London Tests Heard Faintly---Flying To Britain Looming

New Browning-Drake Design

THE RADIO RECORD

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WHO WILL FLY TO LONDON IN 1930?

—S. P. Andrew, photo.

GROUP-CAPT. P. T. M. FELLOWES,
Director of British Airship Development

These representatives of the Imperial Airways say that in 1930 it will be possible for those who desire it to fly from New Zealand to London in from 12 to 14 days. Airships now building will make it possible. Accommodation is being provided for 100 passengers and 30 tons of payable freight, such as mails, valuables, etc. Fares will probably run 25 per cent. higher than present mail steamer rates.

It sounds like a dream but so many dream-like things are happening these days. These men are substantial enough to be here, coolly looking for a suitable site for the necessary mooring mast and studying the air-currents and meteorological conditions. They say that airship travel is perfectly safe, that scientific data and carefully tabulated experience have conquered earlier disabilities, and that in airship travel over Empire Airways, the British race will add a final binding tie to the British Commonwealth of Nations, and world unity. Group-Captain Fellowes spoke from both 1YA and 2YA on his mission —and listeners say it was the best talk put on the air here.

—S. P. Andrew, photo.

MR. M. A. GIBLETT,
Superintendent of the Royal Airship Meteorological Division in Britain.

To endeavour to view airships and their present position in their true perspective, it is necessary to look to the past.

I daresay a great many people in New Zealand think that airships owe their existence to war requirements. As a matter of history this is not so. Before the war Count Zeppelin constructed his early airships for passenger traffic, and he, together with other German companies, had carried approximately 40,000 passengers before the war without damage to a single passenger, a performance immeasurably beyond the capacity of pre-war aeroplanes, and it is doubtful if aeroplanes have reached this pitch of efficiency yet. Comparing this performance with the figures of aeroplane transport of the present day, or even with the P. and P. first-class passenger traffic of 30,000 passengers a year, it is startling in its promise. It must be remembered that in the war airships were not only deliberately written down to discount the Zeppelin menace, but they were also used for a purpose that threw them open to easy destruction once the proper means had been discovered.

THE WAR AND AIRSHIPS.

Together these two factors created an unfavourable public opinion towards airships. Another factor that has affected airships, and which has, from one aspect, definitely damaged their progress, was their too rapid rate of development and construction during the war. This pressure for production definitely prohibited the necessary scientific investigation of the problems involved.

The Germans produced at great speed by empirical methods, rigid ships of great and greater efficiency, and we did the same in regard to non-rigid ships. The methods adopted for this period of development can be adequately described as ordinary engineering bridge-building practice diluted by experience and rule-of-thumb methods, a process not nearly refined enough for airship construction where maximum strength at minimum weight is essential to efficiency.

REVIVAL OF INTEREST.

After the war the development of airships was closed down for all practical purposes. The Americans and Italians kept airships going in a tentative fashion, but it really remained for the British Government to take the responsibility of opening anew the whole question. This they did, first by investigating very thoroughly on a thoroughly scientific basis through the medium of the National Physical Laboratory, and a number of highly qualified scientists, the problems involved in airship construction. To do this they had to make certain assumptions of the conditions to be met in the air, and at mooring towers, and I feel confident that we have not under-estimated them. Finally, there have been carried out certain full-scale experiments in R33 and in the structure of R101, to prove out the reliability of the model and theoretical investigations. I am glad to be able to tell you that these full-scale experiments proved that the assumptions and calculations of the scientists were for all practicable purposes correct, and have enabled the necessary modifications to the formulas used to be made. At the same time the mooring tower, which I will describe later, was developed and tested out, and unless this had been successfully achieved the regularity of service essential to commercial success would not be possible.

So the position we have now reached is that two 5,000,000 feet, or 150 tons displacement airships, based on these investigations, are now being built, and the necessary sheds and towers for their test in temperate and sub-tropical conditions are in course of erection.

It then remained for the South African and Canadian Governments to come forward with offers to build mooring towers, which will enable airships to be tested out on routes which involve tropical and sub-arctic conditions. Incidentally, the fact that the South African Government came forward in this way will enable the modifications which may be found necessary in the type of airship for crossing tropical routes to be put into production perhaps several years earlier than could have been possible, had they not done so. Also, the erection of a mooring mast in South Africa will enable the route to Australia and New Zealand to be opened earlier Our programme which you probably have already heard about is to carry out very full tests of these new vessels at Home, and when these tests are complete to fly them out to India and do mooring tests in that country. When these tests are complete, which they should be by the middle of 1929, the period for demonstration flights will arrive, and

it is the present intention to fly a ship to South Africa in July or August of 1929, and to Australia and New Zealand in 1930 if bases in these two countries are available.

COMMERCIAL DEVELOPMENT.

Assuming that all these projects are carried out successfully, it is hoped that the shipping companies or other large organisations will come forward and embark on airship construction and operation Naturally it is our desire to hasten the commercial development of airships to the utmost possible extent, but I think it is perhaps fortunate that circumstances in the shape of lack of building sheds put a break on the speed of this development Because, if this were not so, airships might cause serious injury to the important shipping interests involved in this area, due to the superior facilities in regard to speed and in some respects, comfort, which they offer for the carriage of passengers, mails and valuable light freight, such as diamonds and gold Our aim is very foreign to such a purpose and is rather constructive than destructive We hope that airships will gradually come into healthy co-operative relations with other established methods, or, for that matter, growing methods of transport, such as the steamer, train, the motor and the aeroplane Airships will not for a long time, and possibly may never take a large part in overland transport, and I should like to mention here that it is my opinion that airships will increase traffic rather than take away from existing modes of transport, particularly the aeroplane passenger and mails coming from England on a fast passage, say in 12 days, for they will not then be satisfied to take perhaps

(Continued on Page 2.)

Who Will Fly To London in 1930?

2 days to reach their final destination in New Zealand and it is here that aeroplane feeder and distribution lines from airship bases will find their uses.

If a base is established in Perth and in Melbourne or Sydney, and if a base is also established in New Zealand, it will bring you within one day of the East of Australia and 2½ days of the West, and 12 to 14 days from England.

WHAT EFFECT ON HUMANITY?

I do not propose to go further into the quest of times and distances as I am sure you all appreciate the effect on the world in general (as far as the human imagination is capable of such a feat) the halving of the time of passage or, as it may eventually become, the quartering of the time of passage between great centres of population will have. It is probably sufficient to say that some time during the next ten years the time taken for this development being dependent on the success these two airships achieve and the support consequently engendered amongst the commercial public, there could be established between New Zealand and England a mail service which would enable the recipient to read his letter in under a fortnight from the time of posting and to get an answer within a month of writing. We expect to base our timetable on a regular time of passage between England and New Zealand of 12 to 14 days.

aFACTS ABOUT THE SHIPS.

You will probably be interested to obtain the outlook on these ships of those actually engaged in their construction. First, we believe that we have built them quite strong enough, in fact, probably unnecessarily strong for all normal operational purposes. We have been building on the policy of safety first, and any other policy than this I think you will agree would have been unwise, considering the possibilities involved in the development of airships, and the great advance in size we are making, the biggest ship built previously the Los Angeles is only half the size.

Secondly, we know that we shall get a much better performance out of ships built as a result of the trials we are to undertake with these two ships. We expect to be able to lighten the structure. We expect to get better, cheaper, and more durable material for the cover of the ships and the gas-bags. The engines we are using are the first aerial engines of the Diesel type, and these, we are promised by our engine experts, will be much improved in regard to weight per horse-power and also in regard to fuel consumption.

We, therefore, feel justified in forecasting a greatly improved performance for future ships, both in regard to speed and paying load, and, of course, gas and airships' facilities generally will all get cheaper when large numbers of airships come into service.

30 TONS OF PAYING FREIGHT.

The performance of our present design will give us a full speed of approximately 75-80 miles per hour, and a cruising speed of 63 miles per hour in still air. With these engines we shall be able to carry about 30 tons of paying load for a distance of 4000 miles in still air. For demonstration flight purposes this paying load will be largely if not completely absorbed in fuel-carrying capacity, because the necessary intermediate masts for commercial purposes will not then be available. But to provide for the commercial service, airship mooring tower sites for intermediate masts have and are being surveyed. At the present moment the British Government does not intend to erect further masts or sheds, beyond one additional shed now being constructed in Englad, but no doubt the money for these services will be obtained early in the trials of the two ships. The British Government are confident of the ultimate value of the experiment we are undertaking, but as is the case with all Governments they cannot force the pace far in advance of enlightened public opinion, and therefore we have to await the results of these experiments before any great advance in respect of shed construction—a costly matter—and the bottle neck of airship construction can take place

—S. P. Andrew, photo.

FLIGHT-LIEUTENANT S. NIXON, of the British Air Ministry.

Each shed costs about £150,000 to £160,000 in England. We have two sheds, one in England and one in India, which can be used for operation or construction, and a further shed under construction, and two sheds in England which can be used for construction only, and these two latter are rather too small for modern ships. There is no reason in the future why Australia or New Zealand should not build airships within their own borders, the components being supplied by England. The fact that your Government has asked for the survey we are now carrying out will assist in the speed of development of airship services to New Zealand when the proper moment arrives.

WHAT COMFORT FOR PASSENGERS?

To leave policy and come to matters of more immediate material interest you will probably like to know the sort of accommodation airships will afford. The passenger accommodation in the two experimental ships we are now building will comprise 50 two-berth cabins. A South African member of Parliament remarked to me that supposing you did not like your fellow passenger, his disposal should be easy, but I think he was optimistic as the floors will be very strong. There will be a large lounge 60 ft. by 40ft., a diningroom to seat 50 and a small smoking room, two enclosed promenades and the other usual conveniences. Water for washing purposes will naturally be limited, but we are probably putting in shower baths in the first ship. The food will be cooked on electric stoves and perhaps some use will be made of the heat from the radiators for this purpose. There is no reason that the meals should not be as satisfying as those served on the ordinary ship. At heights where the air is cold it will be heated before entrance into the passengers' accommodation—the normal height for an airship to fly at will be between 2000 and 3000 feet. The period of a voyage between stopping places will not extend to more than three days at the outside and will generally not exceed two days, the distance covered during the voyage depending on the favourable or otherwise direction of the wind. Comfortable hotels at the stopping places will be available for baths and meals. Passenger ships will stop at mooring towers for periods of about six hours when the services are fully organised. Exercise will be obtainable on board, the lounge will provide a remarkably fine dancing floor slung as it is on the joints of the main frames and supported as the ship is in such an elastic medium as the air. A matter which will interest bad sailors is that an airship does not roll to any appreciable extent, floating as she does completely enclosed in a medium not subject to opposite to the case of a surface vessel floating in the sea which is itself subject to the influence of the air. An airship does, however, pitch slightly and rise and fall in the influence of another medium, the disturbed air conditions, and this brings us to the all-important subject of meteorology.

IMPORTANCE OF METEOROLOGY.

Meteorology bears the same relation to airships which pilotage does to surface vessels. With the present development of the knowledge of the science of meteorology provided the service is available to supply this knowledge, and provided the system of communication is also available to pass the information to the airship, there is every reason to believe that airships, once routes are established, will be able, due to their long range, to avoid unfavourable weather conditions, and to make use of winds to increase the speed of their passage. It is literally true to say that unless a sufficient and efficient meteorological service is established throughout the world over the airship routes, their commercial development will be unduly retarded. For economic as well as perhaps safe flying, it is not only necessary for the airship to be fully informed of the meteorological conditions of the area it is approaching, but also of the conditions prevailing in the area for at least a thousand miles in rear and on either side of it. To enable this to be done, close co-operation between surface ships and the land must be organised. The airship meteorological division under Mr Giblett is conducting some very important experiments in the interests of airships, and the value the British Government place on these experiments is well instanced by the fact that they are spending more per annum on this division than South Africa is on their whole meteorological service.

STRESSES AND STRAINS.

Among other things he is doing with an elaborate network of out-door instruments, is the measurements of the factors involved in the structure of wind gusts; this he is doing to enable us to appreciate the stresses an airship is likely to be subjected to at a mooring mast. He is also measuring the variation of temperature of the air stratas within two hundred and fifty feet of the ground for two reasons. One is to discover the flotation conditions the airship will meet when landing, the other the conditions she will have to meet when lying at the mooring tower. His division is also analysing from the airship point of view the meteorological conditions of the world in these areas which will probably develop into airship routes.

In regard to the capacity of airships to weather the conditions they are likely to meet in the air, you need have no doubt about this. They are not only being built much stronger than former ships, but before British airships are allowed to proceed over a route the authorities of both the Old Country and the Dominions will no doubt ensure that the airship crews are fully trained to meet all the conditions, and that the meteorological and signals organisations are fully adequate to supply the information that we require.

I expect the thought of thunderstorms and tornadoes arises in your minds. The former we shall avoid where possible, or pass through or under when necessary, and the latter we will and can avoid.

Perhaps you do not realise it, but actually there is available 25 years of experience of airship navigation, and during that period the rigid type of airship has been struck by lightning dozens of times without suffering damage.

The reason for this immunity is because the great metal structure of the airship provides an ample path for

—S. P. Andrew, photo.

MAJOR T. M. WILKES, M.C., Director of Aviation in New Zealand.

the electrical energy generated by the storm.

USE OF TRADE WINDS.

The importance of the direction of the prevailing winds to airships, such as the N. and S.E. Trades and the westerly winds which prevail in the north and south areas of the northern and southern temperate zones respectively is such that it will decide the direction and location of the routes which airships will follow For instance, the route from South Africa to here will go down to about latitude 40S. in order to make use of the westerly winds in that area to assist our passage to Australia and the return route would go further North towards the equator to obtain the assistance of the S.E. Trades

MODERN MOORING METHODS.

I expect you would like to know how an airbip lands and how the passengers get in and out. In the old days, an airship captain, after stopping his ship and adjusting the lift of the ship by valving gas or dropping ballast until the ship had only a very slight tendency to rise, would fly his ship in head to wind and drop a rope out, from the fore end of the ship; this rope would be seized by men on the ground, led through a block and the ship hauled down. A number of handling guys would then be dropped from the ship and a party of men from 150 to 350 strong would walk the ship into the shed, and this could only be done on days when there was little wind. Nowadays the captain adjusts the lift of the ship as before and then flies in head to wind towards the mooring tower, a structure of about 200 feet high. When close to the mooring tower and about 800 feet up, he drops a wire out from his nose. This wire is picked up by a couple of men on the ground and connected with a wire lying on the ground the centre of the tower, and out through an arm at the top of the tower, and at its other end this wire is led round that has been previously led up through ships, it will have to be a very bad gale indeed, to incommode us in our operations, and the whole operation only requires a staff of ten men. A passenger enters the ship in the following manner. He enters a lift at the bottom of the tower; he is taken up to the top in this lift; he steps on to a platform surrounded with a high rail enclosed in canvas. From here he steps up through a covered-in gangway into the centre passage of the ship, and from thence into his cabin—a great deal more comfortable and luxurious method than they have yet invented for getting on board a ship.

HOW MUCH THE FARE?

It will interest you to know the prices airships will charge. Of course, it is only possible to make an approximation at present, as we do not know how much of the overhead charges of the bases and necessary organisation, etc., will be borne by the operating companies, and how much by the local authorities. However, we think, at first, commercial companies will have to charge about 25 per cent. over the existing first-class fare by steamship, but we expect these rates to fall below the steamship fare later on. As far as letters are concerned, 6d. an ounce should be an ample charge, and I understand business men would be willing to pay five times as much as this to get their mail home in twelve instead of thirty days. You all know how interested your Government is in getting the time of communication between New Zealand and England shortened. They realise that the unit of space between places is time, not distance. The reason that, during the last thirty years, they have not been able to reduce the time of passage at all, and it is a remarkable fact that this has not been possible, in that it is not possible to increase the economic speed of the steamships on the route—England to New Zealand—without incurring an altogether disproportionate expense. Hence the opportunity afforded to airships, who by virtue of their possession of an economic speed nearly four times that of the existing steamship, and due to the fact that they also have sufficient lift to transport exactly the type of traffic which can, and is, willing to pay for speed of transit, that is, passengers, mail, gold, etc., they can fill the gap left by the steamship transport.

NO RUSH PROGRAMME.

I would like you all to realise that, in order to succeed with our airship programme, we must make haste slowly. It would be most unwise, from many points of view, to attempt to rush the commercial development of airships. If Australia and New Zealand are, in 1930, or soon after, ready for the first demonstration flight, you will not have lost any time, as we could not come to you before then. Ships take time to build, at present about eighteen months each, reduced rates, and each ship requires a shed to be built in. We think we shall require a total of twenty slips in all to maintain a bi-weekly service to India, tri-weekly to Egypt, and weekly to Australia, New Zealand, and South Africa. Four on the Indian route, eight on the Australia and New Zealand route, five on the South African route, and three on the Canadian route. To carry this service there would require to be in England four sheds and seven towers; in Australia, one shed and three towers; in New Zealand, one tower; and in Canada, one tower; in South Africa, one shed and two towers; Egypt, two towers; India, one shed and three towers. The number of intermediate towers required we do not know yet.

Finally, if this estimate of the possibility of airships is not exaggerated, the future will prove that the two great egg-shaped structures now building in England contain the germs of a truly epoch-making development in world amenities.

2LO, LONDON

HUGE ORGANISATION

INTERESTING SUMMARY.

The average listener who hears night after night "This is the London station calling," or when the time for the news bulletin comes round, "This is London calling the British Isles," has little conception of what an efficient organisation has been gradually built up at 2 Savoy Hill, says a Home paper. It is only a matter of two to three years ago that the B. B. C. had only one large studio and the announcer had to ask for "just a couple of minutes' interval please while the orchestra take their places."

Now there are no fewer than seven studios and three more are in course of construction. Some of these are interchangeable, while others are kept for special purposes. One of these is a heavily draped small room, comfortably fitted up as a cosy study for talks In the corner is a sound proof announcer's box, from which the announcer can make his, perhaps, laudatory remarks on the speaker's achievements without the latter's hearing them.

Another studio is kept entirely for "noises" which can be transmitted separately or superimposed on the main transmission. If necessary, a third studio for "noises or voices off" can be used. Another studio is devoted to the production of the correct amount of "echo." Formerly this was achieved by the draping, partial or otherwise, of the studio whence the transmission was being made. One of the newer rooms has been made by taking in one on the floor above it, so as to give added height. It had been noticed that transmissions from the Grand Hotel at Eastbourne always came through particularly well, so the endeavour was made to achieve this at Savoy Hill by the added height, with a great measure of success.

Experiments and research are always going on at 2LO; the effects of different draping, both on walls and ceilings; the effect of pictures on walls, carpets on floors, deadening of sound, resonance, echo, are all minutely studied. At one time auditions were freely given to every aspiring radiocaster and these ran into 200 to 300 a week, while it was found that only some 5 or 6 per cent. ever reached the microphone. Then the rule was made that some sort of credentials would be necessary and even so there are about 150 auditions per week.

To the mechanically minded the most interesting department is the control room. Here, at the top of the building, eight young wireless engineers are engaged in looking after the transmission of the day's programme. At the back of a large switchboard, occupying one end of the room, the writer was told that some 7000 connections linked up this room with every department of the British Broadcasting Corporation's system.

Men seated at four control tables were faced with a panel on which were numerous tell-tale lights. One of these glowing would tell of Newcastle, 300 miles away, ready to take the London programme or of Glasgow, ready to switch through an hour's entertainment to London listeners, and so on. From 10 a.m. to 11 p.m. or midnight these control engineers have to be constantly on the alert. So far as is humanly possible everything is duplicated to guard against breakdown. And the result is that for rigid punctuality and elimination of vacant pauses the 2LO station cannot be equalled anywhere in the world.

In the secretarial department every letter of the enormous correspondence is courteously dealt with. Thanks are given for praise, and criticism is investigated and the causes remedied. And it is surprising how critical the proprietor of an annual 10s. license can be of his 10 to 12 hours' programme per day.

A mile away in a little hut on the roof of a huge London store is the transmitting apparatus at the foot of the aerial masts towering 300 feet above the London streets. There, surrounded by great glass bulbs in which the electric filaments glow white hot, three engineers are on duty looking after the machinery which sends the electrical vibrations to the transmitting aerial wires whence they travel broadcast to be picked up in their flight by the million or more little aerial wires waiting to receive them.

CHECKING HOWLERS

The Auckland Listeners' League recently suggested to the Postmaster-General, the Hon. W. Nosworthy, that, with a view to avoiding some of the present howling-valve interference, a stage of neutralised radio-frequency amplification should be made compulsory.

In the course of his reply, Mr. Nosworthy said: "It may be realised that my Department is by no means unaware of the position. It is, however, pointed out that in no country in the world has the radiating receiver nuisance been entirely eliminated, although it is hoped that by the following means better conditions will be obtained in the future: (a) Education of the listener; (b) prevention of the use of notoriously offending sets by providing for the testing of sets which it is proposed to submit to the public for sale; (c) inspection by radio inspectors, including the investigation of complaints made to them by listeners; (d) The gradual improvement in the design of sets on the market. This is already noticeable; (e) the increasing power of the broadcasting stations.

"It will be evident that your association has great opportunities for assisting my Department under certain of the above headings, and it may be stated the departmental inspectors are at all times prepared to do all in their power to supply any information that you may desire."

ANOTHER GOOD LIST

Mr. Esmond Clarke, St. Leonard's, Dunedin, forwards a nice list of stations received. "I notice," he says, "in your recent number an interesting article on receptions recorded by Mr. Grey, of Shannon, and although I am not asking for publicity, I thought that the following information might be interesting. During the last twelve months on an all-wave receiver, using the detector and one stage audio amplifier, I have logged over 60 stations. If a record is to be claimed by any person, I consider that only stations whose actual call sign has been heard should be included. If I were to count all the stations from which I have as yet heard no call sign I could easily add ten more to my list. I should also be extremely interested to hear how WGY was heard on the broadcast band on the average receiver when this station signs off at approximately 8.30 p.m., New Zealand time.

