unable to flow through "b," passes round the coils of the phones or loudspeaker. With this explanation the other type should now in its turn be understood.

There is very little trouble from oscillation with these sets, as the crystal has a stabilising tendency. The saving in cost is not so great as might appear at first glance, since the components are practically those necessary for a two-valve set, with the exception of the second valve, and its fittings, and the grid leak and condenser, but still, the set is a very useful one, and exceedingly easy to use.

BROADCASTING IN U.S.A.

AN AUSTRALIAN'S IMPRESSIONS

WONDERFUL PROGRAMMES.

On his return from a trip through the United States, a Mr. George Sutherland, of Melbourne, was interviewed by a representative of the "Listener In" on his impressions of broadcasting in America. He said:—

"My general impression of America—and by that I mean, of course, the U.S.A.—is that broadcasting has made enormous strides in the public favour since I made my previous trip to the States in 1924.

"This great increase in the popularity of broadcasting is due to the development of land lines for the transmission of better programmes. These land lines now link up the whole of the United States, enabling people everywhere to listen in to a New York programme.

Best U.S.A. Programmes.

"The best programmes in America are broadcast from New York, but until quite lately the New York man was not very particular whether he got distance. But to the man—say, in New Orleans, distance was the all-important feature of the radio, simply because it enabled him to hear New York. These land lines have changed all that.

"Some of the programmes broadcast

would cost anything from £1000 to £2000 for a single performance. For instance, there may be opera with Metropolitan stars; concerts with artists like John McCormack, Lena Cavalleri, Kreisler, and the Flonzaley Quartet on the one programme. A programme like that is broadcast all over the U.S.A. on particular nights—say, once a week.

Nearly 500 Stations.

"There were, until three or four months ago, 488 stations in America broadcasting, with the result that the air was overcrowded, and there was a state of chaos as far as the listener was concerned. Then Herbert Hoover, Secretary of State, took the matter in hand. The Government drew up stringent regulations under which each State was allowed time only in accordance with the quality of the programme given to the public. The serious effect of this will be grasped when it is realised that 80 per cent. of the stations exist only by selling their time for advertising purposes, and that the musical items broadcast are solely for the purpose of luring listeners to listen to advertisements.

"To illustrate the incidence of this: Station A might have contracted with an advertiser for 500 hours for the year. Under the new regulations Station A would find itself restricted to 200 hours only on the air for the year. The immediate result is that all the stations are striving frantically to show that they are giving the best service to the public, and are entitled, therefore, to more time than they are getting.

Journalists and Playwrights Combine.

"The advertising matter for broadcasting is very skilfully arranged, and

the very best journalists, and occasionally playwrights, are employed in preparing the material. Usually the advertising firm occupies a quarter to half an hour. This is the method: An announcer begins, 'Ladies and Gentlemen, — The Cornflake Corporation take this opportunity of presenting Signor Sappari, who will sing Donna e Mobile,' and so on through a good programme by front rank artists. Then the announcer finishes up: 'The Cornflake

APPLAUSE CARDS

The Stratford Radio Society has had printed an applause card for the use of members desiring to express to stations and artists their appreciation of the broadcastings received. The idea is excellent and is largely used in the States. The Stratford Society is very wisely designing the card to be of "return" value, for two views of Stratford are incorporated together with items of interest concerning the town and district and its attractiveness to the tourist.

Corporation thanks you for your attentive appreciation, and wishes to remind housewives that the revised book of recipes, for which no charge is made, is more comprehensive than any previous edition. Send for a copy."

The Dempsey-Sharkey Fight.

"I listened to the broadcasting of the Dempsey-Sharkey fight. For days before the stations had been reminding listeners to have their batteries in good order for the great event. The excitement was intense. The feature of the event was the amazing broadcasting of the fight by Major White, who is considered to be the best announcer of sporting events in America.

"And that reminds me, He is English, and so are the majority of wireless speakers in America.

"I never heard a more wonderful description of a fight. He detailed every move of the pugilists with lightning rapidity. Like this:—

"Sharkey - is - crouching down - with - his - head - between - his - arms. Dempsey - uppercuts - him - the - blow - glancing - off - the - chin. Sharkey - comes - in with - a short - left - jab. Followed by - a - right - straight - from - the - shoulder. Dempsey - retaliates - with - a - short - right - jab - and - a - swing - with - a - left - which - just - misses."

"Details of this description were clearly given with incredible speed during each round. About the fourth round another voice explained that the Major was momentarily exhausted and must have half a minute's spell. It is impossible to convey an idea of this remarkable feat of broadcasting.

"As to the quality of the broadcasting in America, it is no better than we are getting; but the programmes are naturally much more interesting on occasion than ours, because they are able to employ world-famed artists."

A GIANT STATION

ONE HUNDRED THOUSAND WATTS

Comparative nightly radio tests on the thirty and 100 kilowatt transmitters of WGY, at Schenectady, which are being conducted by the engineers of the General Electric Company, have brought letters from all over the country, according to Martin P. Rice, Manager of Broadcasting. "No attempt has yet been made to effect a complete analysis of the reports received," said Mr. Rice recently, "but the replies indicate that the 100 kilowatt transmitter delivers a more reliable, clean-cut signal to receivers. The thirty and fifty kilowatt broadcasts from WGY are often considerably marred by static and ground noises. While many listeners report less fading, approximately an equal number report that no change is noticeable in regard to fading." The outstanding comment, however, he said, "is that the 100 kilowatt transmitter delivers a programme very free from static and local electrical interference."

Printed and published for the New Zealand Radio Publishing Company, at the registered office, Dominion Avenue, Wellington, of the Wellington Publishing Company, by Archibald Sando, of 47 Freyberg Street, Lyall Bay, FRIDAY, OCTOBER 21, 1927.