I am not making my claims unsubstantiated, but enclose herewith a number of verified reception cards and letters along with a list of stations received:—

New Zealand.—1YA, 2ZF, 2YA, 3YA, 4YA, 4ZB, 4AK, 1ZB, 1ZQ, 2YM, 2YK (11).

Australia.—2BL, 2FC, 2GB, 2ME, 2UW, 2KY, 3LO, 3SW, 3AR, 3DB, 4QG, 5CL, 5DN, 5KA, 6WF, 7ZL (16).

U.S.A.—KNRC, KDKA, KFKX, KOIL, KOA, KGO, KPO, KFI, KSL, KFON, KFRC, KFVD, KFWB, KFWI, KMOX, KJR, KFWM, WBBM, WLIB, WENR, WOI, WLW, KFEQ, KFSD, KFSG, KNX, 2XAF, 2XAD, 2XG, 2XK (30).

Philippine Islands.—KZRM (1).

India.—7BY (1).

Canada.—CNRV, Marconi short wave at Quebec (2).

Japan.—JOAK, JOBK, JOCK (3).

Europe.—PCJJ, RFN (2).

Grand total, 66.

The Chit-Chat Club——

Points from Papers Put "Over the Air."

(Set Down by "Telanother")

"Birds," said the oldest member fiercely, in answer to a query from Blinks, "are a cursed nuisance. I remember the day when farmers could grow decent crops in New Zealand, but the infernal sparrows won't let them do it now. Shoot them—that's what you want to do with them."

The "wireless bugs" of the X Club were comfortably esconsed in the big easy chairs before the fire, and Hargost, known to his intimates as "Blinks" had asked the oldest member what he thought of our bird life.

"If it wasn't for the birds, you probably wouldn't be here," said Harrison, "and," he added reflectively, "what a terrible loss!"

"Rubbish," said the oldest member, who was never quite sure when Harrison was taking a rise out of him. "What difference do the birds make I'd like to know?"

"They save us from the insect menace," said Harrison. "Without them, the world would rapidly be overrun by insects, and gradually we'd go under before the onrush of the victorious insect."

"That's a new and rather startling viewpoint," said Drexter, known to his cronies as "Silent George" because of his few contributions to the general conversation.

"It may be," said Harrison, "but it's not far wide of the mark. I remember reading a while ago where a chap in the 'Scientific American' said that in another few thousand years, mankind would have gone down before the insects which are rapidly growing in numbers and variety. Something similar was stated by Mr. W. R. B. Oliver, of the staff of the Dominion Museum in a wireless address last week, except that he says that the birds will save us."

"That's exactly what set me thinking about the subject," said Blinks. "I heard the address, and it struck me that our present policy is suicidal."

"Nonsense," said the oldest member, who was always ready to take a definite stand on any subject, whether or no he knew much about it. "All the birds do is to eat our crops and our fruit. Do the Nelson fruitgrowers love the birds?"

"Yes, many of them do," said Harrison, "and with good reason. For a few weeks each year they give trouble through eating our fruit, but most of their attacks are on insects. Picture for yourself the creeping, crawling onrush of the insect world, and the gradual but steady overcome of man.

"There are thousands upon thousands of varieties of insects scattered over the world, and in his lecture, Mr. Oliver pointed out that there is an incessant war between man and the insects. Insects harass us wherever we turn, and the reason for their consistent growth lies in our own action of destroying their natural enemies."

"They multiply so beastly rapidly, too" Interposed Blinks.

"Yes, that was another point he made. One pair of potato beetles would multiply to 60,000,000 in a single season if all grew to maturity. Think of it," he added, turning to the oldest member, "millions of potato beetles advancing in a solid phalanx."

"We'd spray them," said the oldest member, who did not like to admit he was on weak ground.

"A fat lot of good that would do," said Blinks. "You couldn't kill them all."

"No," agreed Harrison. "It's the birds that help us out of our difficulties. There are three groups of insects, and any of them might get the better of us if it weren't for the birds. First of all there are the disease carriers, taking round germs such as the bubonic plague...."

"It makes me feel sick," said the oldest member apprehensively, looking around to make sure there were no insects in the vicinity.

"It would make you feel a jolly sight more sick if you killed off the birds as you want to," said Harrison. "Another group of insects are the crop eaters, while the third group directly attack us for food."

"The crop eaters must get through some grain in a year," said Winton Thribs thoughtfully.

"Yes," replied Harrison. "Mr. Oliver said that it was estimated that at least ten per cent. of all crops grown in the United States were destroyed by insects. Fortunately we're not as badly off as that in New Zealand, but we've got to take more care of our native birds if we don't want to go gradually back. All three groups are to be found in New Zealand, and we've all had experience of group three, in the mosquito family

"You can kill them off with crude oil," said Thribs, determined to air a little bit of knowledge gleaned from a popular science paper.

"No fear you can't," said Harrison. "You can prevent some of them breeding, but that's as far as you can get. It would be impossible to destroy all their eggs or breeding places, even if we knew where they were, Mr. Oliver said that the main factor in the increase in insect life in other countries was the decrease in their birds."

"That's all very well," said the oldest member, determined not to give way, "but conditions have never been bad in New Zealand—and never will be."

"You're wrong there," said Harrison. "Mr. Oliver said that in Canterbury in the '60's grass grubs invaded certain districts and ate everything in front of them. All that the farmers could do was to dig trenches and stem the advance. It was the birds that came to the rescue."

"Well, it's birds like the sparrow we want to shoot," said the oldest member.

"We don't want to shoot any," said Harrison. "The sparrow eats a bit of wheat once a year, but he's eating insects all the rest of the time don't forget. The blight bird eats fruit once a year, and all the fruitgrowers want to get after him, but they forget that for about eleven months of the year he is keeping their orchard clean."

"I've read that if all birds were to disappear, man could live on the earth only nine years," said Drexter

"It's about right too," concluded Harrison. "Kill all the birds, and we'd be forced to live in a world of creeping, crawling things. Just imagine it. A battalion of slugs advancing in front, mosquitoes by the millions hovering all around you, tens of thousands of great hairy spiders guarding the rear, and you nedged in and unable to move...."

"Hell," roared the oldest member. "What's this," and rising hurriedly he swiped frantically at the back of his collar, looking all the time as if he were about to go off into a fit. A moment later, a tiny spider had been dislodged and hurriedly dispatched, and the oldest member sat down, feeling that he had made rather a fool of himself. "For God's sake don paint your vivid pictures while I'm here," he said to Harrison, "I thought a battalion of them were after me."

"The chickens, or rather the spiders, coming home to roost." said Blinks sententiously. "I don't think I'd take a gun after those birds after all."

"No," said Harrison, "I'm all for protection, too. The birds are evidently our allies, and we don't want to go back on them."

"Talking of birds," said Larton...

"We've finished talking of them and of spiders too," said the oldest member hurriedly.

"It just reminded me of some of the queer birds there were in olden times. Human birds, I mean," he added, giving the oldest member a sideways glance.

"I heard an address on publicity, given by Carlson E. Holmes, of the Gordon and Gotch people, and it showed how publicity came down through the ages."

"Don't want any blessed advertisements over the wireless," growled Thribs, who held a few shares in a newspaper, and was always liable to keen feelings where his pockets were concerned.

"This wasn't advertising," said Larton, "so it won't affect old granny in which you've got those shares my boy. You will probably be surprised to learn that long before your great grandfather started taking down the little Niggers with dud advertisements, and founding the family fortunes, advertising was a powerful medium."

"We've always paid twenty shillings in the pound," said Winton virtuously.

"And given your clients about nine shillings worth of value for the pound, too," said Larton. "Anyhow the art of advertising is just about as old as the hills, and although your great grandad may have taken people down a bit with advertising, he wasn't half as bad as many who went before.

"From what Mr. Holmes said, it seems that, apart from the hen which has always been both an advertiser and a wireless announcer, the Greeks were the first to indulge in a little publicity. You'd think from the stately plays that the old boys performed, that they didn't hav much of a sense of humour, but from their ideas of advertising, they must have had a little."

"How on earth did they advertise," queried Blinks?

"They used to inscribe fearful curses on their enemies, and attach these to statues of their pet Gods But one thing at least they did do, and that was to punish severely any of their town crier johnnies who misplaced the Emperor's Greek. No dropping of the H's there, or off would come your head."

"It's a pity we can't try a similar treatment with some of the birds who erect street hoardings these days, said Thribs, who naturally considered the newspaper the only medium for advertisement.

"That's an old trick too," said Larton. "The ancient Romans apparently were the first to start the hoarding business, and used it to announce the big attractions of the gladiatorial contests. Can't you see the flappers of those days reading all about the deeds of derring do of their George or Percy as the case might be."

"Advertisin for many centuries seems to have been confined to the blackening of the characters of your enemies, ar. from 1500 downwards, the English used it in various ways to denounce those who had aroused their wrath for one reason or another.

"Advertising in the style which we know it is of comparatively recent times, and 100 years ago the advertisements consisted mainly of quack medicines and bogus adventurers. What a contrast to to-day, when advertisers recognise that it's not worth advertising, unless their goods will command repeated sales through their worth. A hundred years ago, advertisements were lures for fools, but to-day they are the medium through which wise buyers make their best bargains."

MAYOR AND RATEPAYERS

"One of the most novel experiences I've had for a long time," said Brenton, who, having worked late, had but just joined the little circle, "was that of listening to the Mayor, Mr. Troup, describing to ratepayers, how the Council proposed to spend the loan money they intend to raise. Fancy sitting back in comfort in a big chair, and hearing the whole story. Doesn't it make you want to get a wireless set?" he inquired of the oldest member.

"No, it doesn't. I wouldn't have one of the infernal things on my mind," retorted the oldest member. "Can't even get in a quiet evening apparently, without being disturbed by someone wanting to raise the rates. It ought to be prohibited."

"It opens a wonderful field," said Larton. "We in New Zealand find it hard to think nationally but wireless will help us. Its quite unique to have a Mayor explain over the wireless what loan proposals mean, and so it is to get those excellent talks on the Singapore base. Wireless is going to weld the Empire still more firmly tobether—and it's my belief that our labour agitators see that coming, and are annoyed because too much light can now quite easily be thrown on Bolshevism and like subjects. Many a man won't bother to study the question closely from his paper, but he will listen-in to a talk from someone who knows. Mayor Troup has led the municipal field with his talk over the wireless and has shown us what wonderful possibilities are possessed by this twentieth century marvel. Distance is annihilated and...."

"So will you be, if you aren't home for dinner within the next ten minutes," interposed Blinks, cutting short what looked like becoming a lengthy dissertation.

"By Jove, you're right," agreed Brenton. "It's well after six o'clock, I'm off, and suiting the action to the word, he picked up his hat and made for his suburban home, a lead which was shortly after followed by the others.

What Do You Know

"THE INSECT MENACE."

"PUBLICITY OLD AND NEW."

"MUNICIPAL MATTERS BY WIRELESS."

MR. J .C. KING.

Winner of Soprano Cornet Championship at the last New Zealand Band Contest will play at 2YA on Saturday 24

THE NEW ZEALAND Radio Record

PUBLISHED WEEKLY.

Printed Tuesdays to permit of effective distribution before the week-end, with full copyrighted programmes for the succeeding week. Nominal date of publication Friday.

LITERARY MATTER.

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Advertisements requiring setting should be in hand not later than Friday of each week to ensure publication in succeeding issue. Stereos and blocks, providing space has been arranged beforehand, can be accepted up to midnight Monday. Contract advertisements not changed will be repeated.

No responsibility is accepted for blocks, stereos, etc., remaining unclaimed after last use, beyond a period of three months.

A. J. HEIGHWAY,
Managing Editor,
"The N.Z. Radio Record,"
P.O. Box 1032,
WELLINGTON.

WELLINGTON, SEPTEMBER 16, 1927.

INVESTIGATION INTO FADING.

We are looking forward with interest to the results of the combined inquiry into the facts of fading, which we are asking our readers to undertake with us on the evening of September 26 and 27, in relation to the transmission of 2YA. It remains to be seen just what facts can be established by the mass of combined reports we hope to receive. The scattered and individual reports that have come to hand previously in relation to 2YA have been of a most contradictory nature—some listeners reporting no fading, while others indicate intermittent and occasionally persistent fading. Obviously the fault must lie either with the transmitter, the receiver, or intervening factors covering atmospheric conditions, including magnetic storms, or atmospheric electricity, or land absorption. It will be very interesting to discover, if possible, which factor is primarily at fault. If the transmission is at fault, every effort will be made to effect remedy. If the fault lies with the reception, then it will be the duty of listeners, individually and collectively, to put their receiving sets in such a state of efficiency as to avoid reaction and annoyance to others.

The comments that have been made in respect to 2YA recall the difficulty that was experienced in Great Britain following on the opening of the high-powered station at Daventry. Numerous and persistent complaints were then received from all quarters in relation to distortion, and an official article, published in the "Radio Times," dealt with the subject along lines that have an interest for New Zealand listeners. There were, it was pointed out, three possible causes. The first was fading, or what was commonly known as "night effect," which was described as being due to the confusion of those rays which travel tangentially to the earth's surface, and those which are reflected downwards from a supposed electrified layer. It is not impossible that "night effect" should be experienced during the day. A second cause was land lines, which at times, due to intermittent earth or some other variation, might give distortion. The third cause might lie either in the transmitter or the receiver. The fading effect might begin to be apparent at 150 miles, and should be most noticeable at 200, 300 and 400 miles. There was no cure so far as the authorities knew. Theoretically, an absolute constancy of wave-length should minimise the trouble, and that was what was striven for. While this might not be always successful, the authorities thought that the average accuracy was so nearly constant as to prevent serious night distortion from this cause.

As to leakage from land lines, the experiments carried out tended to show that this factor was immaterial. In relation to the transmission, the authorities affirmed that, with the greatest care, they could not suggest the fault lay here. Coming then to the conditions for reception, it was stated that they had found quite definitely that, if the receiver was brought near to reaction, distortion did arise. Whether this was due to a partial fault in the transmitter—too much carry or too little modulation—had to be determined, but the fact definitely remained as a fact. It was admitted and emphasised that it was not always perfectly simple to get good quality out of Daventry, and the authorities were working hard to find out whether that was attributable to them. If it was, it would be remedied; if it was not, they must continue to press for sane methods of reception on the part of listeners. In that connection, it was absurd for listeners to endeavour to force sets to do more than they were designed to do, and too much reaction was always bad. It was pointed out that the reports received by the authorities overwhelmingly showed that crystal users did not, on the whole, complain one-tenth as much as the valve people; and this was used in support of the theory that intensive reaction was spoiling results. It was suggested that some of those who had experienced trouble should try putting up a much bigger aerial or a really efficient earth, until they were sure they were not relying upon intensive reaction. Finally this review said: "We are all experimenters on the finer points, and can only go ahead in terms of co-operation and frank speaking."

We have summarised the British experience because it seems to us to be applicable in some points to our own case. We have proposed this investigation in an earnest desire to secure a clear understanding of fading problems, and definite information, if possible, as to the incidence of the fault. We confidently look for the co-operation of our listeners. The investigation will be continued over two nights, and if required, we will not hesitate at a later stage to institute further tests, both in relation to 2YA and other stations.

GOOD MUSIC WELL PLAYED

NEW DIRECTOR ASSESSES PUBLIC'S APPRECIATION

Mr. W. J. Bellingham, who, as director of music, will control the programmes for the Radio Broadcasting Company throughout New Zealand, expressed himself thus to a "Radio Record" representative regarding public appreciation of music:

"Respect your public," he says, "and they will respect you. Do not underrate the capacity of the audience to appreciate good music well played. Majority opinion is generally sound. It will not express itself in a technically correct manner; it will not know the reason of its preferences (though it may think it does), but it does know the difference between good and bad. This reminds me of a very common error of expression. We continually hear the remark, 'I do' or 'I do not like classical music!' Classical music is commonly supposed to comprise all music that is involved or difficult to understand, in contrast to lighter and more melodious forms. The person who disclaims most strongly against classical music will be delighted with Beethoven's Minuet in G. As a matter of fact the term 'classical' in music refers to an early period and to music written in the style of that period. The large majority of our master composers no not belong to the classical school, but to the romantic or modern schools. Musical compositions in their content are very similar to literature, and what is good and bad in both is produced in very similar proportions The difference is, for the understanding of music an intermediary in the person of a performer stands between composer and the listener. I have no hesitation in saying that the full beauty of the works of the great masters is seldom heard in New Zealand, and in very many cases works of great beauty are so marred in performance that the listener is justified in discrediting the result. Unfortunately he more often blames the composer than the performer. I believe in a varied programme, with a major proportion of standard works. The essential feature is that what is done, whether it be foxtrot or symphony, must be well done."

RADIO RECEPTION IN NEW PLYMOUTH

EXPERIMENTS CONDUCTED

As tho' wearing the seven-league boots so renowned in nursery fairy tales, instead of moving in waves which are measured by metres, the radio energy from 2YA seems to jump over certain localities. Only a proportion of the power that was expected has been received. This has been the case in New Plymouth and it has been a source of great disappointment to listeners in that town who expected that 2YA would nearly "lift the roof." For the purpose of seeing and hearing for themselves, Mr. A. R. Harris (General Manager of the Radio Broadcasting Co. of New Zealand Ltd.), and Mr. J. M. Bingham (the company's chief engineer), accepted an invitation from the New Plymouth Radio Society to visit that place. They were most cordially welcomed and entertained and they conducted tests in several parts of the town. The members of the Radio Society could not do enough for the convenience of their guests and at a meeting on Monday night there was a general clearing of the air. The investigations by the company's experts was productive of much good in many ways. The report from the "Taranaki Daily News" of September 6, states:

Messrs. A. R. Harris (general manager of the company) and J. M. Bingham (chief engineer), who conducted a series of tests in New Plymouth during the week-end in an attempt to solve the trouble of fading, were the guests of the society last night, and by their answers to a number of questions satisfied most of their audience that the company was doing its best in the interests of the listeners-in.

As an outcome of preliminary investigations tests had been carried out over the week-end, said Mr. Harris, and while it had certainly been found that fading was a distinct disadvantage in Nortly Taranaki, yet Mr Bingham and the speaker had something definite to work on, and hoped to be able to effect an improvement. There had been hundreds of conflicting reports about fading, and it could not be said whether it was due to atmospherics or something else. Wellington, during the past week-end's tests, had been found to be no better than Auckland under normal conditions, and as an experiment the power was increased to 10,000 watts, or 20 times the power of Auckland. Still the results were no better. Some absorption seemed to exist somewhere The power undoubtedly went into the air quite steadily at Wellington, but where it went to after that he did not know.

Progress to Date.

Outlining the progress made to date, and the position as between broadcaster and receiver, Mr. Harris said that the company's contract was originally to instal four half-kilowatt stations the first two at Auckland and Christchurch, and the second two at Wellington and Dunedin. It had no obligations to carry on the old stations at Wellington and Dunedin, but did so. And in running a 24-hour service at Auckland and Christchurch instead of a 12-hour one it had to depend on voluntary talent. Sometimes the artists did not put in an appearance, and some times they did not give what the company wanted, so the matter of maintaining the standard of concerts was a difficult one.

The company had to take over the four old plants, realising at the same time that it would have to scrap them all. While the company was fully aware that "the programme is the thing of paramount importance," yet it was necessary that good studios and appointments should be provided, and at the same time the new stations had to be erected. It was subsequently decided to increase the power of Wellington considerably while they were on the job, and the constructional work at Auckland, Wellington, and Christchurch was now completed Owing to better plants and better organisation the programmes had recently been much improved.

Cost of Operating Station.

When making comparisons with the services in Australia and England, it had to be remembered that whereas England had 2,000,000 people to each station, and Australia a million, New Zealand had only a quarter of a million. In England the land lines were used for the purpose of duplicating the broadcasting of programmes, but this was out of the question in New Zealand as the land lines here would not transmit music. The only way to remedy this was to instal repeater stations, costing between £10,000 and £30,000 each, to provide four channels of different frequencies. It was satisfactory to know that, in spite of expectations to the contrary, it was now confidently anticipated that musical programmes from Wellington could be rebroadcast from Christchurch. The rebroadcasting of speech was not so difficult a matter. It was a question of the availability of the lines.

The Problem of Fading.

Mr. Bingham, dealing with the technical aspect of "fading," said that increases in the power at Wellington evidently did not effect an improvement in New Plymouth reception. It may be that Mount Egmont was the cause, and it may not. The theory of broadcasting was that one wave left the station and followed the surface of the earth, while a second, or "reflected" wave, travelled round the edge of the atmosphere. If the two waves synchronised in movement exactly, reception was satisfactory, but when the two waves did not synchronise fading and mushiness occurred. When receiving weak stations such as KGO ('Frisco) listeners-in often experienced fading, but no mushiness, owing to the fact that only one set of waves reached them. The only way to improve the position in New Plymouth seemed to be to alter the method of sending the power from the aerial in Wellington Experiments would be carried out on Thursday, Friday, and Saturday of this week, alterations being made on each of these days.

In reply to Mr J. S Lynch, Mr Harris said that in the event of the company being unable to effect an improvement with the present plant, by experiment, it could do nothing further for the present It had been suggested that Auckland's power might be increased, but the company would not do that, because from 75 to 80 per cent. of the power from Auckland was lost at sea. If the present schemes failed, the most practical alternative for Taranaki seemed to be the provision of a relay station in South Auckland.

Replies to Questions.

For some time Mr. Harris was bombarded with questions, in the course of answering which he said that the company could not at present consider starting broadcasting before 3 p.m. unless it were shown that the majority of listeners-in wanted this In spite of the contention of his questioner that the farmers wanted to listen-in between 2 and 3 p.m., he said that the peak hour for the farming community had been found to be 7.30 p.m., and for the city community 9.30 p.m. The company had offered the Education Department the period from 2 p.m. to 3 p.m. for the purpose of broadcasting lectures for school children. If the majority of the listeners indicated that they wanted the afternoon session to last from 2.30 to 4.30 instead of 3 to 5, no doubt the company would do this.

For several reasons the company intended to continue with its "silent" days. For one thing, city listeners wanted one day when they could receive outside stations without being swamped by their own station. Secondly, the staff were entitled to one day off a week.

Asked whether the company would experiment to reduce fading by alteration of the wave length, Mr Harris said that there was a limit to which the wave-length could be changed without overlapping other stations with the permitted band

"Is the company opposed to broadcasting by "free" stations such as Dr. leigh College, Auckland? and would the company welcome another meeting of the advisory board? were two written questions submitted. The first matter, said Mr Harris, had not been discussed by the company. In regard to the second, he might point out that in the company's contract there was no mention of an advisory board. He would not say that the advisory board did not do good, but it dealt only with minor considerations, and not with fundamentals. It all boiled down to a question of qualified men, who demanded high fees, and this in turn developed into a question of staff.

At the conclusion of the meeting, on the motion of the Mayor (Mr F. E. Wilson), who presided, a hearty vote of thanks to the visitors, was carried by acclamation.

MR. WILBUR DAVIES.

Mr. Wilbur Davies, of Welsh descent, possesses a fine baritone voice, full of quality and power. He renders his solos with fire and dash, inspiring them with a depth of meaning always found with the bards of his country. He is a newcomer to the Dominion, and listeners to 2YA will have an opportunity of being the first to hear him before the microphone on September 22.

DOMINION REVIEWED

The Rev. James Barr, M.P. in the British House of Commons, who has been touring New Zealand, has consented to give his impressions of the Dominion from 2YA on Thursday afternoon, September 15. This is the only time that can be arranged that is suitable for Mr. Barr, as his time is limited.

MR. MARCUSE'S EMPIRE BROADCAST

POOR RECEPTION IN NEW ZEALAND

At the time of going to press, reports of only poor reception have been received in connection with Mr. Gerald Marcuse's broadcast from London on September 11, at 5.15 to 7 p.m., New Zealand time. It may be mentioned that this was the first occasion on which exact times had been given for Mr. Marcuse's broadcast, and although he had been heard earlier, it had been more or less by accident.

With the notification of the time, amateurs in New Zealand were on the tiptoe of expectation, and took considerable pains to endeavour to satisfactorily receive 2NM. Mr. Clive Liddell, of Lyall Bay, Wellington, stood by throughout the time of the test and heard voices in rapid speech on 2NM's wave-length, but the exact words were not distinguishable. On the previous day, at approximately the same time, Mr. Liddell was in touch for an hour with 2NM, and heard Mr. Marcuse detailing the list of items to be given on the succeeding day's test, and also heard some gramophone selections. On the actual day, however, the conditions were by no means as satisfactory and reception was poor. The nearest approach to satisfactory reception was the interception of a message from Mr C D. Maclurcan, of Sydney, Australia, to 2OD London. This message was delivered very slowly and with many of the phrases repeated, and came through perfectly clearly. He said that 2NM started very well, but was later subject to a lot of interference, which was very bad there, especially on Sundays. Mr. Maclurcan's message continued: "2CM Maclurcan, Sydney, Australia, speaking. This station will be closing down from to-day for about 12 months. Some other amateur has been using the call sign of 2CM. If anybody hears this call sign in the next 9 or 12 months, would they oblige by sending a report to the radio inspectors? 2CM to 2OD, England, I hope to see you very shortly. Please reply now on the lower wave. I will not mention it It is impossible to work you on 32 This station is closing down for about 12 months."

Mr F W. Sellens, of Northland, reports that his reception of the Empire broadcast was also very poor. Before 5.30 p.m he could hear music very faintly, but Morse was coming in from everywhere, especially on 2NM's wavelengths. At 5.30 p.m. Mr. Sellens heard "Hullo — 2NM calling, first—from studio——." This was followed by an other voice apparently making a speech from that time till 6 p.m. Mr. Sellens heard nothing definite, but at 6 o'clock the call 2NM was again heard and "Just stand by." Nother further was heard till 6.10 p.m., although later attempts were made.

The station 2OD is owned and operated by Mr. E J. Simmonds, F.R.S.A., M.I.R.E., the enthusiastic English amateur, who has done a great amount of pioneer work on short-wave, and who was amongst the first few in England to get into direct communication with the antipodes.

A SHORT-WAVE ENTHUSIAST

Mr. F. W. Sellens, of Northland, Wellington, is a good illustration of the enthusiasm that is permeating the ranks of amateurs in relation to short-wave work. As a listener of some four years' standing he determined, when the possibility of London was first mooted seriously some six months or so ago, to "get in on this," and after making a number of judicious inquiries, set to work to build his own set. He completed this on May 1 this year, and the very first afternoon he went searching was successful in getting 5GC Adelaide on 31 metres. As a matter of fact, Mr. Sellens at the moment was trying for UTXAF on 32 metres. He did not get that station, but picked up the amateur in Adelaide, which, having regard to the transmission, was really a greater feat Since that time Mr. Sellens has compiled quite a respectable little list of short-wave stations on his log, and this is given for the sake of others who may be interested in the wave-lengths used by the stations.

	Metres.
Europe.	
PCJJ (Eindhoven, Holand)	30.2
4AC (Belgium)	30 (about)
2NM (Gerald Marcuse)	33
Asia.	
RFN (Siberia)	50 & 60
America.	
WLW (Cincinatti, Ohio)	52.2
UXAF (Schenectady, New York)	32.79
UTXAD (Schenectady, New York)	21
KDKA (East Pittsburg)	63

(Also heard on about 26 metres.)

Australia.

5GC (Adelaide)	31
3LO (Melbourne)	29.8
2AJ (Rangiora)	36 (approx.)
2AU (Rangiora)	35
2XD	34
— (unidentified)	60

(Songs and instrumental items heard in a foreign language.)

Mr. Sellens has been particularly interested in the broadcasting work of station PCJJ, and has made the practice of forwarding full reports of the quality of the reception to that station. This has meant a good deal of early rising for Mr. Sellens, as Holland works at the equivalent of approximately 5.30 a.m. to 7, New Zealand time. The reception is sometimes very good, giving fair loud-speaker strength; at other times only weak 'phone strength.

A word of advice to enthusiasts now taking up short-wave work was given by Mr. Sellens. This was that they must not expect too much at first. To secure distant stations on short wave required the operator to have a pretty full knowledge of his set and the best means of handling it. The conditions varied so much that the results secured on one occasion could not always be repeated, and this might lead those who had entered the field to lose heart and blame their sets or the makers thereof. Short-wave reception was opening up a tremendous field, in which, of course, a great deal remained to be learned, and those exploring this field had to realise that patience and knowledge was demanded of them

NEXT WEEK'S SPORTING

Monday, Sept. 19—Cricket talk, "Do we know the Immortal W.G."?—3YA, 8.47 p.m.

Thursday, Sept. 22—Dempsey-Tunney fight. (If any results can be received from the shortwave broadcast due to begin about 2.30 p.m., they will be announced.

Saturday, Sept. 24—All Black Trial—1YA.

Saturday, Sept. 24—All Black Trial—4YA.

CANADA'S CELEBRATIONS

The jubilee celebration for the Confederation of Canada was broadcast world-wide by radio. Trade Commissioner Lynn W. Meekins, at Ottawa, recently reported to the Department of Commerce.

A network of circuits was arranged in Canada from the Atlantic to the Pacific, involving twenty broadcasting stations, with Ottawa as a centre. About 21,650 miles of telegraph and telephone lines were used, and also fifty-three repeaters for amplification at a distance of about 200 miles. Equipment, lines, and apparatus cost 3,000,000 dollars (£600,000).

The broadcast was sent overseas by high power, short-wave transmission from the Canadian Marconi station at Drummondville, Quebec, on a wavelength of 26.18 metres The wavelength from Ottawa was 431.5.

Have you noticed the difference in style between the "goodnight" of the announcers at 2BL, Sydney, and 2FC, Sydney. George Saunders, the cheerful, buoyant official at 2BL, calls out a prolonged "Go-o-o-o-d night. Now bunky-doo everybody!" The more sedate gentleman at 2FC, says "Good night everyone," then a pause and a solemn "Sleep well."

DATA ON RADIO TIME SIGNALS

The Dominion Observatory has received the following information on radio time signals:—

FRANCE.

French radio time signals are now transmitted in accordance with the systems adopted at the meeting of the International Time Commission, held at Cambridge, England, in July, 1925.

The signals are sent from the standard clock at the Paris Observatory in accordance with the following table:—

G.M.T. h	m	Station.	Call.	Frequency kilocycles.	Wave length metres.	Kind.
08	00	Paris, Eiffel Tower	FL	113	2650	Spark
08	00	Paris, Eiffel Tower	FL	9038	32	C.W.
08	00	Bordeaux	LY	15.85	18940	C.W.
09	30	Paris, Eiffel Tower	FL	113	2650	Spark
20	00	Paris, Eiffel Tower	FL	113	2650	Spark
20	00	Paris, Eiffel Tower	FL	9038	32	C.W.
20	00	Bordeaux	LY	15.85	18940	C.W.
22	45	Paris, Eiffel Tower	FL	113	2650	Spark

As soon as the time signals are sent at 08h and 20h the (usually very small) correction to the signals sent on the previous day is sent in the morse code.

Of these signals the short wave 32-metre and the long wave 18,940-metre are regularly received in New Zealand.

GREAT BRITAIN.

The Admiralty, with the co-operation of the Board of Trade, has arranged with the Post Office for the distribution of time signals from the wireless station at Rugby. The signals will be sent at 10h and 18h, G.M.T.

This service is expected to be in operation before the end of 1927.

G.M.T. h	m	Station.	Call.	Frequency kilocycles.	Wavelength metres.	Kind.
10	00	Rugby Radio	GBR	16	18740	C.W.
18	00	Rugby Radio	GBR	16	18740	C.W.

GERMANY.

The time signals from Nauen are received regularly in Wellington, chiefly 0h, G.M.T.

G.M.T. h	m	Station.	Call.	Frequency kilocycles.	Wavelength metres.	Kind.
00	00	Nauen	POZ	16.6	18075	C.W.
12	00	Nauen	POZ	16.6	18075	C.W.

JAVA.

The time signal from Malabar is heard regularly in Wellington.

G.M.T. h	m	Station.	Call.	Frequency kilocycles.	Wavelength metres.	Kind.
01	00	Malabar	PKK	19.2	15600	C.W.

HAWAIIAN ISLANDS.

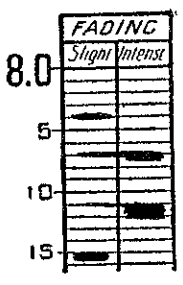
The time signal from Honolulu is heard regularly in Wellington.

G.M.T. h	m	Station.	Call.	Frequency kilocycles.	Wavelength metres.	Kind.
00	00	Honolulu	NPM	26.1	11490	C.W.

Combined Fading Investigation Fixed For Sept. 26 and 27

The combined fading investigation, in which we ask the co-operation of our readers, has been arranged to take place on September 26 and 27. The first day is Auckland's silent day, so that on that evening North Island listeners will be able to concentrate upon 2YA without difficulty. The report to be used is set out at the foot of this article, and readers who are taking part in the investigation are invited to kindly clip that coupon and fill in the necessary data, which is arranged to facilitate the rapidly sorting of the reports into the provinces and districts principally concerned. This schedule covers only the actual fading, and readers are invited to make supplementary reports of as full a nature as they can.

Here is an example of how the actual fading record should be made. This example shows that at 8.4 there was a slight fade of slight duration, which was followed three minutes later by an intense fade lasting about half a minute, and at 8.11 another intense lapse occurred for about a minute. At 8.15 a slight fade lasted for over half a minute. Use a soft pencil, so that the marks will show distinctly.



The definition of slight fading and intense fading may be given as follows:—For the purpose of this test, the fading will be considered slight if a considerable weakening is noticed, but it is still possible to hear music or speech, by listening more definitely, by the same reproducer, whether 'phone or speaker, without any alteration in tuning. As soon as the items cannot be distinguished, then the fading is to be classed as intense, and noted accordingly.

The reports will be of most value if the listener tunes his set to the station, and then does not interfere with it throughout the period of the test, except so far as may be necessary in accordance with the paragraph above.

Listeners are requested to write plainly in their reports. We are specially interested in getting records from isolated sets, and where the nearest valve set is a mile or more away, the fact should be noted and the approximate distance given. If barometer readings can be given as well, they would be acceptable, and a brief indication of the nature of the weather—whether electrical or calm and settled, etc.

An address on fading from the technical aspect will be given from 2YA shortly after 8 o'clock.

As timing is an essential feature of the investigation, listeners are requested to set their watches carefully by the station time, which will be given at 8 o'clock, and, as far as is possible in relation to the items being broadcast, at quarter-hour intervals thereafter. Accurate reading of various meters on the station will be logged throughout the evening, and these will be available for analysis later.

Considerable interest is being displayed in this dual test, and we have already received advices from a number of isolated listeners that they will be giving their assistance. We would like to thank in advance all those who will be taking part, and wish to assure them that their co-operation will be keenly appreciated. We hope that the result will be the establishment of some facts of interest to both listeners and the operating officials. If it is not possible for a listener to give records for the full two hours on both evenings involved in the test, we would be glad to have an accurate record for even one hour. Reports are desired not only from distant listeners, but also from those at the nearest point to the station from which fading is noticeable. Even crystal users can render valuable help on this occasion. Should any desire extra charts, we will be glad to supply same on request. Prompt dispatch, after the investigation, of the reports will be appreciated. They should be addressed to "Fading," P.O. Box 1032, Wellington."

FADING REPORT, SEPTEMBER 26

Province .....

Name .....

Address .....

Crystal, or how many valves?

Will isolated sets please state approximate distance from nearest valve set—a mile or more.

FADING REPORT, SEPTEMBER 27

Province .....

Name .....

Address .....

Crystal, or how many valves?

Will isolated sets please state approximate distance from nearest valve set—a mile or more.

From the Woman's Point of View.

By VERITY.

ELECTRICITY IN THE HOME

"In building new homes where electricity is available it is the exception for anyone to install any other method of illumination," said Mrs. Barrington in her little heart-to-heart talks from 2YA recently, "yet it is surprising how many people still fail to recognise the fact that the more generalised the use of electricity for all houshold purposes, the greater the comfort and well-being of the country as a whole. Life has been very hard for so many women, that it is just fine to know that all the wearying disagreeable part of that everlasting preparing of meals, the daily round of sweeping and cleaning, the drudgery of the weekly wash, can now become a pleasant hobby."

It is rather lamentable at times to hear the wrong notions people entertain about electricity. A new home is being planned, and perhaps someone says, "Are you going to install an electric range?" "Oh! no," is so often the answer, "We are only working people, we cannot afford luxuries of that sort." It has never occurred to them to thoroughly go into the matter. A good electric range can be installed at practically the same cost as a small coal range, including the chimney mantle and tiles. An electric range can be set down in any suitable corner, as one would a piece of furniture. Apart from the tubing with the wires, which are attached to the wall, it remains to all intents an exceedingly attractive and useful piece of furniture. Some prepare a place for the range by tiling the floor, and sometimes the surrounding wall, but this, though very nice, is not in the least necessary.

Another reason commonly given, is that sometimes the power fails for a while. As large business premises and whole cities can be run with perfect success, it is reasonable to expect the average home can do likewise. There are occasions when the power may be cut off for a short while, especially in districts where wiring is in progress. If in the middle of cooking, the consequences are not so drastic as one not accustomed to electric ranges may suppose, as a good range is made to hold the heat for an astonishing length of time, and ten or twenty minutes is about the limit of time, in which the power is liable to be off. The inconvenience likely to occur only very occasionally, is surely a trifling matter when compared with all the other advantages to be enjoyed every day in the week.

Running Expenses.

Yet another matter which bothers many people unaccustomed to electric ranges, is the possible running expenses. Apart from the few isolated cases where people run up enormous bills for which there must always be some definite reason, a whole household can be run electrically at so astonishingly low a figure, many people find it very hard to accept the fact as first told them. It does not matter what you have been accoustomed to use as fuel, where money has to be spent, electricity can, and should, and does prove far more economical than anything else.

One of the blessings of cooking by electricity is, you always know just where you are. As a lady said to me the other day, "When you set the switches to maintain a certain heat, it stays put." And I think that most aptly expresses it.

Diverse Opinions.

It is surprising how divided a household will often be on this important matter. I find the foregoing opinions mostly expressed by the menfolk. Maybe because the cleaning of filthy coal ranges does not, as a rule, concern them. Where the housewife is dead against an electric range, it is quite often because she is absolutely afraid of it. I had one lady tell me, that when the electricians had completed their work, and lert her alone with the mysterious thing, she felt absolutely sick with terror! Electric ranges are so definitely calculated to be a joy and delight to any woman, it seems such a pity that anyone should allow this reason to deter them from installing one in the home.

"Another point is speed. Though an electric range is undoubtedly much quicker than any fuel stove in heating, because it is a little slower than gas in some instances, the whole proposition may be thrust aside The first heating of the top elements takes, say, two minutes, but once thoroughly hot, one thing after another can be brought to the boil as quickly as can be desired by any reasonable person. Mrs Barrington gave detailed instructions as to the use and management of electric ranges.

The Washing Machine.

"One of the electric household appliances which interests me most as an extreme labour saver is the washing machine. Hard as it sometimes is to educate people to the use of electric ranges, it is much harder to get people to credit what a washing machine means in the home. They simply make the erstwhile laborious washing day non existant if you wish. There is no need to ever keep soiled cloths about. With a good washing machine there is no wear and tear of even the most delicate fabrics during the washing process. It is so simple a matter to run some hot water into the machine add a little soap, pop the clothes in and set the machine in motion You come back in five minutes, or thereabouts, and the clothes are perfectly clean and only require rinsing.

It is not generally understood that there is no necessity whatever to boil white clothes when an electric washing machine in used. Your sheets, etc., will always remain snowy white, and you will be proud to put them on the line. For flannels and blankets, they are out on their own. As long as a good supply of hot water is available you are set indeed.

MRS. BARRINGTON.

—S. P. Andrew, photo.

"I have seen some of the most modern homes with the machine installed in the bathroom or in the kitchenette. It only means a heating point on the wall, a hot water tap handy, and means for the water to run away from the machine. By doing away with the laundry, when building a new home, and purchasing the washing machine, a saving of just on £40 or more is made. This aspect of the business does not occur to many people.

The Comfort of a Radiator.

"Another thing I would like to mention is the radiator. These are well-known and widely used, and most people are familiar with the comfort and convenience they bring in their train. However, it will do no harm to stress the fact, of their especial merits in cases of sickness, and where people are studying a good deal When it is desirable to keep one's wits alert and spend long hours in mental exertion, heat engendered by electricity is in no wise enervating. Electrical heat does not interfere with the oxygen in the air, and so has not the tendency to make one drowsy and heavy This fact is well worth remembering."

This week Mrs. Barrington will have something to say about vacuum cleaners, and the installation of the electric water heating system in the home. The latter should be especially interesting and instructive; and, as there is considerable diversity of opinion on this matter, Mrs. Barrington has spared herself no pains in collecting thoroughly reliable information with the idea of clearing up some ponts for those who are interested but still undecided. We are looking forward to receiving enlightenment on the various problems that always present themselves when considering new installations.

COOKERY NOTES

Nearly everyone finds frying more or less difficult. To be able to send food to the table fried a beautiful "golden brown" is an accomplishment, the attainment of which needs both skill and practice. Miss Christian's advice and hints on "Frying," heard last week from 2YA, will, I feel sure, be much appreciated in all quarters. Some general rules to remember were:

1. For deep frying have the fat deep enough to cover food.
2. Fat must be right temperature. Wait until a blue smoke arises before dropping food in.
3. Food must be tender and of even thickness.
4. For shallow frying food should be coated with flour or oatmeal; for deep frying with egg and breadcrumbs or batter.
5. Serve very hot and free from grease.

RECIPES.

The following are a few recipes given over the air by our authorities on cooking last week. Some of our listeners may like to have a permanent record of them.

Fish Balls.

½lb. cold cooked fish, ½ teaspoon anchovy essence, 1 teaspoon chopped parsley, 2 tablespoons breadcrumbs, 1 egg, 6 oz. mashed potatoes, 2 tablespoons cold sauce, pepper and salt.

Mash potatoes flake fish and remove all bones and skin. Put potatoes and fish into a bowl and mix with the sauce, pepper, salt and parsley Make into balls, brush with egg, toss into breadcrumbs, and fry in pan of hot fat.

Dough Nuts.

1lb. flour, 2 oz. butter, 2 teaspoons baking powder, 2 eggs, 6oz. sugar, ½ pint milk, pan of fat for frying.

Put the flour and 2 oz. sugar into a bowl, rub in the butter, add baking powder, and mix to a moist paste with eggs and milk, roll out to a quarter of an inch in thickness, cut into rounds with a plain cutter, remove centres with a smaller cutter, fry in deep fat a golden brown, toss in sugar, and serve either hot or cold.

Small Ginger Bread.

½lb. flour, 2 oz. brown sugar, 3 oz. golden syrup, ½ teaspoon salt, 3 oz. butter, ½ teaspoon carbonate of soda.

Put flour, salt, sugar, ginger and carbonate into a bowl, rub in butter and mix to a stiff paste with melted golden syrup. Roll out and cut into rounds. Bake in a slow oven.

Molasses Cake.

A large tin, 10in. x 12in. and nearly 3in. deep is required Prepare your tin first. Then thoroughly sift together 3 cups of flour, 1½ teaspoon baking powder, 1 teaspoon cinnamon, and ginger to taste, and stand on one side. Next cream together one cup of sugar and one cup of melted lard or butter Lard does quite well and is more economical Then add 3 eggs. The mixture jellifies when you add the eggs to the melted ingredients. Next add a cup of treacle or golden syrup. Stir in the sifted flour thoroughly. Lastly add one cup of absolutely boiling water. The mixture is very thin when ready for the oven Time according to the depth of the tin, half an hour to three-quarters of an hour.

AMONG OUR LISTENERS

"Since the afternoon sessions from 2YA, my wife has been very pleased and listens with interest to the lectures on fashions and cooking. This is a great boon to the ladies, and I am sure is meeting with the success it deserves."—W.P.R., Wanganui.

"We all look forward to the band concerts, and think the Monday programme from Christchurch is a favourite with most listeners, as a band appeals to most people. We are the only people in Hoanga to have a radio, but now that my son has had such success with his crystal others may follow. I often say that the radio gives me greater pleasure than any other thing during the whole fifteen years that I have been in New Zealand We receive Wellington and Christchurch splendidly on four valves, much better than we get Auckland "—P.L.M., Hoanga.

"The subjects of interest to women are vast and varied, embracing almost if not every calling, and I feel sure women's sphere is going to be even broader with the advent of the wonder of the ages—radio."—G.H., Kilbirnie.

"I wish to make a little suggestion for our afternoons with radio, that we might hear more of the children singing. If you could only have a peep at a lonely old man just for the half-hour on Sunday evening with his two-valve set it would bring tears to your eyes."—A.B., St. Martin's.

Imperial Conference

The second portion of the lecture upon the Imperial Conference was given by the Editor-Announcer on Friday evening last, the subject of defence being mainly dealt with.

On the subject of foreign affairs and defence, the conference had the advantage of hearing a full exposition of existing conditions by the Secretary of State for Foreign Affairs and by the authorities of the Navy, the Army, and the Air Force Foreign affairs and defence are allied subjects—the provision to be made for defence depends on the international position at the time, while on the other hand the policy of the Empire in foreign affairs is similarly affected by its existing means of defence It was understood at the conference that, notwithstanding the equality of the Dominions with Great Britain, the major share of the responsibility, in the twin domains of foreign affairs and defence, must necessarily remain at the present stage with His Majesty's Government in Great Britain In order to ensure that the actions in this connection of that Government may meet with the approval of His Majesty's Governments in the Dominions, every possible step is taken to consult with Dominion Governments, and to keep them up-to-date in all material developments, but on the cardinal principle of British policy there is no difference of opinion between any of the Governments of the Empire That principle is the maintenance of peace—the British Commonwealth desires nothing beyond this, and the whole of its efforts are directed to that end Its foreign policy is conducted openly and publicly insofar as this can be done in the present state of the world, and all the Governments represented at the conference were firm in their support of this attitude wherever practicable From the point of view of foreign policy, and from the point of view of defence, it was made abundantly clear that whatever may be the status or the powers of the Governments forming the Empire, on these objects the Empire speaks with one voice

Technical Arms Reviewed.

The Dominion delegations were shown the latest developments in the Navy, the Army, and the Air Force Each branch arranged a display of great interest To observe the work of the Navy the delegations were taken to sea from Portland by the battle-cruiser Revenge," where they witnessed realistic demonstrations of the progress that is being made in the senior service. Aeroplanes, submarines, and destroyers, using guns, torpedoes, smoke screens, mines, and depth charges, were seen in action, and manoeuvres and firing at great range by the battle fleet demonstrated the efficiency of the latest implements of war. The military authorities staged at Camberley an impressive demonstration of the movement towards the mechanisation of the Army. On a most difficult day, deluged with rain all kinds of vehicles, from the [illegible] to the latest monsters, from [illegible] tors to one-man "crabs," filed past in feet of mud without a hitch or delay, and subsequently staged manoeuvres and a mimic battle, assisted by aeroplanes, to show the part that the mechanised army may be expected to play in the future The Air Force at Croydon provided a thrilling demonstration of the almost impossible things that may be done in the air Not the least interesting feature of this day was the almost insignificant machine in which Sir Alan Cobham had just completed his flight to Australia and back

One result of the deliberations of the conference on defence was the decision of the New Zealand Government, referred to in the preceding lecturette, to lay before Parliament a proposal to grant a subsidy of £1,000,000 towards the construction of the naval base at Singapore.

Communications.

Very full consideration was given to the question of communications between the different parts of the Empire. The easier it is to communicate from one part to another, and the shorter the time necessary to proceed from one part to another, the more opportunity will be afforded for personal discussion on any point at issue, and consequently the smaller the possibility of misunderstanding or disagreement. The success of the 1926 conference in removing all misunderstandings by the solvent of personal discussion, brought the importance of communications more clearly to the front. Every aspect of the subject was debated at length—shipping, cables, wireless telegraphy, the aeroplane, and the airship each received its share of attention, and the possibilities were recognised of future developments in the air of great Imperial significance. As a first means of drawing the Empire closer together in point of time, the two new airships that are now in course of construction are expected to prove of material assistance, and a party of experts from Great Britain are now in New Zealand in order to assist in the selection of a suitable base for an airship mast and the necessary terminal facilities to enable these ships to add this country to their route. It need not be stressed how greatly inter-Empire communication would be facilitated if it were found possible, as experts assert that it will, to reduce the time required to travel from Great Britain to New Zealand from some five weeks to ten or twelve days. A future lecturette will deal more fully with the question of Imperial communications.

The subject of inter-Imperial trade was one of the most important on the agenda, and it received long and detailed consideration. It was the unanimous opinion of the conference that everything possible should be done to encourage trade within the Empire, and although any increase in this trade must in the last resort depend upon the efforts and good-will of the traders and the people themselves, it was felt that in many directions assistance could be rendered by the Governments concerned The very large part played by trade in bringing the peoples of the Empire into closer touch, and in assisting to create that understanding of different viewpoints and different conditions that is so desirable, was explicitly recognised, and steps were resolved upon to bring this point of view clearly before the peoples of all the countries concerned. From the material aspect it was recognised that trading within the Empire adds to the general prosperity all round, and helps to avoid real difficulties relating to exchange and to reduce the possibility of foreign entanglements.

Allied with the question of trade is that of migration. The population of the Empire at present is not distributed to the best advantage. On the one hand we see in Great Britain a large number of people unable to obtain employment, while on the other hand, in many of the great Dominions, there are vast stretches of country not yet fully developed. The unemployment difficulty in Great Britain seems to be steadily decreasing, but the problem of how best to transfer the surplus population of the Old Country, so as to bring into effective production the unused areas in the Dominions, is one calling for earnest consideration. The subject was discussed at length by a committee of the conference, and, while no novel or dramatic step was found to be possible, the result of the committee's deliberations will be to facilitate in many directions the desired movement of population.

Value of Publicity.

Another very important subject debated was that of kinematograph films. The members of the conference were unanimous in recognising the desirability of arranging for the exhibition of a greater proportion of British films. Throughout the Empire the present position appears to be that the American film practically dominates the market, and that British people, by means of this new and extremely popular method of entertainment, are being gradually educated to foreign ideals and foreign customs. It was felt that this cannot be allowed to continue indefinitely, and that the welfare of the nation demands that the younger generation should not be confined to the lessons and the examples of foreign films, but should have the opportunity of seeing on the screen British films conveying British ideas and British customs. How best to achieve this end is a difficult question, but a Bill for the purpose has already been introduced in the British House of Commons, and the New Zealand Government are considering the introduction of a somewhat similar measure

The question of research was considered by an expert committee, which produced a most valuable report, recommending, among other things, the establishment of a considered scheme of co-operation and uniformity in this subject throughout the Empire. Pointed attention was called to the fact that if the Empire is to hold its own in the period of active competition that is anticipated in the future, it must rely more and more upon the application of science to increase its production or decrease its costs Even in a small country such as New Zealand the potential possibilities of scientific research cannot be over-estimated It should be recognised by all that, as a community, we in New Zealand exist by the sale of our raw products—our wool, dairy produce, meat, fruit, etc.—and that, in practically all these articles, the competition in the future is likely to be more severe than in the past. If we are to maintain our present position we must, so to speak, attempt to make two blades of wheat grow where one grew before—to produce more goods at the same cost, or the same quantity at a lesser cost. Science is already grappling with these problems, and the conference has pointed out the significance of the subject to the Empire, and the necessity of our keeping pace with the world.

The Spirit of the Conference.

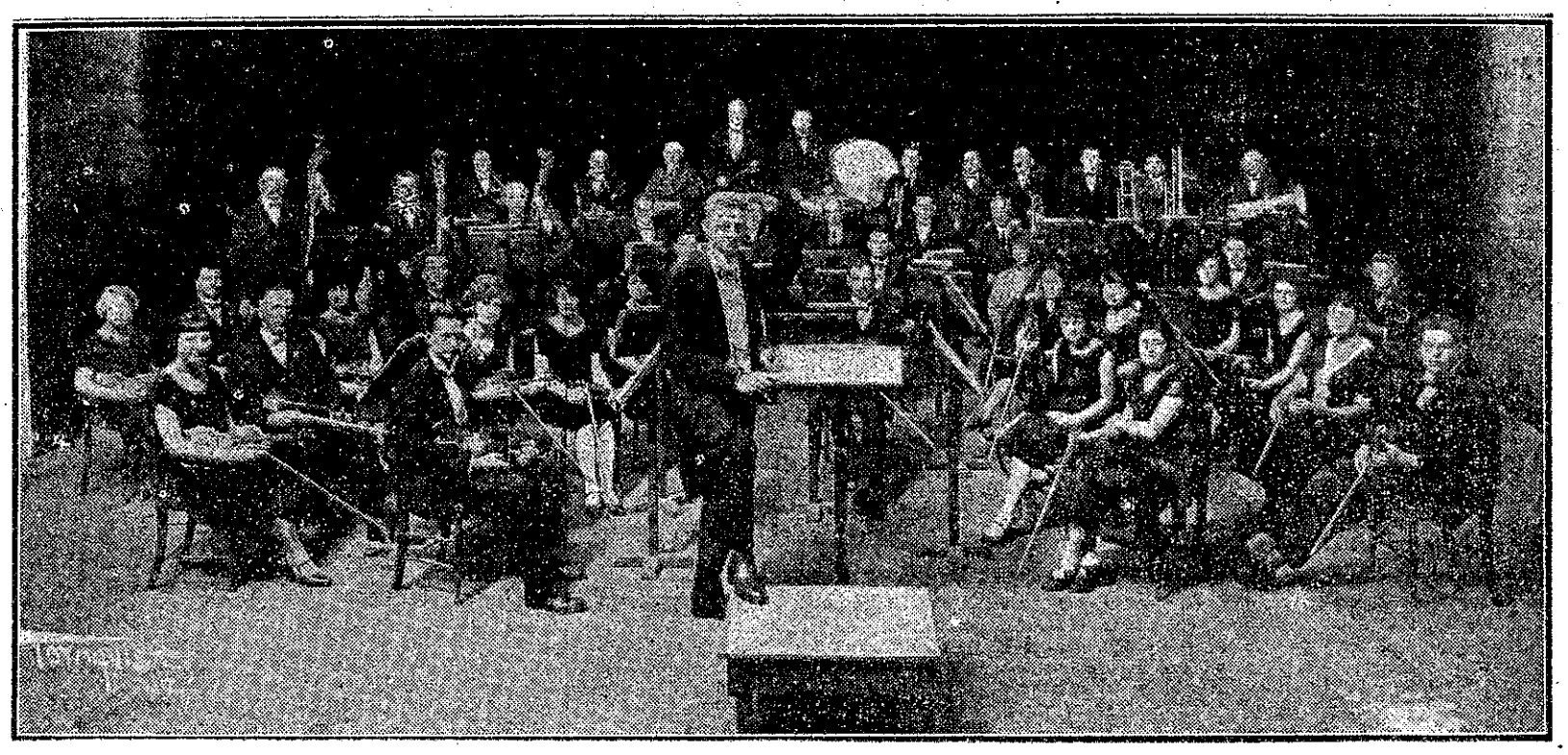
The outstanding result of this conference was not the work done, but the spirit in which the work was approached and in which it was completed. When it is remembered that the conference consisted of representatives from all parts of the world, speaking for people in all stages of development, of different races, of different histories, and with different conditions of life, the existence of varying points of view is inevitable, and the fact that it was possible to arrive at unanimous conclusions on so many delicate and difficult subjects must be regarded as remarkable. One thing, and one alone, enabled this unanimity to be achieved, and that is good-will. Every individual representative quite obviously arrived at the conference with a determination to consider fully any point of view that might differ from his own: with a sympathy for countries other than his own, and for their individual problems; and with an intention to sink any individual and selfish interests for the good of a common whole. While this spirit of good-will exists there is no season to fear for the continued existence of the British Commonwealth of Nations.

After all, the forces that bind us together are stronger than any force that might tend to drive us apart. From the material point of view of self-protection, we are obviously stronger together than we are apart Covering all portions of the world, and producing raw materials of practically every kind required by civilisation, we are in an excellent position to combine the producing potentialities of the Dominions with the manufacturing powers of the Old Country, and to exist, to some extent, in an economic system, undisturbed by the fluctuations and possible dissensions of the outside world From the most selfish point of view there are very real advantages in maintaining our association.

But the strongest and most enduring ties of all are, of course, those of sentiment, of sympathy, and of mutual understanding, and there can be no more powerful instrument for strengthening and perpetuating these ties than the full personal discussions of the Imperial Conference.

Some Features of Next Week's Programmes

Star Night By Auckland Aeolian Orchertra 1YA Sept. 22



—Tornquist, photo.

The Aeolian Orchestra who will be heard from 1YA on September 22. The conductor, Mr. Edgar Webb, has one foot on the dais and the leader, Mr. W. Price, is on his right.

The whole of the evening's entertainment on Thursday at 1YA will be given by the Aeolian Orchestra, one of the city's leading amateur musical organisations. This will be the second radio concert given by this orchestra, a magnificent performance having been broadcast last month.

The concert on Thursday should be equally good—in fact, better, if possible. The soloists will be Miss Phyllis Gribben and Mr. Fred Baker. Miss Gribben, the well-known contralto, of St. Andrews' quartet, will sing "The Lost Chord," with full orchestral accompaniment. Mr. Fred. Baker is a regular and consistent singer at 1YA. He is down for three songs. The orchestra, 53 strong, is under the baton of Mr. Edgar Webb, a conductor of extensive English and colonial orchestral experience.

For the information of listeners, the following notes on the orchestral numbers are given:—

"Entry of the Gladiators."

This triumphal march by Fucik is majestic and stirring, with many chromatic runs for the higher instruments.

"Poet and Peasant."

Franz von Suppe (1819-1895), who composed this overture, was a famous Dalmatian conductor and composer. "Poet and Peasant" is probably his most popular number. Commencing with the slow and stately brass opening, it soon leads into the beautiful cello solo with string pizzicato accompaniment. Then comes a fast brilliant movement, which in turn gives way to the well-known Allegretto waltz theme. The overture ends in a fast number with all instruments fortissimo.

Entr'acte No. 2 from "Rosamunde."

Franz Schubert (1797-1828) was one of the world's greatest composers, his range covering chamber music, orchestral numbers, church music, dramatic works, piano sonatas, and songs. Entr'acte No. 2 is a hauntingly beautiful number, with the melody alternately taken by strings and woodwind.

"Blue Danube."

"An der schonen blauen Donau," or "Beautiful Danube," is probably the best known waltz in the world, and was written by Johann Strauss, who died in 1899.

"Turkish Patrol."

The "Turkish Patrol" has been deservedly popular for many years. It represents the approach, the passing, and the departure of a Turkish patrol, and therefore it commences softly, gradually reaches a fortissimo, and as gradually fades away again to a mere whisper.

"Coppelia."

Leo. B. Delibes (1836-1891) stands in the forefront of French composers in his own sphere—ballet suites. His best known suites are "Coppelia" and "Sylvia." Coppelia ballet contains some very fascinating themes of varied character and tempo—allegros, mazurkas, waltzes and andantes, with solos for various instruments in turn.

Haydn's Symphony No. 6, The "Surprise."

Haydn was the most distinguished of Austrian composers, and his symphonies are of the straight-forward classical school, with a distinct melody. The "Surprise" symphony consists of four movements, two of which will be played by the Orchestra.

"Valse des Fleurs."

This waltz is from the celebrated Nutcracker (Caisse-Noisette) ballet, composed in 1892, a year before Tschaikowsky's death. The waltz is varied both in tempo and character, and various instruments take the solo parts in turn—first violins and clarinets alternatively, then cellos and violas with running string accompaniment in quavers, then flutes and clarinets, and lastly the full orchestra playing fortissimo

"A Dervish Chorus."

This "Oriental scene," as the composer (Sebek) calls it, represents various phases of desert life, including weird supplications to Allah, and the wild excited cries of Arabs in the bazaar and market-place. The former phase, which both opens and closes the piece, is taken by solo cornet, with string accompaniment.

"The Merchant of Venice."

Frederick Rosse, the noted English composer, has given us some beautiful incidental music to Shakespeare's play, reminding us somewhat of Edward German's Shakespearian incidental music. There are five numbers in the piece, three of which are being played by this orchestra. No. 1 **Prelude I.** A stately number of great beauty. No. 2 **Intermezzo "Portia."** A string and wood-wind number in slow time. No. 3 **Doge's March.** An impressive triumphal march, with a distinctly Eastern atmosphere.

THE WEEK AT 1YA

1YA studio will be handed over to Mr. Peter Black and his party on Tuesday evening. They will even do their own announcing. The programme will consist of vocal quartets, choruses, and solos, with instrumental trios and solos.

The instrumental trio will consist of Miss Ruby Brame, Miss Marion McMurtrie and Mr. Peter Black. This combination won first prize at the recent Auckland Competitions Society's annual festival. Messrs. Littler and Parrow, vocalists in Mr. Black's party, won the vocal duet section.

Mr. J. W. Hayden, who is to speak at 1YA on Tuesday on "The Progress and Development of Hydro-Electric Power in the Dominion," is chairman of the Waitemata Electric Power Board. He was intimately connected with the installation of the New Plymouth Borough Council hydro-electric scheme, and he has recently been on a visit to Arapuni. A very interesting talk should result.

Mr. Norman Watson, violin soloist with the Aeolian Orchestra, and well known by radio and on the concert platform, is to play at 1YA on Wednesday.

The captivating "Floral Dance" will be one of three very popular items to be sung by Mr. Clinton Williams at 1YA on Wednesday. Mr. Williams is a bass baritone singer of outstanding ability.

Whistling and bird mimicry will constitute a novelty item at 1YA on Wednesday. The talented artist will be Mr. Reg. Bell

Miss Berta Carr, mezzo-soprano, who will be introduced to 1YA listeners on Friday evening, is well known locally on the concert platform, and her rendering of "Spring Waters," by Rachmaninoff, will be something completely out of the ordinary.

A pianiste who will be heard for the first time from 1YA will be Miss Maida Hooker, who will play on Tuesday evening. She is a student of the Matthay School of Music, and is an Associate of the Royal College of Music. Miss Hooker spent a considerable period in the Old Country studying the latest methods, and will contrast the older school of composers in Schumann's "Whims" or "Grillen" with Debussy's modern style in "Gardens in the Rain."

Mr. Barry Coney, who is to sing again at 1YA on Friday, has been engaged by the Wellington Choral Society to take the part of "Amanasro" in the performance of "Aida" in the Empire City.

"The reason why your motor knocks" will be "Gargoyle's" subject at 1YA on Friday, at 7.30

Mr. and Mrs. W. Leather, whose voices have been heard from Pitt Street Church as well as from 1YA studio, are singing on Saturday evening. The well known "Fishermen of England" will be given by Mr. James Hutton.

2YA'S FEATURES

Artists from Wanganui will provide the concert at 2YA on Monday evening. It is doubtful if a more brilliant combination could be got together on any concert platform. All have won Dominion-wide honours in competitions and should broadcast well. Madame Lillian Spillane, who heads the Wanganui talent, is a very successful teacher of singing. She and her husband are vocalists of outstanding merit, and both take part in any amateur theatrical enterprise (dramatic, comedy, or musical opera). They are leading entertainers in New Zealand's fifth city.

A further instalment of Mr. Gordon Burt's story of the British Arctic Expedition, 1925, will be given at 2YA on Tuesday.

The ladies are being well catered for in the afternoon sessions. Talks on electricity in the home, gas cooking, and fashions are now current, and a series on gardening will shortly be added.

Miss Joan Lowry, who is to sing at 2YA on Tuesday, comes from Otaki. She is a very sweet singer. At Christchurch she won a championship as soprano vocalist.

Miss Mavis Castle, a member of the well-known family of singers, will also be heard on Tuesday. She has a mezzo-soprano voice of very pleasing quality. Also singing on Tuesday is Mr. Geo. Wilkinson, a newcomer to radio. He has a good baritone voice. Miss Lilla Hill, 'cellist, is making her second appearance. She is associated with the city's leading orchestral organisations. Mr. Arthur Coe, tenor, is soloist for the Commercial Travellers' Choir, Harmonic Society, and Orpheus Society, as well as being a member of the talented Aeolian Male Quartet.

The Aeolian Male Voice Quartet, comprising Mr. B. Mayall (first tenor), Mr. A. Coe (second tenor), Mr. W. Church (first bass), and Mr. D. Hall (second bass) is a combination well known to Wellington audiences. They have appeared with marked success on concert platforms, notably in association with the Commercial Travellers' Choir, and are recognised as one of the leading quartets in Wellington.

On Thursday the band of the 1st Battalion, Wellington Regiment, will provide the bulk of the programme. Amongst individual performers, Mr. Wilbur Davies, baritone, is new to radio. On audition he proved himself a very pleasing singer. Miss Ethel Wells, contralto, is the possessor of a well modulated voice of good range. Miss Mavis Castle, mezzo-soprano, is a well-known Wellington vocalist, deservedly popular with concert audiences. Lieut. B. J. Shardlow, conductor of the band of the 1st Wellington Regiment, is a cornetist of champion rank, and his artistry is familiar to listeners-in.

"The Cuckoo" will be the subject of Mr. Johannes Andersen's talks on Thursday. Many listeners are very interested in this series on our native birds.

Mr. Johannes Andersen is librarian of the Turnbull Library, and is an acknowledged authority on bird life, and, indeed, natural history generally. For the past five years he has contributed the "Natural History" section of the School Journal. He is the editor of "The Transactions of the New Zealand Institute," and, with Mr. Elsdon Best, editor of "The Polynesian Journal."

Singers on Friday include Madam Lola Maries, soprano, who is an experienced concert artist.

Miss Madge McKenzie, a sweet singer with a delightful voice, is making her first appearance "on the air."

Mr. and Mrs. Porter, exponents of the steel guitar and ukulele, will entertain with solos and duets, and for their first appearance in radio they have chosen numbers illustrative of the traditional melodies of Hawaii.

Little Miss Phyllis Andrews, only 8 years of age, daughter of that talented entertainer at the piano, Mr. Frank Andrews, will make her first appearance at 2YA on Saturday night. She has appeared with marked success at various concerts in and around Wellington.

Another Saturday dance night, with the music provided by Allan's Orchestra, has been arranged for 2YA next week-end. Some very entertaining items will intersperse the dances.

Photo, S. P. Andrew.

ST. ANDREW'S QUARTET.

A musical combination who are fast becoming very popular with listeners. Reading from left to right: Mr. Robert Peter, tenor; Miss Phyllis Gribben, contralto; Miss Adelaide Taylor, soprano (seated), and Mr. Arthur Colledge, bass. Miss Gribben, a member of this quartet, is to sing Sullivan's "Lost Chord," with full orchestral accompaniment, at the Aeolian Orchestra's performance at 1YA.

ITEMS AT 3YA

"Do we know the immortal W.G.?" has been taken as the text for a talk on cricket—or what game is it?—by the sports announcer at 3YA on Monday evening. His recent lecturette on the New Zealand team now at Home aroused much interest.

Mr James Laurenson, well-known Christchurch elocutionist, and winner at competitions, will help to entertain at 3YA on Monday evening. Mr. Laurenson has been "on the air" before, so listeners will tune in for him.

Assisting the Municipal Tramways Band at 3YA on Monday evening will be Mrs. L. B. Salkeld, a soprano singer of the first class, also Mr. E. Orchard, bass, who pleased his hearers so well recently that he makes his second appearance in radio. Mr. Orchard has chosen three exacting solos for the evening. Miss Gladys Rugg will make her debut as a broadcaster.

The Beckenham Quartet, consisting of Mr. E. R. Pitman (first tenor), Mr. W. H. Odell (second tenor), Mr. K. G. Archer (baritone), Mr. F. S. Jackson (bass), will make its first appearance in radio at 3YA on Wednesday evening. The voices harmonise remarkably well, and the quartet is probably the best in Christchurch. The items on Wednesday evening will include a varied selection of six songs, sentimental as well as humorous.

The Woolston Instrumental Brass Quartet:—Mr. S. Creagh (cornet), Mr. E. N. T. Trenhearth (flugel horn), Mr. T. H. Hughes (euphonium), Mr. G. Wilson (tenor horn), which appeared at 3YA a few weeks ago for the first time in radio, will play again on Wednesday. All the members are gold medal-

MR. F. R. HAWKER, OF 3YA.

A fine bass soloist—a prize-winner at the 1927 Christchurch Competitions—Mr. Hawker commenced singing under Mr. Hall-Johnstone, of New Plymouth, in 1914. He was that year a member of the New Plymouth Amateur Operatic Society, and took part in the production of "San Toy" and "The Mikado." During 1924 and 1925 he studied singing under Mr. Arthur Macdonald (well-known on 3YA's air), and he is now a pupil of Madame Ottlee. Mr. Hawker is always welcomed on a 3YA programme, for he broadcasts well. He will be singing on Saturday evening.

lists, winners at many a contest. They provided a treat last time they played before the microphone, and listeners will look forward to their again.

Vocalists who will entertain on Wednesday evening will be Miss Ruby Clarke and Mrs. G. L. Bull, mezzo-soprano. Besides being a cultured singer, Mrs. Bull is a swimmer of no mean ability. Miss Marian Haywood, a talented girl pianist, is to play several items.

Full Programmes for Next

3YA FEATURES CONTINUED

With a guide who knows every inch of the way, listeners will be taken on Wednesday evening for a motor tour to Mount Cook, the Cold Lakes, etc. The guide will be Mr. Leo Hayward, of Rink Taxis. This will be the first of a number of weekly lectures.

Mr. H. M. R. Thomas (baritone), who will be singing at 3YA on Thursday, has recently been successful at the Wellington competitions. He is a pupil of Mr. A. G. Thomson, who was trained under Sir Charles Cantley.

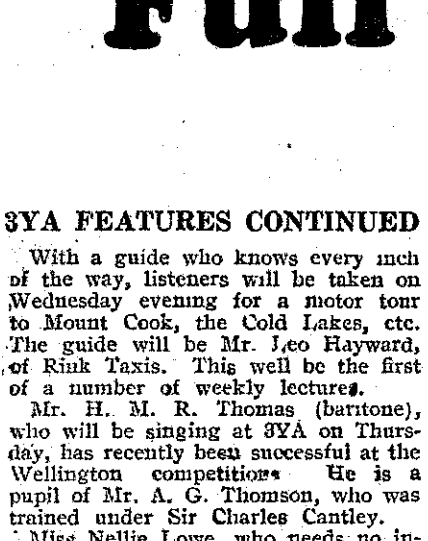
Miss Nellie Lowe, who needs no introduction to an audience in a concert hall in Christchurch, or to radio listeners, will sing at 3YA on Thursday. Another lady vocalist will be Miss Thelma Ayres (soprano), also well known at 3YA. Mr. E. Rogers, a very popular tenor, is also on the programme. Among his items will be "The Sailor's Grave."

A new combination, the Christchurch Broadcasting Trio, will be heard from 3YA for the first time on Thursday. Three of the best artists in Christchurch have been engaged, and the trio will regularly appear on 3YA programmes.

Mr. Harold Beck, one of the most talented 'cello players New Zealand has produced, appears at 3YA on Thursday.

A very popular Christchurch violinist, Miss Irene Morris, will play at 3YA on Thursday.

A miscellaneous programme has been prepared for Friday at 3YA, comprising singing, elocutionary, and instrumental items. The vocalists include Madame Eva Litchfield (contralto) and Mr. Cyril Rushworth (baritone).



MISS MARJORIE WATTS.
Miss Marjorie Watts, who is the holder of the degrees A.T.C.L. and L.T.C.L., is to play pianoforte solos at 4YA on Tuesday. She has enjoyed much success in local competitions, and is very popular in radio.

A cornetist well known throughout New Zealand and Australia, Mr. Fred Fox, is to play at 3YA on Friday.

In Tewkesbury Abbey there is an historic organ. On it the great Milton played, and it is now known by his name. The honour of playing on the same famous old instrument came the way of Mr Ravnor White, organist at Trinity Congregational Church, Christchurch, a regular contributor to 3YA's programme. Mr White, who comes of a very musical family, his forefathers having been organists in Tewkesbury before him, is playing a number of organ solos for 3YA on Friday.

Variety will again be the keynote of Saturday evening's programme. Besides Mr. F. R. Hawker (baritone), always a welcome singer, Miss Margaret O'Driscoll, a fifteen-year-old girl is to make her debut. This young lady has a very sweet mezzo-soprano voice. Mr F. R. Munro, with his steel guitar, will also be there, and Miss Amy Peters will improvise on the piano.

Very likely, some of 2YA's programme will be rebroadcasted by 3YA on Saturday.

SOME 4YA ITEMS

Well known throughout Otago and Southland as a social worker, and more widely known over the radio as a brilliant clarinet player, the Rev. G. E. Moreton will further spread his popularity as an instrumentalist at 4YA on Tuesday evening.

The versatile Pastor W. D. More, whose lecturettes at 4YA are so entertaining, has chosen "Great Love Stories" for his theme on Tuesday evening.

"Big Brother Bill," who is now an established favourite at 4YA, will conduct the children's sessions on Tuesdays and Fridays, and pleasing half-hours of amusement and instruction are guaranteed for children of all ages.

Miss Winnie McPeak (contralto), who is to sing at 4YA on Thursday, is a pupil of Mr. Ernest Drake. She has been very successful at competitions in Christchurch and Dunedin.

The band of the First Battalion, Otago Regiment, under Mr Lew O. Asten, will supply the instrumental music at 4YA's concert on Thursday evening.

Mr. Malcolm Robilliard, probably the foremost 'cellist in Dunedin, will play at 4YA on Thursday. Mr. Robilliard is a member of the Dunedin Orchestral Society.

Sunday, September 18th

1YA AUCKLAND (333 METRES)—SUNDAY, SEPTEMBER 18.

6.55 p.m.: Relay of service from Pitt Street Methodist Church. Preacher, Rev. L. Dalby. Choral director, W. Leather.
8.30: Relay of Municipal Band Concert from Town Hall, under Mr. Christopher Smith.
9.45: Close down.

2YA WELLINGTON (420 METRES)—SUNDAY, SEPTEMBER 18.

6.55 p.m.: Relay of Vivian Street Baptist Church. Preacher, Rev. F. E Harry. Organist, Mr. C. Collins. Choirmaster, Mr. A. R. Don
8.15: Relay of the Port Nicholson Silver Band concert from the Grand Opera House.

3YA CHRISTCHURCH (306 METRES)—SUNDAY, SEPTEMBER 18.

5.45 p.m.: Children's song service from 3YA Studio, by Uncle Sam.
7.0: Relay of evening service from St. Barnabas's Church of England, Fendalton. Preacher, Rev. H. S. Leach. Choirmaster and organist, Mr. A. J. Merton. Anthem, "O, Love the Lord" (Sullivan)
8.15: Rebroadcast 2YA, Wellington (circumstances permitting). Otherwise relay of concert from Liberty Theatre, arranged by R.S.A. for Unemployment Fund.

4YA DUNEDIN (463 METRES)—SUNDAY, SEPTEMBER 18.

6.30 p.m.: Relay of service from the Methodist Central Mission. Preacher, Rev. W. Walker. Organist, Mr. Chas. A. Martin.
8 to 9 p.m.: Concert by Mr. Ernest Drake's choir and students. The following anthems and part-songs will be rendered:—"Londonderry Air," "By Babylon's Wave" (Gounod), "Alleluia" (arr. O'Connor Morris), "At Evening" (Abt.).

Monday, September 19th,

1YA AUCKLAND.—SILENT.

2YA WELLINGTON (420 METRES)—MONDAY, SEPTEMBER 19.

3 p.m.: Chime. of the Wellington General Post Office Clock.
3.1: Gramophone recital.
3.30: Lecturette—Miss Mann, "A Talk on Fashions."
3.40 to 5: Gramophone recital.
6.30: Children's session.
7.0: News session and market reports.
7.34: Lecturette—Mr. Preston Billing, "Radio."
8.0: Chimes of the Wellington General Post Office clock.
8.1: Instrumental—Studio Orchestra, selected.
8.7: Studio concert by the pupils of Madame Spillane, of Wanganui.
Quintet—"Love is Meant to Make Us Glad "(Chappell and Co.).
8.12: Tenor solo—Mr. E. Reid. "A Dream Tryst" (Cadmon).
8.16: Baritone solo—Mr. Pawson, "Five and Twenty Sailormen" (Coleridge-Taylor-John Church Co.),
8.20: Soprano solo—Miss Amy Eaton, "The Bell Song" from "La Kine" (Delibes-G. Schirmer).
8.24: Duet—Messrs. Reid and Meehan, "Flow Gently, Deva" (Parry-Edwin Ashdown).
8.28: Contralto solos—Miss Marjorie Allomes, (a) "The Sandman" (Brahms-Boosey and Co.), (b) "Lavender Days" (Cory and Co.).
8.32: Instrumental—Studio Orchestra, selected.
8.38: Baritone solo—Mr. C. I. Spillane, "Through All the Ages" (Coates).
8.42: Trio—Madame Spillane, Miss Eaton and Miss Allomes, "A Flower Greeting" (Novello-Novello, Ewer, and Co.).
8.46: Bass solo—Mr. S. L. Kendall, "Spanish Gold" (Fisher), (Boosey and Co.).
8.50: Soprano solo—Madame Spillane, "If There Were Dreams to Sell" (Ireland-Winthrop Rogers).
8.54: Baritone solo—Mr. Pawson, "When the Sergeant-Major's on Parade" (Longstaffe-Chappell and Co.).
8.57: Vocal duet—Mr. C. I. Spillane and Miss M. Allomes, "La Serenata" (Tosti-Ricordi and Co.).
9.1: Weather report.
9.2: Instrumental—Studio Orchestra, selected.
9.12: Baritone solo—Mr. T. M. Meehan, "So We'll Go No More a-Roving" (White-Chappell and Co.).
9.16: Soprano solo—Miss Amy Eaton, "Poor Wandering One" ("Pirates of Penzance"), (Sullivan-Chappell and Co.).
9.20: Baritone solo—Mr. C. I. Spillane, selected.
9.24: Vocal duet—Misses Eaton and Allomes, "Venetian Boat Song" (Blumenthal-Cramer and Co.).
9.28: Soprano solo—Madame Spillane, selected.
9.32: Bass solo—Mr. S. L. Kendall, "She Alone Charmeth My Sadness" (Gounod-Boosey and Co.).
9.36: Instrumental—Studio Orchestra, selected.
9.42: Vocal trio—Madame Spillane, Miss Allomes, and Mr. C. I. Spillane, "Wisdom Songs" ("Tom Jones"), (German-Chappell and Co.).
9.46: Song cycle—"A Pageant of Summer" (Brahe-Enoch and Sons).
Quartet—Madame Spillane, Miss Allomes, and Messrs. Reid and Meehan, "We've Flowers for You."
Contralto solo—Miss Allomes, "Meadow Sweet."
Duet—Madame Spillane and Mr. Meehan, "None so Pretty."
Tenor solo—Mr. Reid, "My Mignonette."
Baritone solo—Mr. Meehan, "Traveller's Joy."
Quartet—Madame Spillane, Miss Allomes, and Messrs. Reid and Meehan, "Speedwell."
10.6: Instrumental—Studio Orchestra, selected.

3YA CHRISTCHURCH (306 METRES)—MONDAY, SEPTEMBER 19.

3 p.m.: Afternoon concert session.
6.0: Children's session, by Uncle Sam.
7.15: News and reports.
8.0: Chimes. Studio concert by Christchurch Municipal Band, under conductorship of Mr. A. J. Schnack and assisting 3YA artists.
8.1: March—Band, "Loyal Hearts" (Greenwood-Wright and Round).
8.5: Soprano solo—Mrs. L. B. Salkeld, "Swing, My Cherub" (Clutsam-Enoch).
8.8: Bass solo—Mr. Ernest Orchard, "Lily of Laguna" (Stuart-Day and Hunter).
8.12: Waltz—Band, "Ecstasy" (Baynes-Boosey).
8.16: Mezzo-soprano solo—Miss Gladys Rugg, "Days of Joy Are Here" (Hemery-Phillips).
8.21: Selection—Band, "Le Domino Noir" (Auber-Smith).
8.25: Character sketch—Mr. James Laurenson, "Daniel Peggoty" ("David Copperfield"), (Dickens).
8.29: Hymn—Band, "Abide With Me" (Monk-Palings).
8.32: Soprano solo—Mrs. L. B. Salkeld, "Slumberland" (Hope-Ascherberg).
8.36: Bass solo—Mr. Ernest Orchard, "A Dream of Paradise" (Gray-Larway).
8.39: Selection—Band, "Le Cirque" (Lithgow-Lyons).
8.44: Mezzo-soprano solo—Miss Gladys Rugg, "The Little Old Garden" (Lockton-Fox Publishing Co.).
8.47: Talk—Sports Announcer, "Do We Know the Great Immortal W. G.?"
9.2: Relay of orchestral selections from Strand Picture Theatre Orchestra, under the direction of Mr. Harry Ellwood.
9.16: March—Band, "Carry On" (Johnstone-Wright and Round).
9.21: Humorous recitation—Mr. James Laurenson, "How We Saved the Barge" (Williams-M.S.).
9.24: Selection—Band, "Souvenir de Russe" (Rimmer-Smith).
9.29: Soprano solo—Mrs. L. B. Salkeld, "Song is so Old" (Terry-Schirmer).
9.33: Air variation—Band, "Welsh Melody" (Rimmer-Smith).
9.38: Mezzo-soprano solo—Miss Gladys Rugg, "The Milkmaids" (Rogers).
9.41: Selection—Band, "Andante in G" (Batiste-Smith).
9.47: Bass solo—Mr. Ernest Orchard, with organ accompaniment by Mr. C. Pilling, "Land of Hope and Glory" (Elgar-Boosey).
9.51: March—Band, "Punchinello" (Rimmer-Richardson).
10.0: Close down.

4YA DUNEDIN.—SILENT.

Tuesday, September 20th.

1YA AUCKLAND (333 METRES)—TUESDAY, SEPTEMBER 20.

3 to 4.30: Afternoon session.
6.30: Children session—Aunt Betty.
7.15 to 7.45: News and information session.
8.0: Chimes.
8.1: Relay of overture from Majestic Theatre. Mr. J. Whitford-Waugh, conductor.
8.16. Drawing-room entertainment, arranged by Mr. Peter Black and party.
Quartet—Mr. Peter Black's Quartet, "Awake, Aeolian Lyre."
Soprano solo—Miss Jean Black, "I Hope."
Flute solo—Miss Ruby Brame, "Shepherd's Idyll."
Duet—Mrs. Lewis and Mr. Farrow, "Calm, Silent Night."
Song and chorus—Mr. Peter Black and party, selected.
Violin solo—Miss Marion McMurtrie, "Irish Fantasie."
Bass solo—Mr. James Littler, "The Roamer."
Quartet—Mr. Peter Black's Quartet, "Prayer" from "Moses in Egypt" (Rossini).
9.0: Lecture, by Mr. J. W. Hayden, chairman of Waitemata Power Board, on "Progress of Development of Hydro-Electric Power in the Dominion."
Weather report.
9.20: Relay from Majestic Theatre.
9.26: Quartet—Mr. Peter Black's Quartet, "The Cat and the Fiddle" (Smith).
Contralto solos—Mrs. A. L. Lewis, (a) "Down Here" (Brahe), (b) "To a Miniature" (Brahe).
Flute solos—Miss Ruby Brame, (a) "Il Bacio," (b) selected.
Song at piano—Mr. Peter Black, "Let's Grow Old Together."
Vocal duet—Miss Jean Black and Mr. Littler, selected.
Instrumental trios—Misses McMurtrie and Brame, and Mr. Peter Black, (a) "Spring's Awakening" (Sanderson), (b) "Serenade" (Titl).
Tenor solo—Mr. Wm. Farrow, "I Hid My Love."
Quartet—Mr. Peter Black's Quartet, "In This Hour of Softened Splendour."
10.0: Close down.

2YA WELLINGTON (420 METRES)—TUESDAY, SEPTEMBER 20.

3 p.m.: Chimes of the Wellington General Post Office Clock.
3.1: Afternoon concert.
3.30: Lecturette—Mrs. Barrington, "Electricity in the Home."
3.45 to 5: Afternoon concert.
7.0: News session and market reports.

Week - All Stations - to Sept. 25

7.38: Lecturette—Mr. R. Jacobsen, "Oxygen: The Life Supporter."
7.50: Close down.
8.0: Chimes of the Wellington General Post Office clock.
8,1: Instrumental—Studio Orchestra, selected.
8.7: Soprano solo—Miss Joan Lowry, "Waltz" from "Tom Jones" (German-John Church).
8.11: Male quartet—The Aeolian Quartet, "In Silent Mead" (Emerson).
8.15: Baritone solo—Mr. Geo. Wilkinson, "I Will Not Grieve" (Schumann-Boosey and Co.).
8.19: Piano and organ duet—Mrs. F. H. Peyton and Mr. Clement Howe, selected.
8.24: Contralto solo—Miss Florence Penny, "Still as the Night" (Bohm).
8.29: 'Cello—Miss Lilla Hill, "Guitarre" (Moskowski-Peters Edition).
8.33: Tenor solo—Mr. Arthur Coe, "The English Rose" (German-Chappell and Co.).
8.37: Male quartet—The Aeolian Quartet, "Lovely Night."
8,41: Instrumental—Studio Orchestra, selected.
8 47: Soprano solo—Miss Joan Lowry, "Youth and Spring" (Steinel-John Church).
8.51: Baritone solo—Mr. Geo. Wilkinson, "Lend Me Your Aid" (Gounod-Boosey and Co.).
8.55: Male quartet—The Aeolian Quartet, "Love's Old Sweet Song" (Molloy).
9.0: Weather report.
9.1: Lecturette—Mr. Gordon Burt, "Inception of the British Arctic Expedition, 1925, New Zealander off to the Polar Regions."
9.16: Instrumental—Studio Orchestra, selected.
9.21: Contralto solo—Miss Florence Penny, (a) "The Wind Song" (Rogers-Schirmer and Co.), (b) "From the Land of the Sky-blue Water" (Cadmon-Schirmer and Co.).
9.26: Male quartet—The Acolian Quartet, "Comin' Thro' the Rye."
9.30: 'Cello—Miss Lilla Hill, "Andante" (Klengal-Brietkoph and Hartel).
9.34: Tenor solo—Mr. Arthur Coe, "Where'er You Walk" (Handel-Novello and Co.).
9.38: Piano and organ duet—Mrs. F. H. Peyton and Mr. Clement Howe, selected.
9.43: Bass solo—Mr. D. Hall, "Three for Jack" (Squire-Chappell and Co.).
9.47: Male quartet—The Aeolian Quartet, "Medley."
9.52: Instrumental—Studio Orchestra, selected.
9.57: Tenor solo—Mr. B. Mayall, "An Emblem" (Thompson).
10.0: Baritone solo—Mr. W. Church, "I'll Sing Thee Songs of Araby" (Clay-Boosey and Co.).
10.4: Instrumental—Studio Orchestra, selected.

3YA CHRISTCHURCH (306 METRES)—TUESDAY, SEPTEMBER 20.
SILENT.

4YA DUNEDIN (463 METRES—TUESDAY, SEPTEMBER 20.

3 p.m.: Town Hall chimes.
3.1: His Master's Voice recital.
3.15: Address on "Interior Decoration," by Miss M. Puechegud.
3.30: Studio music.
4.0: Book talk, by Mr. H. Greenwood, Librarian, Dunedin 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.
7.30: News and market session.
8.0: Town Hall chimes.
Studio concert and orchestral items, under the conductorship of Mr. L. D. Austin. Relayed from the Octagon Theatre.
8.1: Soprano solos—Miss Rita Holmes, (a) "Last Rose of Summer" (Moore), (b) "Songs My Mother Taught Me" (Dvorak).
8.6: Piano solo—Miss Marjorie Watts, "Cappriccio" (Rosenbloom).
8.10: Mezzo-soprano solos—Miss Florence Sumner, (a) "The Nightingale" (Alabieff), (b) "O, the Merry Frost Time" (Dubuc).
8.16: Violin solo—Mr. E. G. Ruffell, "Elegy" (Massenet).
8.20: Baritone solos—Mr. L. M. Cachemaille, (a) "Lorraine" (Sanderson), (b) "Ici Blas" (d'Hardelot).
8.26: Clarinet solo—Rev. G. E. Moreton, "Song Without Words" (Mendelssohn).
8.30: Mezzo-soprano solos—Miss Agnes Holmes, (a) "You've Got Your Mother's Eyes" (Drummond), (b) "Mignon, Here is April" (Del Riego).
8.36: Orchestral selections—Relayed from the Octagon Theatre.
8.42: Piano solo—Miss Marjorie Watts, "The Girl With the Flaxen Hair" (Debussy).
8.45: Address by Pastor W. D. More, "Great Love Stories."
9.0: Soprano solos—Miss Rita Holmes, (a) "Dawn" (Curran), (b) "Spirit Flower" (Tipton).
9.6: Violin solo—Mr. E. G. Ruffell, selected.
9.11: Mezzo-soprano solos—Miss Florence Sumner, (a) "Heart of Gold" (Lang), (b) "Gleaner's Slumber Song" (Walthew).
9.17: Piano solos—Miss Marjorie Watts, selected.
9.22: Orchestral selections from the Octagon Theatre.
9.42: Baritone solos—Mr. L. M. Cachemaille, (a) "She is Far from the Land" (Lambert), (b) "Rich Love."
9.48: Clarinet solo—Rev. G. E. Moreton, selections from "The Bohemian Girl" (Balfe).
9.54: Orchestral selections from the Octagon Theatre.
10.0: Close down.

Wednesday, September 21st.

1YA AUCKLAND (333 METRES)—WEDNESDAY, SEPTEMBER 21.

3 to 4.30: Afternoon session.
7.15 to 7.45: News and information session.
8.0: Chimes.
8.1: Relay of overture from Prince Edward Theatre. Mr. Geo. Poore, conductor.
8.16: Contralto solos—Miss Robina Chellburg, (a) "Beloved, Sleep" (Slater), (b) "The Nightingale" (Kjerulf-Boosey).
8.24: Violin solos—Mr. Norman Watson, (a) "Orientale" (Cesar Cui), (b) selected.
8.32: Baritone solo—Mr. Clinton Williams, "The Floral Dance" (Moss).
8.37: Flute solo—Mr. Vic. Bedford, "Paraphrase" on "Alice Where Art Thou?"
8.41: Soprano solo—Mrs. Cyril Towsey, "With Thee is Peace" (Schubert).
8.46: Piano solo—Mr. C. Towsey, "Holberg Suite" (Greig).
8.52: Whistling solos—Mr. Reg. Bell, (a) "Let the Rest of the World Go By," (b) "Bird Mimicing."
9.0: Weather report.
9.1: Relay from Prince Edward Theatre.
9.16: Contralto solo—Miss R. Chellburg, "Yonder" (Oliver-Larway).
9.21: Violin solo—Mr. N. Watson, "Ballet Music" from "Rosamunde" (Schubert).
9.26: Baritone solos—Mr. C. Williams, (a) "Stone-cracker John" (Coates), (b) "For the Green" (Lohr).
9.34: Flute solo—Mr. V. Bedford, "Song Without Words" (Clinton).
9.43: Soprano solo—Mrs. C. Towsey, "O, Divine Redeemer" (Gounod-Chappell).
9.48: Piano solo—Mr. C. Towsey, "Devotion" (Schumann-Liszt).
9.55: Whistling solo—Mr. R. Bell, "Three O'clock in the Morning."
10.0: Close down.

2YA WELLINGTON (420 METRES)—WEDNESDAY, SEPTEMBER 21.
SILENT.

3YA CHRISTCHURCH (306 METRES)—WEDNESDAY, SEPTEMBER 21

3 p.m.: Afternoon concert session.
6.0: Children's session, by Uncle Jack.
7.15: Addington stock market reports.
7.30: News.
8.0: Chimes. Relay of orchestral selections from Everybody's Picture Theatre Orchestra.
8.15: Male quartet—Beckenham Quartet (Messrs. Pitman, Odell, Archer, and Jackson), (a) "An Evening Lullaby" (Shaw-Curwen), (b) "Little Tommy Went a Fishing" (Macy-Ditson).
8.21: Euphonium solo—Mr. T. H. Hughes, "The Broken Melody" (Van Bien-Ascherberg).
8.25: Mezzo-soprano solo—Mrs. G. L. Bull, "By the Waters of Minnetonka" (Lieurance-Chappell).
8.29: Pianoforte solo—Miss Marian Hayward, "Nocturne No. 5, F Sharp Major" (Chopin-Peters).
8.33: Mezzo-soprano solo—Miss Ruby Clarke, "Lullaby" (Scott-Elkin).
8.37: Brass instrumental quartet—Woolston Band (Messrs. Trenbearth, Hughes, Creagh, and Wilson), "Lohengrin" (Wagner-Haigh-Hume).
8.42: Male quartet—Beckenham Quartet, Thuringian Volkslied" (Abt-Novello).
8.46: Pianoforte solo—Miss Marian Hayward, "Cappriccio in B Minor" (Brahms-Lengnick).
8.50: Cornet solo—Mr. S. Creagh, "Peristyle Polka" (Chambers-Smith).
8.55: Mezzo-soprano solos—Miss Ruby Clarke, "Curios," (a) "China Mandarin" (Crampton-Cramer), (b) "Persian Prayer Rug" (Crampton-Cramer).
9.0: Talk—Mr. Les Hayward, "A Round Trip Thro' the Southern Lakes and Mt. Cook District."
9.15: Relay from Everybody's Picture Theatre.
9.25: Euphonium solo—Mr. T. H. Hughes, the waltz song, "Il Bacio" (Arditi-Boosey).
9.29: Pianoforte solo—Miss Marian Hayward, "Sonata No. 24, Op. 78" (Beethoven-Albert).
9.33: Mezzo-soprano solo—Mrs. G. L. Bull, "Lament of Isis" (Bantock-Breitkopf and Hartel).
9.36: Cornet duet—Messrs. Creagh and Trenbearth, "Down the Vale" (Moir-Boosey-Hume).
9.40: Mezzo-soprano solo—Miss Ruby Clarke, "Beautiful Isle of Somewhere" (Fearis Ercells).
9.44: Male voice part-songs—Beckenham Quartet, (a) "Every Rustling Tree" (Kuhlau-Novello), (b) "A Catastrophe" (Sprague-Banks).
9.51: Brass instrumental quartet—Woolston Band Quartet, "Passing Clouds" (Round-Wright and Round).
9.56: Mezzo-soprano solo—Mrs. G. L. Bull, "The Lass With the Delicate Air" (Arne-Chappell).
10.0: Close down.

NOTES AND COMMENTS

(By Switch).

Now that the "ferry" steamers Maori and Wahine are being equipped with valve tarnsmitters, broadcast listeners will experience less interference from ship spark interfernce. This reminds me of a Wellington medico, who is an enthusiastic broadcast listener, and the mishap which befel his set from ship spark interference. This re- was tuned in to a station when a vessel close to Wellington came in with some crashing morse. The doctor's dog was lying under the table, and when the morse blasted in the canine made a dash for the door. Dog and battery wires became hopelessly entangled. The set crashed to the floor—curtain.

Broadcast station, 4QG, Brisbane, is erected in the heart of the city. The towering masts are located on the top of a Government building. The sea is about 18 miles away, and yet this station is about the loudest Australian station heard in Wellington.

"What is the best radio joke illustration you have seen?" asked a friend the other day. It occurred to me that the one which amused me most was the picture of a tiny tot with a large radio set lying on the floor with broken panel, valves shattered and all the internal organs of the set scattered about. The horrified father on entering the room is informed by his cherished offspring "I'se looking for the dear kind uncle in the box, who tells the nice bed-time stories."

Voltmeters, being always in parallel in the circuit, are made of very high resistance to prevent any great flow of current through them and around the part of the circuit with which they are in parallel.

Keep a little table of dial settings for stations which you have heard and enjoyed. That is, have a chart of the various scales of your receiver and mark carefully on it the positions of the various stations so that you can readily pick them up by setting everything as indicated on the chart. This avoids the necessity of "fishing" for

MISS MAUDE FARRANT.

Miss Maude Farrant, the well-known elocutionist, late of South Island, now resident of Wellington, will be heard at 2YA on Friday, September 23. Miss Farrant has for many years been a first prize winner at competitions in all parts of the South Island, including the West Coast.

Programmes Continued

4YA DUNEDIN—SILENT.

Thursday, September 22nd.

1YA AUCKLAND (333 METRES)—THURSDAY, SEPTEMBER 22.

3 to 4.30 p.m.: Selected Studio items.
7.15: News and information session.
7.30 to 7.45: Talk on "The Garden," by Mr. E. H. Skeates.
8.0: Chimes.
Studio concert by the Aeolian Orchestra, conducted by Mr. W. Edgar Webb, and assisted by Miss Phyllis Gribben (contralto) and Mr. Fred. Baker (baritone).
8.1: March—Aeolian Orchestra, "Entry of the Gladiators" (Fucik).
8.11: Overture—Aeolian Orchestra, "Poet and Peasant" (Suppe).
8.26: Contralto solo, with orchestra entracte—Miss Phyllis Gribben, "The Lost Chord" (Boosey-Sullivan).
8.31: Aeolian Orchestra, "Entracte No. 2" from "Rosamunde" (Schubert).
8.41: Waltz—Aeolian Orchestra, "Blue Danube" (Strauss).
8.46: Baritone solo—Mr. Fred. Baker, "Oberon in Fairyland."
8.51: March—Aeolian Orchestra, "Turkish Partol" (Michaelis).
9.0: Weather report and interval.
9.1: Selection—Aeolian Orchestra, "Ballet Music" from "Coppelia" (Delibes).
9.13: Contralto solos—Miss P. Gribben, (a) "The Inquirer" (Boosey-Schubert), (b) "St. Nicholas Day in the Morning" (Enoch-Schubert).
9.21: Symphony—Aeolian Orchestra, No. 6, "The Surprise," (a) "Andante," (b) "Allegro di Molto" (Haydn).
9.36: Concert waltz—Aeolian Orchestra, "Valse des Fleurs" (Tschaikowski).
9.41: Baritone solo—Mr. F. Baker, (a) "Young Tom of Devon," (b) "The Wheel-tapper's Song."
9.48: Descriptive—Aeolian Orchestra, "In the Soudan—A Jewish Chorus" (Sebek).
9.54: Selections—Aeolian Orchestra, incidental music to "The Merchant of Venice" (Rosse).
10.0: Close down.

2YA WELLINGTON 420 METRES)—THURSDAY, SEPTEMBER 22.

3.0: Gramophone recital.
3.30: Lecturette—"The Trend of Fashion," by Miss Britten.
3.45: Gramophone recital.
7.0: News session and market reports.
7.30: Lecturette—Mr. W. King, "Esperanto."
8.0: Chimes of the Wellington General Post Office clock.
8.10: Band selection—First Battalion Regiment Band, march, "Ravenswood" (Rimmer).
8.1: Relay from Paramount Theatre Orchestra.
8.16: Baritone solo—Mr. Wilbur Davies, "Invictus" (Bruno Huhn-Augener).
8.20: Trombone solo, with band accompaniment—Bandsman W. Matson, "Out on the Deep" (Lohr).
8.24: Contralto solo—Miss Ethel Wells, "Keep on Hopin'" (Kathleen Heron Maxwell-Boosey).
8.28: Band selection—First Battalion Regiment Band, "Smile" (F. M. Chappell-Chappell).
8.40: Mezzo-soprano solos—Miss Mavis Castle, "When Daisies Pied" (Dr. Arne) and "Passing of the Moon" (Purcell).
8.45: Cornet solo—Lieutenant B. J. Shardlow, "The Nightingale" (Carl Yeller).
8.50: Band selection—First Battalion Regiment Band, W. H. Squires's songs (arr. by Ord. Hume).
9.7: Weather report.
9.8: Lecturette—Mr. Johannes Andersen, of the Turnbull Library, "Native Birds."
9.18: Relay from the Paramount Theatre Orchestra.
9.28: Baritone solo—Mr. Wilbur Davies, "The Wheel-tapper's Song" (Wolseley-Charles-Boosey).
9.32: Trombone solo, with band accompaniment—Bandsman W. Matson, "Handel's Largo, in G" (E. Newton).
9.39: Contralto solo—Miss Ethel Wells, "Passing By" (Purcell-Ashdown).
9.43: Band selection—First Battalion Regiment Band, "Indian Love Lyrics," "Temple Bells," "Less than the Dust," "Kashmiri Song," "Till I Wake" (Woodforde-Finden).
9.56: Mezzo-soprano solos—Miss Mavis Castle, "Fiddle and I" (Weatherby-Enoch and Son) and "From the Land of the Sky-blue Water."
10.6: Band selection—First Battalion Regiment Band, march, "Simplicity" (Ord. Hume).
10.16: National Anthem.

3YA CHRISTCHURCH (306 METRES)—THURSDAY, SEPTEMBER 22.

3 p.m.: Afternoon concert session.
3.45: Talk by Mr. Wood—"Fashions in Hosiery, Lingerie, Shoes, Gloves, and Neckwear."
7.15: News and reports.
8.0: Chimes. Relay of orchestral selections from Crystal Palace Picture Theatre Orchestra, under direction of Mr. A. J. Bunz.
8.15: Soprano solos—Miss Thelma Ayres, (a) "Waiata Maori" (Hill-McIndoe), (a) "Early One Morning" (Old English-M.S.).
8.22: Baritone solo—Mr. H. M. R. Thomas, "The Cobbler's Song" (Norton-Allan).

the stations, with the set in danger of oscillating and, if it is not neutralised, disturbing others, and also simplifies picking up stations speedily.

I notice that a Wellington listener has discovered that it is no prodigious feat to tune in the Calcutta and Bombay stations between 3 a.m. and 4 a.m. He obtained half gramophone strength from his loudspeaker towards 4 a.m. with just an ordinary Browning-Drake set. It is wonderful the fuss some people make about getting this long-distance stuff with antiwontodwne sets, when the honest old Browning-Drake does it on its head.

To-morrow evening, Saturday, September 17, a real live minstrel troupe will give an old-time darkie entertainment from the studio of 2FC, Sydney. Mr. H. Marshall is directing the company. I wonder if old Charlie Pope (formerly of Pope and Sayles coon vaudeville comedians) will be in the programme.

MR. N. R. JACOBSEN,

Who commences a series of lectures on Popular Science with a talk on "Air and its Wonders" at 2YA on Tuesday evening, 13th inst., is a scholar and artist possessed of a remarkable record. Not only has he attained high honours in many sports, but also he has carried off many honours in the scholastic world. He is now a lecturer at the Wellington Training College, and spreads abroad the gospel of mental and physical fitness.

A visitor to Mr Claude P. Grey, the Shannon broadcast listening champion, writes:—"Although Mr. Grey is an utter novice at radio, he has a particular gift in handling his two dials. He adjusts them with meticulous nicety and manipulates them with that hair-splitting skill which defies the average man who is 'all thumbs.' His set is a great and wonderful performer, but the man who can get 68 stations on it deserves full credit."

Most storage batteries are rated by their eight-hour discharge rate, or their eight-hour charge rate. Technically a battery will require longer to charge at a given rate than to discharge at the same rate, partly because all the energy delivered to the battery does not go into the charge while something more than the energy received from the battery is used in the discharge. The eight-hour discharge rating means, if a battery is rated at 60 ampere hours, that it will deliver 60 ampere hours if discharged in eight hours i.e., at 7½ amperes current. It will deliver somewhat less if discharged at a higher current flow and somewhat more if a less flow is used.

The United States is now working under a gent'emen's agreement with Canada by which the Dominion has allocated to its use six exclusive wavelengths and shares twelve others with

8.26: Violin solos—Miss Irene Morris, (a) "Meditation" (Thais-Massenet-Hugel), (b) "Rondino" (Beethoven-Kreisler-Schott).
8.36: Contralto solos—Miss Nellie Lowe, (a) "Red Rose of England" (Oliver-Larway), (b) "Japanese Love Song" (Brahe-Enoch).
8.44: Instrumental trio—Christchurch Broadcasting Trio, "Trio in B Minor" (First Movement), (Mendelssohn-Peters).
8.51: Tenor solo—Mr. Ernest Rogers, "The Sailor's Grave" (Sullivan-Boosey).
9.0: Interval.
9.5: Relay from Crystal Palace Picture Theatre.
9.15: Soprano solo—Miss Thelma Ayres, "The Night Wind" (Farley-Schirmer).
9.19: Baritone solo—Mr. H. M. R. Thomas, "Banjo Song" (Homer-Allan).
9.23: 'Cello solo—Mr. Harold Beck, "Hungarian Rhapsody" (Popper-Hoffmeister).
9.30: Contralto solo—Miss Nellie Lowe, "When You Come Home" (Squire-Boosey).
9.34: Instrumental trio—Christchurch Broadcasting Trio, (a) "Adantino," arr. by Gustav Holst (Lemare-Novello), (b) "Menuett" (Bocherino-Metzler).
9.44: Tenor solos—Mr. Ernest Rogers, (a) "Angels Guard Thee" (Godard-Metzler), (b) "A Request" (Finden-Leonard).
9.50: Baritone solo—Mr. H. M. R. Thomas, "Blow, Blow, Thou Winter Wind" (Sargeant-Boosey).
10.0: Close down.

4YA DUNEDIN (463 METRES)—THURSDAY, SEPTEMBER 22.

7.0: Town Hall chimes.
7.1: Request gramophone concert.
8.0: Town Hall chimes.
Studio concert by the Band of the 1st Battalion, Otago Regiment, under the baton of Mr. Lew O. Asten, and assisting artists.
8.1: March—The band, "Viscount Nelson" (Zicle).
8.4: Overture—The band, "If I Were King" (Suppe).
8.16: Contralto solos—Misss Winnie McPeak, (a) "La Serenata" (Braga), (b) "Summer Night" (Goring-Thomas), with 'cello obbligato by Mr. Malcolm Robilliard.
8.22: Waltz—The band, "Nights of Gladness" (Ancliffe).
8.28: 'Cello solo—Mr. Malcolm Robilliard, "Serenade" (Tosselli).
8.32: Cornet solo—Sergeant T. Donaldson, with band accompaniment, "The Lost Chord" (Sullivan).
8.36: Baritone solos—Mr. Avery Dale, (a) "My Dream" (Tosti), (b) "Requiem" (Homer).
8.42: Minuet—The band, "Number Two" (Paderewski).
8.46: Contralto solos—Miss Winnie McPeak, (a) "Ships that Pass in the Night" (Stephenson), (b) "Hail, Caledonia."
8.52: Address for motorists, by "Gargoyle."
9.4: Selection—The band, "The Mikado" (Sullivan).
9.20: 'Cello solos—Mr. Malcolm Robilliard, (a) "Traumerei" (Schumann), (b) "Londonderry Air."
9.27: Gavotte—The band, "Hearts and Flowers" (Tobani), the band, "Valse Triste" (Sibelius).
9.38: Baritone solo—Mr. Avery Dale, selected.
9.46: Selection—The band, "Masken Polonaise" (Faust).
9.55: March—The band, "Colonel Bogey" (Alford).
10.0: Close down.

Friday, September 23rd.

1YA AUCKLAND (333 METRES)—FRIDAY, SEPTEMBER 23.

3 to 4.30 p.m.: Selected Studio items.
6.30: Children's session.
7.15: News and information session.
7.30 to 7.45: Talk on "Motoring," by Mr. Geo. Campbell.
8.0: Chimes.
8.1: Relay of concert from Messrs. John Court's, Ltd.
8.30: Mezzo—Miss Berta Carr, (a) "Spring Waters" (Rachmaninoff), (b) "Lafolette" (Chappell-old Italian).
8.38: Baritone—Mr. H. Barry Coney, "Wind on the Heath" (Chappell-Lohr).
8.42: Piano—Miss Maida Hooker, (a) "Whims" (Schumann), (b) "Fairy Tale" (Meitner).
8.49: Mezzo—Miss B. Carr, "Blow, Blow, Thou Winter Wind" (Quilter).
8.53: Mr. B. Coney, (a) "Beware of the Maidens" (Cramer-Day), (b) "Mary Morison" (Windsor-Henderson).
9.0: Piano—Miss M. Hooker, "Gardens in the Rain" (Durand-Debussy).
9.4: Weather report.
9.5: Organ—Mr. Arthur E. Wilson and assisting artist, organ and vocal selections.
10.0: Close down.

2YA WELLINGTON 420 METRES)—FRIDAY, SEPTEMBER 23.

3 p.m.: Chimes of the Wellington General Post Office clock.
3.1: Gramophone recital.
3.30: Lecturette—Miss Marion Christian, "Gas Cooking."
3.40 to 5.0: Gramophone recital.
6.0: Children's session—Uncle Ernest.
7.0: News session and market reports.
7.34: Lecturette—Flight-Lieutenant S. R. Grover, M.C., "Brief History of Aviation, and a Summary of Growth and Development of the Aeroplane."
8.0: Chimes of the Wellington General Post Office clock.
8.1: Instrumental—Studio Orchestra, selected.
8.7: Soprano—Mdme. Lola Maries, "Here's to Love and Laughter" (Rubens-Chappell and Co.).
8.11: Violinist—Mr. Geo. Joseph, "La Cinquintaine" (Marie-Costalat and Co.).
8.15: Mezzo-contralto—Mrs. Madge McKenzie, "The Passing of Spring" (Slater-J. H. Larway).
8.19: Instrumental—Studio Orchestra, selected.
8.29: Tenor—Mr. J. G. Osborne, "Lolita" (Bozzia Pezzia-Ricordi and Co.).
9.33: Cornet—Mr. W. J. Kay, "Flocktonian Polka" (Casey-Carl Fischer).
8.37: Elocution—Miss Maude Farrant, "Castles in the Air" (Broughton).
8.41: Bass-baritone—Mr. Cecil B. Chambers, "The Floral Dance" (Moss-Chappell and Co.).
8.45: Songs at the piano—Mrs. J. Parker, "Janie" (Scott Gatty-Chappell and Co.).
8.49: Instrumental—Studio Orchestra, selected.
8.59: Weather report.
9.0: Lecturette—Editor-Announcer, "Imperial Affairs: Egypt."
9.16: Soprano—Mdme. Lola Maries, "Carmencita" (Lane-Leonard and Co.).
9.20: Violinist—Mr. Geo. Joseph, "Canzonetta, Op. 6" (d'Ambrosie-Edwin Ashdown).
9.24: Mezzo-contralto—Mrs. Madge McKenzie, "Soul of Mine" (Barnes-Chappell and Co.).
9.28: Cornet—Mr. W. J. Kay, "Good-bye" (Tosti-Ricordi and Co.).
9.32: Tenor—Mr. J. G. Osborne, "For You Alone" (Geehl-Gould and Bottler).

Programmes Continued

9.36: Instrumental—Studio Orchestra, selected.
9.42: Elocution—Miss Maude Farrant, "Aren't Men Funny?" (Dane).
9.46: Bass-baritone—Mr. Cecil B. Chambers, "The Border Ballad" (Cowen-Boosey and Co.).
9.50: Songs at piano—Mrs. J. Parker, "When Autumn Leaves are Falling" (Silver-Albert and Sons).
9.54: Instrumental—Studio Orchestra, selected.

3YA CHRISTCHURCH (306 METRES)—FRIDAY, SEPTEMBER 23.

3 p.m.: Afternoon concert session.
7.15: News and reports.
8.0: Chimes. Relay of orchestral selections from Liberty Picture Theatre Orchestra, under the direction of Mr. Ernest Jamieson.
8.15: Baritone solo—Mr. Cyril Rishworth, "Look Down, Dear Eyes" (Fisher-Boston Co.).
8.19: Contralto solo—Madame Eva Litchfield, "The Nightingale" (Kferuff-Boosey).
8.22: Instrumental trio—Christchurch Broadcasting Trio, "Elegie" from "Trio Opus 32" (Arensky-Jurgensen).
8.30: Baritone solo—Mr. Cyril Rishworth, "Take a Pair of Sparkling Eyes" ("Gondoliers"), (Gilbert and Sullivan-Chappell).
8.34: Piano solo—Selected.
8.40: Cornet solo—Mr Fred. Fox, "Arbucklenian Polka" (Hartmann-Hawkes).
8.45: Contralto solo—Madame Eva Litchfield, "All Souls' Day" (Lassen-Bosworth).
8.49: Organ solos—Mr. Raynor White, (a) "Carillon" (Martin-Enoch), (b) "Intermezzo" (Kiefert-Enoch), (c) "Pastorale" (Rawle-Ascherberg), (d) "Fugue in C" (Wesley-Novello).
9.10: Relay from Liberty Picture Theatre.
9.25: Baritone solo—Mr. Cyril Rishworth, "Chorus, Gentlemen" (Lohr-Chappell).
9.29: Instrumental trios—Christchurch Broadcasting Trio, (a) "Chanson Triste" (Tschaikowsky-Metzler), (b) "Mignonette" (Godard-Boosey).
9.39: Piano solo—Selected.
9.43: Cornet solo—Mr. Fred. Fox, "The Whirlwind" (Levey-Hawkes).
9.46: Organ solos—Mr. Raynor White, F.L.C.M., suite, (a) "Beneath the Southern Cross" (Thomson-Elkin), (b) "Festive March" (Tozer-Hart Co.), (c) "Jeu d'Esprit" (Lane-Enoch).
10.0: Close down.

4YA DUNEDIN (463 METRES)—FRIDAY, SEPTEMBER 23.

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: Reading, by Mrs. I. W. Cowie.
4.15: His Master's Voice recital.
4.30: Close down.
7.0: Town Hall chimes.
7.1: Children's session—Big Brother Bill.
7.30: News and market session.
8.0: Town Hall chimes.
8.1: Studio concert.
8.45: Address arranged by the Workers' Educational Association.
9.0: Dance music by Ern. Beecham and His Orchestra, relayed from the Savoy.
10.0: Close down.

Saturday, September 24th.

1YA AUCKLAND (333 METRES)—SATURDAY, SEPTEMBER 24.

3 to 4.30 .m.: Studio concert.
7.15: News and sports results.
7.30 to 7.45: Talk by "Gargoyle" on "The Reason Why Your Motor Knocks."
8.0: Chimes.
8.1: Relay of overture from Strand Theatre, Mr. Eve Bentley conducting.
8.20: Tenor solo—Mr. W. Leather, (a) "In Your Dear Eyes" (Cramer-Trotere), (b) "Take a Pair of Sparkling Eyes" (Sullivan).
8.28: Soprano solo—Mrs. W. Leather, "Break-o'-Day" (Boosey-Sanderson).
8.32: Baritone solo—Mr. J. Hutton, "Fishermen of England."
8.37: Duet—Mr. and Mrs. Leather, "Maying" (Ricordi-Smith).
8.42: Piano solo—Studio pianist, "Romance" (Sibelius).
8.47: Baritone solos—Mr. J. Hutton (a) "Mate o' Mine," (b) selected.
8.55: Soprano solo—Mrs. W. Leather, "The Splendour of the Morn" (Sanderson).
9.0: Weather report.
9.1: Relay of dance music from Dixieland Cabaret, by The Internationals, under Mr. Clyde Howley.
11.0: Close down.

2YA WELLINGTON (420 METRES)—SATURDAY, SEPTEMBER 24.

3 p.m.: Relay of football match, by Mr. Fletcher.
7 to 8 p.m.: News and market reports and sports results.
8.0: Chimes of the Wellington General Post Office clock.
8.1: Instrumental—Studio Orchestra, selected.
8.10: Waltz—Allan's Dance Orchestra, "Honolulu Moon" (Lawrence) and "Don't You Understand?" (Forster-Allan's-Chappell).
8.20: Baritone solo—Mr. W. McDonagh, "Devonshire Cream and Cider" (Boosey and Co.).

the United States. An agreement of similar character may be made with Cuba and Mexico, both countries having given notice of intention to send delegates to the Washington World Conference empowered to discuss questions with the Federal Commission with a view to an equitable arrangement of the radio situation on the North American Continent.

Because a valve glass bulb becomes loose in its base, it does not necessarily follow that the valve is defunct It should be handled carefully so that the fine wires running from the prongs to the inside elements do not become broken The use of powerful fish-glue will often cement the glass to the base and make a good permanent job.

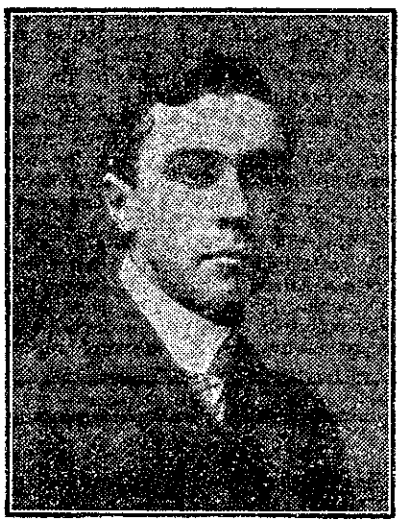
BALLROOM DANCING

Dancers — especially country dancers—will be interested in the announcement that Miss Phyllis Bates has been engaged to give a series of talks on the "Modern Ballroom Dances," over the air, from 2YA. These will probably be featured on dance nights, so that the instructions can be immediately applied. Photographs to illustrate the movements will be published beforehand in the "Radio Record."

An honest to goodness dilemma is that in which the enthusiastic host endeavours to tune in music to please half a dozen guests. Each wants something different to the rest How on earth can a broadcast programme organiser please 26,000 listeners all the while?

Portable receiving sets are now coming into their own with the approach of summer with its seaside whare life, bush camping and yachting cruises A well-known Wellington business man has lately purchased a de luxe portable and he runs it out to his seaside house in his motor-car "to keep in touch" with things during the week-end respite.

Ammeters, being always used in series in a circuit, always are of very low resistance, so that little power is wasted in them, and their use does not change the electrical characteristics of the circuit. Sometimes shunts are employed to accomplish this, the shunt being placed in the circuit and the ammeter arranged in parallel. With an ammeter of resistance A and a shunt of resistance S, the proportion of the total current going through the ammeter is S divided by A+S. Then the actual flow in the circuit is A+S divided by S multiplied by the ammeter reading.



MR. W. SALKELD.

After an absence of some years, Mr. Salkeld is once more a resident of Christchurch, and is taking an active part in musical affairs, his splendid bass voice being frequently heard from 3YA. Mr. Salkeld has studied music since childhood, and of whatever choir he has been a member, in New Zealand or in England, was always chief bass soloist. He studied music under Madame Ottlee, and has been first prize-winner at competitions in Christchurch. Mr. Salkeld is choirmaster at New Brighton Methodist Church.

Riflemen throughout Australia can look forward to the exclusive broadcast by 2FC, Sydney, of "The Kings" shooting tourney from Liverpool, New South Wales, on Friday afternoon, October 14. A description of the final stages of the match will be given, and the speech by the winner after he is chaired. On the night previous to the King's match, a camp concert will be broadcast by 2FC, under the capable direction of Ad. Cree.

8.23: Two fox trots—Allan's Dance Orchestra, "Who?" (Kern-Donaldson) and "At Sundown" (Chappell-Allan).
8.33: Steel guitar and ukulele—Mr. and Mrs. Eric Porter, "Hawaiian Hula" (traditional).
8.38: Fox trots—Allan's Dance Orchestra, "He's the Last Word" (Kahn) and "I'm Looking Over a Four-leaf Clover" (Dixon-Allan-Davis).
8.48: Elocution—Mr Fitzroy Robson, "Uncle Josh Buys an Automobile."
8.53: Two fox trots—Allan's Dance Orchestra, "Cairo" (Myers) and "Muddy Water" (De Rose-Chappell-Davis).
9.3: Weather forecast.
9.5: Cornet solo—Mr. J. King, "O, Lovely Night" (Rimmer).
9.9: Two fox trots—Allan's Dance Orchestra, "Ain't She Sweet?" (Ager) and "It All Depends on You" (De Sylvia-Davis-Alberts)
9.19: Vocal solo—Miss Phyllis Andrews, "Too Many Parties. Too Many Pals" (Henderson).
9.23: Two fox trots—Allan's Dance Orchestra, "Two Little Bluebirds" (Kern) and "There Ain't No Maybe" (Donaldson-Chappell-Allan's).
9.33: Ukulele—Mr. Eric C. Porter, "Aloha Oe" (Lilioukaloline-Herman Clay).
9.38: Two fox trots—Allan's Dance Orchestra—"Mary Lou" (Lyman) and "I've Got the Girl" (Donaldson-Albert's-Allan's).
9.48: Baritone—Mr. W. McDonagh, "Glorious Devon" (German-Boosey and Co.).
9.53: Two fox trots—Allan's Dance Orchestra, "Cock-a-Doodle" (Johnston) and "Just a Bird's-eye View" (Donaldson-Bibo, Bloendon, and Lang-Allan's).
10.2: Ukulele—Mr Eric C. Porter, "Aloha Hula" (traditional).
10.5: Fox trots—Allan's Dance Orchestra, "Me. Too" (Woods) and "Idolising" (Messenheimer-Albert's-Allan's).
10.15: Elocution—Mr Fitzroy Robson, "The Rev. Foster Addresses His Flock"
10.18: Two fox trots—Allan's Dance Orchestra, "Far Away Bells" (Gordon) and "Oh, If I Only Had You" (Kahn-Chappell-Albert's)
10.28: Cornet solo—Mr. J. King, "A Perfect Day" (Carie Jacobs-Bond).
10.33: Two fox trots—Allan's Dance Orchestra—"So Blue" (De Sylvia) and "Along Miami Shore" (Warren-Albert's-Forster).
10.43: Vocal—Miss Phyllis Andrews, "I'm Knee-deep in Daisies" (Ash).
10.48: Three fox trots—Allan's Dance Orchestra, "Pal of My Lonesome Hours" (Hirsch), "Drifting and Dreaming" (Van Alstyne), and "Sunday" (Miller-Allan's-Albert's-Allan's)
11.0: Instrumental—Studio Orchestra, selected
11.10: Close down.

3YA CHRISTCHURCH (306 METRES)—SATURDAY, SEPTEMBER 24.

6 p.m.: Children's session, by Uncle Jack.
7.15: News and reports.
7.30: Sports results.
8.0: Chimes Relay of orchestral selections from Grand Picture Theatre Orchestra, under the direction of Mrs. Black.
8.15: Baritone solo—Mr F. R Hawker, "Sea Ways" (Sanderson-Boosey).
8.18: Steel guitar solo—Mr. F R Munro "Hawaiian Airs" (M.S.-M.S.).
8.23: Mezzo-soprano solo—Miss Margaret O'Driscoll, "Might I Linger Near Thee?" (Rosa-Boosey).
8.26: Instrumental trio—Christchurch Broadcasting Trio, (a) "Scherzo" from "Trio, Opus 50" (Reisigger-Hansen), (b) "Berceuse" (Godard-Augener).
8.36: Baritone solo—Mr F. R. Hawker, "Sailing" (Marks-Reid Bros.).
8.39: Mezzo-soprano solo—Miss Margaret O'Driscoll, "Come, While the Twilight Closes" (Gluck-Boosey)
8.43: Instrumental trio—Christchurch Broadcasting Trio, (a) "Swedish Folk Song" (Svendsen-Hansen), (b) "Polish Dance" (Schorwenka-Augener).
8.51: Baritone solo—Mr F. R. Hawker, "What Am I, Love, Without Thee?" (Adams-Boosey).
8.55: Steel guitar solo—Mr. F. R. Munro, "Negro Airs" (M.S.-M.S.).
8.59: Mezzo-soprano solo—Miss Margaret O'Driscoll, "The Rosary" (Nevin-Boston Music Co.).
9.3: Rebroadcast from 2YA, Wellington, circumstances permitting otherwise relay of dance music from Caledonian Hall, under the direction of Mr Reg. Stillwell.
10.0: Close down.

Sunday, September 25th

4YA DUNEDIN (463 METRES)—SATURDAY, SEPTEMBER 24.

2.30 to 5 p.m.: All Black trial, Carisbrook Park.

1YA AUCKLAND (333 METRES)—SUNDAY, SEPTEMBER 25.

3 p.m.: Selected Studio and gramophone items.
4.28: Announcement of evening church service.
4.30: Close down.
6.55: Church service from St. Matthew's Anglican, Wellesley Street. Preacher, Rev. Canon Grant-Cowan. Organist and choral director, Mr. W. Phillpott. This is the seventy-fourth anniversary of the church and is the "Paternal Festival."
8.30: Special choral items by St. Matthew's Choir, to be followed by selected studio items.
9.30: Close down.

2YA WELLINGTON (420 METRES)—SUNDAY, SEPTEMBER 25.

6.55 p.m.: Relay of church service from Taranaki Street Methodist Church. Rev. Clarence Eaton.
8.15: Relay of the Wellington Tramways Band concert at His Majesty's Theatre.

3YA CHRISTCHURCH (306 METRES)—SUNDAY, SEPTEMBER 25.

5.45: Children's song service from 3YA Studio, by Uncle Sam.
6.30: Relay of evening service from Oxford Terrace Baptist Church. Preacher, Rev. J. Robertson, B.A. Organist, Mr. Melville Lawry. Choirmaster, Mr. V. C. Peters.
7.45: Programme of choral and organ selections from the church.
8.15: Relay from Liberty Picture Theatre of concert, arranged by the Returned Soldiers' Association for their Unemployment Fund.

4YA DUNEDIN (463 METRES)—SUNDAY, SEPTEMBER 25.

6.30 p.m.: Relay of service from the First Church of Otago. Preacher, Rev. William Scorgie. Organist, Dr V. E. Galway.
8.0: Relay from St. Kilda Band Rotunda (weather permitting) of concert by the St. Kilda Band. Conductor, Mr. James Dixon.
9.20: Close down.

Amongst the Listeners

This is the Listener's Corner. It is available for reports of receptions from individuals; the correspondence of Leagues of Listeners and reports of their proceedings; constructive criticism or suggestions for the betterment of radio in general and the consistent improvement of the service that broadcasting can render in our community life. We wish this page to be the meeting-place of listeners and officials for the better understanding of points of view and the problems of others.. It is a "Service" page, and we invite you to make use of it. Address all communications: Editor, "Radio Record," P.O. Box 1032, Wellington.

LISTENERS' LEAGUE

Delegates from various listeners' societies throughout the Dominion are scheduled to meet at Wellington on September 20, commencing with a special session at 11 a.m., when they will be welcomed by the Mayor (Mr. G. A. Troup). Among those who have been invited to speak are the Prime Minister (the Right Hon. J. G. Coates), the Postmaster-General (Hon. W. Nosworthy), the Secretary of the Post and Telegraph Department, and the general manager of the Radio Broadcasting Company of New Zealand, Ltd. The first sessions, which will be held in the Dominion Farmers' Institute, will be open to the public. The establishment of a New Zealand Listeners' League, to which all societies will affiliate, will be among the important matters to be considered.

The Wellington Society will be represented at the conference by its president, Mr. J. H. Owen; and Mr. I. M Levy, vice-president. Mr. R. Leslie Jones, hon. secretary of the society, will act as secretary to the conference

Members of the executive committee of the Auckland Listeners' League recently had an opportunity of discussing the broadcasting situation with Mr. A. R. Harris, general manager of the Radio Broadcasting Company, says an exchange. Since the interview the league's executive has spent no little time in formulating a scheme of co-operation with the local station director. If the idea is accepted, says the "New Zealand Herald," it is the league's intention to shelve, for the time being, its policy of endeavouring to obtain a similar control of New Zealand broadcasting to that obtaining in Great Britain.

RECEPTION OF 2YA

W. M. Pitcher, Hamilton, writes:—I read with interest your reply to my letter in "Radio Record" dated August 26. My letter, however, does not refer to fading. We all know the natural fading is no fault of the station. This does not explain why Christchurch station is received with more volume and better tone than Wellington, though it is farther south and only one-tenth the power, both being in exactly the same position as far as Hamilton is concerned. I also notice you refer to the discrepancy of reports, and mention that a listener in Stratford reports excellent reception from Wellington, whereas a listener north of Auckland reports poor reception. Is this a fair guide? I think not, Stratford being practically under Wellington's aerial. [Stratford is 130 miles airline from Wellington; Auckland 300.—Ed.] I understand Mr. Thow, who was sent by the makers of the plant for Wellington to instal same and adjust it, has not been in the station since three days prior to the official opening; he has neither adjusted the plant or passed it, the matter being left entirely to the local experts. This, no doubt, explains the trouble I was previously referring to, and suggest that Mr. Thow be approached immediately, as this will save trouble and expense of experimenting at the station.

[On referring this letter to the authorities concerned, we received the following reply from the Standard Telephones and Cables, Ltd. (employers of Mr. Thow): "It is not correct that Mr. Thow has not been in the station since three days prior to the official opening. No particular trouble has been referred to us by the general manager of the Broadcasting Company, but we have been requested to have Mr. Thow visit the station at any convenient time and submit recommendations that in his opinion would effect an improvement in the broadcast transmission."]

[We understand further from the Broadcasting Company that the recommendations received from the manufacturers of the plant, in regard to both erection and operating, have been strictly adhered to. Reports of good reception have been received from Australia, New Guinea, Pacific Islands, and the Western States of America, although the company is aware that there are some localities where reception is not as good as might be expected from a station the size of 2YA. In regard to this the company is closely in touch with the conditions, and the matter will be remedied in due course as far as it is practicable to do so.—Ed.]

LICENSED LISTENERS

COMMENT ON THE FIGURES.

The following are the latest official figures giving the numbers of wireless licenses:—

	Listeners.	Dealers.
Auckland	11,396	442
Wellington	6,651	624
Canterbury	6,425	250
Otago	1,760	157
Totals	26,232	1,483

Three months earlier the figures were:—

	Listeners.	Dealers.
Auckland	8,993	351
Wellington	3,347	475
Canterbury	4,606	197
Otago	1,440	132
Totals	18,326	1,155

The increases in receiving licenses in the four districts in the three months are:—Auckland, 2403, or 27.57 per cent.; Wellington, 3304, or 98.72 per cent.; Canterbury, 1819, or 39.49 per cent.; Otago, 320, or 22.22 per cent.

Upon these figures the radio writer of the "Post" sensibly comments:—The startling feature of the figures is the Wellington total. In spite of the number having almost doubled, it is still far below that of the Auckland district three months earlier. It is hardly believable that the number of licenses issued represents even approximately the number of receivers in use in this district. The population of Wellington seems to be far more interested in radio reception than the license figures indicate; it is a topic in almost every group one enters.

Consider, also, the numbers of dealers' licenses. These are as nearly as possible complete; the radio inspectors are able to keep very close track of traders in wireless apparatus. According to the Wellington figures, there are eleven licensed listeners per dealer. When one goes into a radio dealer's shop and finds a crowd of buyers there, and goes to another to save time and finds another crowd, the statistics begin to look a little weak. . . . It seems probable that Wellington's high-power station, simply because it is a high-power station, cheats itself of revenue; it is so easy to instal a crystal receiver and use it with an indoor aerial; and without an offensive inspection campaign such installations cannot be found. It appears that a system of raising revenue from listeners' licenses must be accompanied by very effective means of ensuring that listeners have licenses, and at present the matter is left almost entirely to the consciences of those concerned, and they are elastic. Licenses should be available at least as early as receivers, and some means should be found to induce dealers to take an interest in the question whether a purchaser is doing his share in maintaining the broadcasting service.

Our Mail Bag

What's Remarkable.

Sir,—I wish to congratulate Mr. McKay and Mr. Hutton on their fine lists—particularly the latter, as only four valves were used. Lists such as this show what a good set and locality can do. My list is only 69 (latest addition CMRV, 500 watts, B.C., which seems to be on old wave 291, and closed at 6.36 p.m on September 7) Given the time there is no knowing where the limit is. Re the statement by "Reflex"—"I would like to ask where anything remarkable comes in"—my reply is, it's not remarkable. The only remarkable thing is that more and better lists have not been forwarded. Sixty-two stations from Dunedin on 4 valves wouldn't make "nearly 80" or a Counterphase 8 remarkable, would it? Replying to Mr. Key's questions, Between 2BL and 3LO is 7BY. (2) The one on 318 metres is a bit hard no doubt. No 3 just above KFON at 5 a.m. this morning was 3LO on low power. Wishing you and your readers as happy radio hours as I have, —I am, etc., C. P. GRIEY

The Other Side.

"J.W.C.": Some people are never satisfied. I notice by this week's "Record" a letter signed "G.C.H.," and another by "G.P.P.," wanting the Broadcasting Company to give us a little more for our money. "Ye gods!" for thirty-seven-and-sixpence per annum we get a daily service and a paper (second to none). Now, these people want the quarter of an hour between 7.45 to 8 p.m. and Sunday afternoon respectively. Surely the announcer wants, and is entitled to, that fifteen minutes, and fully deserves the Sunday afternoons. 1YA and 3YA have been fading badly this last week, and 4YA has disappeared off the air. 2YA has been splendid, and I think puts on a better programme than any of the others.—"J.W.C.," Masterton.

Alterations Wanted.

A Listener: I would like to suggest that when Mr. Ball has finished his daily "news reports," any known alterations to the programme could be broadcast to the listener. It is very unsatisfactory to be waiting for an item to be broadcast and without any apology or explanation that item does not come through, and as I consider myself a customer of the Radio Broadcasting Co. I think I should get as much value as possible for the money I spend This is a hint that is worth consideration, and in fairness to the listener-in who has paid his listener's fee he should be informed of changes from the set programme.

Report on Reception.

R. W. Johnstone (Opoutawa): Speaking from what we find here, fading occurs more at night than during the afternoon—that is as regards 2YA. 1YA fades more than any other station in New Zealand with me here; 2YA fades, but not as much as 1YA; 3YA is the most consistent station in New Zealand as far as I am concerned, hardly fading at all. I have always put the Auckland fading down to the fact Bessels report that there is a 30-mile strip just north of the East Cape, where it is almost impossible to get New Zealand generally, having to get Samoa or Fiji to transmit to New Zealand. 2YA comes better some nights than others, irrespective of winds prevailing. For instance, Thursday, August 25, fading very badly, wind strong S.W.; Friday, August 26, hardly any fading, wind strong S.W. Only reason I can give is the change from a warm northerly wind on Thursday morning to a cold S.W. wind might affect the aerial wire here, and also your aerial, the change from warm to cold affecting both wires through the natural tautening of same. The Friday's atmosphere would naturally have nothing like the same effect, as the wires would be tautened and remain so for hours before the Friday broadcast. On Saturday evening, found all stations very noisy and fading badly. Strong S.W. wind blowing up till 8.30 p.m. Changed these to strong N.E. wind, and at 9 p.m. noise and fading had practically ended, all stations coming through well for the rest of the evening. Presume the relaxing of the wires with the change of wind caused, or at least helped to cause, noise and fading. 2YA usually very powerful, but sometimes get 3YA louder than 2YA, especially with strong southerly gales blowing. Perhaps a howling gale through the straits might affect 2YA, causing a deflection of current to a certain extent to the West Coast. Perhaps some listener-in on the West Coast may have taken notes during various gales or may do so and report.

Tuesday, 30th, 3YA bad, 2YA horrible, 1YA bad until 8.30 p.m., and then very fair. Wind strong, N.E. gale.

Sunday Services.

J. T. (Cambridge): I would suggest if possible that a Church of England service be broadcast from one of the following stations each Sunday evening:—1YA, 2YA, or 3YA, so that anyone wishing to have that service could do so. Dunedin is rarely available. We have three Sundays without a Church of England service at either of those stations. We greatly appreciate the improvement in the Sunday afternoon programme at 1YA, and hope it may still improve by the addition of the Municipal Band. May I also suggest a little alteration in the entertainments after church service. Some of them are not in keeping with the church service. I think the principle of keeping Sunday and Sunday programmes sacred will set a good example, as well as having a good influence with the large number of listeners, and would do a great deal of good.

Crystal Reception.

Amateur: Is it possible to pick up the New Zealand stations, 1YA, 3YA, and 4YA, on a crystal set, if you have a large coil?—Our long distance crystal reception competition will show the distances workable by well equipped crystals. We expect some interesting results.

Comparative Reception.

A Cromwell Reader: Just a line to congratulate you on the excellence of your publication. It deserves every success The afternoon sessions from 1, 2, and 3YA come in here with lots of kick—a bit to spare on 5 tubes and often quite loud enough on four. 2BL and 2FC have been speaker strength all day during the past few months, but at present are only 'phone strength after midday till about 4.30.

Hint for Crystal Users.

"A. D. X. Ham" writes: Here is an item of interest to your readers who use crystal sets, and which is not very widely known. I give it for what it is worth.

While building a crystal set recently I recalled an old dodge which I used to employ in 1922. As the more advanced readers known, a crystal passes 20 to 40 times more current in one direction than it does in the other, therefore a certain amount of current received in the aerial is rejected and so wasted. This rejected current can be used by another crystal being added Letween the earth end of the tuning coil and one side of the telephone receivers. It must be noted that the same type of crystal must be used in each detector, as the resistance of different crystals varies. The resistance of each crystal must be about equal. For obvious reasons, the carborundum-steel type of detector with applied voltage is best, as the cat-whisker type is rather sensitive to adjust. The best way to get this circuit to work efficiently is to adjust one crystal at a time. Short the second crystal with a piece of wire and adjust the first detector to the best results. Then short the first detector, without upsetting the adjustment, remove the shorting wire from the second detector, and then find the best results on the second crystal. Remove the piece of shorting wire from the first detector, and it will be noticed that there is a decided increase in signal strength.

It is a recognised thing that wireless is sent out in a series of waves, and whereas a valve will utilise the whole of this wave (full-wave rectification), the crystal only uses either the top or the bottom half of this wave. Theabove circuit does not give the full-wave rectification, but only uses the rejected portion of energy from the first crystal detector. Full-wave rectification can be accomplished by means of four separate detectors (the circuit of which has slipped my memory), but the slight increase of signal strength given by this means was offset by the amount of trouble in keeping the four detectors working efficiently. For readers who only get weak reception, I can fully recommend this two-crystal circuit.

An Interesting Letter.

A.R. (Tuatapere, Southland): I deem it may be of interest to your company and also readers of "Radio Record," to know how 2YA is received in this district, which is about the most distant in New Zealand from that station. When conditions are favourable it simply roars in on a four-valve Roberts. The other evening I got 2YA on the loudspeaker at good strength with the aerial disconnected and 15ft. of wire hung across the room. I then removed this wire and still got faint signals. This goes to show that the station gets there under favourable conditions, but there is another side to the picture, when conditions are not favourable and fading takes place, and I am pleased to see that this matter is being taken up and a test is to be made. We seldom get through a night without the station fading out a time or two. One evening, a fortnight ago, I could not get 3YA or 2YA, but 1YA was coming in at good strength at times. This goes to show that a moderate powered station will reach out under favourable conditions, and that a powerful station is not much good at a distance, when conditions are bad. At times New Zealand stations are coming in weak and yet the Sydney stations are strong, and then again the opposite occurs. It is a very interesting problem, this fading, Mr. Editor, and I often try round and take the strength of the different stations. I had a rather curious experience the other evening. I tuned in 2BL, Sydney, very weak, and then tried 2FC in Sydney. It was weak also. I then swung on to 2GB Theosophical Broadcasting Station, Sydney. This came in at fair loudspeaker strength. I immediately swung back on to the other two stations, but they were still weak. Now at ordinary times, 2GB is a weak station and here it comes in over the two powerful ones, and by the same pathway through the ether. Does this mean that under certain conditions a station with a certain wavelength will get through while others of different wavelengths will be blotted out? I think the fading tests to be of any use should be carried out over an extended period. I am sure the "listeners-in" would be only too pleased to assist by filling in cards, which could be sent in at stated intervals. Divide the country into districts and have one or two checking for fading at certain times; and when filing the cards don't forget to file a copy of the weather reports and barometric pressures in the different districts. My wife can tell what the weather is like up north or in the Tasman Sea by what stations are fading out.

I consider that the object to be aimed at, no matter how long it takes, is to make it possible for every "listener-in" in New Zealand possessing a five-valve set to be at least certain of getting consistent reception from one broadcast station. I have just been listening to the announcer of 2YA giving the number of "listeners-in" in the different provinces, and Otago comes a bad last. The Scotch are a canny folk, Mr. Editor, and want something for their money. Their palate wants to be tickled with something better than 4YA (the programmes are all right, the little I ever hear of them); but could you not arrange to have 4YA transferred to Rotorua to act as a relay station, as I see suggested in the last "Radio Record," and give Otago a worth-while station. I am dying to "listen-in" in the daytime with a reasonable amount of success In concluding I would like to say I think the company are working on right lines, and are getting broadcasting on to a solid foundation at last, and that given time they will have everybody satisfied or at least nearly everybody almost satisfied. Wishing the company and your journal the best of luck.

Sunday Services.

"In looking over the various Sunday programmes, I notice that the after-service sacred programmes have given place to a more general programme. This to my mind is a pity, for I know some who have installed sets chiefly with the object of hearing the Sunday services and the after-service concert. I am afraid that if some people had their way we should be treated (?) to jazz and such like stuff nearly all the time. Trusting that the Broadcasting Company will reconsider its apparent new move and put on the Sunday sacred concert when possible,—I am, etc., "Crystal Clear."

A LABOUR STATION

The Debs Memorial Radio Fund announced in New York recently the purchase of station WSOM, in Woodhaven, from the Union Course Laboratories, to be used as "a militant voice of the American Labour movement to give expression to the aspirations of the millions of men and women who toil for a living." Active management will be taken over shortly, and application made to the Federal Radio Commission for permission to change the call letters of the station to WDEBS. A protest against the impending execution of Nicola Sacco and Bartolomeo Vanzetti was to be broadcast.

Broadcast station 7ZL, Hobart, is overloaded with "carrier wave." When its trainers clear its throat it will be worthy of battery current nearly every night.

A "tip" all broadcast listeners should heed is the desirability of experimenting with the B battery voltage of their detector valves to ascertain which gives the best results. It makes a whale of a difference to apply the correct high-tension voltage on the detector plate, especially for across-the-sea reception in New Zealand.

WONDERFUL SHORT WAVES

GENERAL ELECTRIC COMPANY'S ACTIVITIES

New York, July 12.

Reports are being received from all parts of the world in connection with short wave tests conducted by the research engineers of the General Electric Company from May 28 to June 4.

Radio auditors were asked to observe reception of special transmissions over two twenty-four-hour periods, a week apart. The experimenters were not interested in local observations, because short waves generally skip the first 400 or 500 miles; but beyond that distance up to 12,500 miles radio listeners received the programmes and noted the volume, fading, distortion, intelligibility, static, carrier intensity, quality and modulation, according to the mail now being received from distant points, including Australia and New Zealand.

A Careful Analysis.

Through a careful analysis of the mail the engineers hope to learn what wave length, what hour, and what power are best to reach a definite objective during a particular season. The operators of the short wave installations explain that it is possible that the 32.77 meter wave is superior for transmission when there is darkness between transmitter and receiver; whereas it is also possible that the 22-meter channel is best when it is daylight at either transmitter or receiver.

"W. A. Waters, engineer and manager of the Manawatu-Oroua Electric Power Board, of Palmerston North, New Zealand, gave a most exhaustive log and graph showing the comparative strength of the 22 and 32.77 meter transmissions," said a General Electric Company representative. "The concluding line in the log for June 5 was: 'Went to bed, unable to keep awake any longer.'"

Twenty-four Hours' Test.

An exhaustive report was also received from G. S. Daughtin, of Stratton and Co., Ltd., radio manufacturers, of Birmingham, England. Mr. Daughtin reported that one or the other station was audible over the entire twenty-four hours during which the tests were conducted.

During the daylight hours Mr. Daughtin recorded better reception from 2XAD, while 2XAF operated on 32.77 metres, was received best during the hours of total darkness. When it was dark at the receiving end and light at the transmitting end, 2XAD was received best. When it was light at the receiving end and dark at the transmitting end the 2XAF signals were most reliable.

3LO ON SHORT WAVE

MELBOURNE STATION'S EQUIPMENT.

The well known broadcast station, 3LO, Melbourne, has now commenced transmitting concerts on a short wavelength. This is a big enterprise and calls for a lot of technical skill and special equipment.

The programmes are being given in the city studio in the ordinary way, and passed on to Braybrook (eight miles from Melbourne) by land line.

The wave-length is 29.8 metres, and the power drawn from the mains will be 15,000 watts. At Braybrook the output from the studio is applied through a line amplifier and sub-modulator unit to the grids of the modulator proper, which in turn is coupled to the plate of the special short-wave oscillating valves. These valves are of unique design, and are enclosed in metal screens in order to distribute the high frequency losses over the whole of the glass envelope and thus reduce the risk of puncture at the high potentials used. The oscillator is worked on the amplifying drive system through the stages of magnification—modulation taking place on the last stage. The output from this is then fed through a specially designed coupling circuit through a "lecher" feed to the distant aerial. The lecher lines consist of two highly insulated, tightly stretched wires supported on miniature telegraph poles. The energy from the transmitter is fed into the base of the aerial system by means of a special coupling. Steps are taken to prevent radiation from the lecher system and to eliminate reflection so as to ensure the maximum transfer of energy from the oscillating apparatus to the aerial. The advantages of this system are that the aerial may be kept free from interference likely to be caused by conflicting electric fields in and around the actual generating apparatus, buildings, and other factors likely to cause absorption due to the enormous intensity of the electro-magnetic fields set up at frequencies of the magnitude of those to be used for these tests.

Electrical Screening.

The various units of the transmitting equipment are electrically screened from each other, and the frames and panels made of brass. The circuits are so balanced that all fields induced in the frames are neutralised. All high frequency portions of the equipment are supported on plate glass strips to eliminate dielectric losses.

The potential on the plates of the main transmitting valves will be 8000 volts, supplied by a specially constructed three-phase double wave rectifier and associated smoothing unit. With this equipment 3LO Melbourne will have the most modern and most powerful short-wave broadcasting station in the southern hemisphere, which should be capable of being heard in any part of the world.

All the apparatus was designed and built in Australia by Amalgamated Wireless (Australasia), Ltd.

100,000 WATTS

WGY'S GIANT TEST.

For the first time in the history of radio broadcasting, 100 kilowatts of electrical energy was modulated with the vibrations of the human voice and instruments for the radio public a few weeks ago. A special transmitter at WGY, Schenectady, U.S.A., was successfully tested with that amount of power in the antenna between the hours of 1 and 2 a.m., Eastern daylight saving time.

"This was the first occasion in the history of broadcast service in this or any other country," said Mr Meenam, of the General Electric Company, "that such a great amount of power has been modulated and delivered to the antenna. The Federal Radio Commission granted permission to operate this high-power transmitter for thirty days between the specified hours.

"Two of the 100-kilowatt type of transmitting tubes recently developed by the General Electric Company are being utilised in the amplifier, and three tubes of the same rating in the modulator The experimental set is crystal controlled, which assures very close adherence to the station's transmitting frequency of 760 kilocycles."

The amount of power placed on the air by the Schnectady test transmitter was more than three times the power utilised in the regular programme broadcasts of WGY, which is 30 kilowatts, or 30,000 watts The 100,000 watts of the General Electric experimental station transformed into power usable in ordinary house lighting bulbs would illuminate 2000 lamps of the 50-watt household type.

WORLD CONFERENCE

WHAT ABOUT BROADCASTING?

DR. DE FOREST'S COMMENTS.

Looking forward to broadcasting on an international scale, Dr. Lee De Forest, inventor of the three-element radio valve, urged recently that the International Radio Telegraph Conference to be held in Washington, U.S.A., beginning October 4 consider various phases of radio broadcasting as well as wireless telegraphy. Twenty-three nations have appointed delegates to the conclave.

"A perusal of the names of the delegates fails to reveal many that have been especially linked with the broadcasting field of radio," said Dr. De Forest. "I firmly believe that before the next succeeding conference will be held international broadcasting will have attained a stable development which will call for careful and harmonious regulation on the part of the various Governments, in order that the greatest possible benefit to the largest number of people may be obtained. This condition doubtless exists to-day in Europe, where nightly programmes from various European capitals are heard all over the Continent.

Radio a Peacemaker.

"For years I have been convinced that one of the greatest possible factors making toward international peace and amity will be the interchange of radio programmes between nations. To this extent, therefore, the problem of international broadcasting is really of equal import to that of exchanging commercial telegrams without interference. I will welcome the time when some 'Geneva Conference' is regularly convened, not for the mere limitation of cruiser tonnage among rival nations, but to secure the greatest possible good for the greatest number of inhabitants, which can be bestowed by regulating radio broadcasting channels of international acquaintanceship."

Arthur Batcheller, Federal Radio Supervisor in New York, who has just been notified of his appointment as a technical adviser to the American delegation of the international conference, said: "I do not know just what will be done in regard to radio broadcasting problems that have arisen in the United States. I have some ideas of my own that I hope to be able to present, however, during the preliminaries to the conference, which I will attend in Washington soon after the first of August. During my absence, which I expect will extend well into the winter, Henry L. Bogardus will act as Radio Supervisor in this district."

To Include Broadcasting.

Latest news from Washington states that among the subjects to be discussed at the conference are the revision of the International Radio Telegraph Convention and regulations signed at London on July 5, 1912, measures for the international supervision of radio communication between large fixed stations, broadcasting and the handling of Press messages, radio telephony, measures for the elimination of interference, distress messages so as to take cognisance of increased uses and classes of service, radio aids to navigation and other purposes for which radio has been used as a result of its development since 1912. Secretary Hoover is chairman of the American delegation.

RADIO SUPREME

WINNING THE WORLD.

Radio will capture the world. Civilisation and advancement is divided into ages. In the nineteenth century the steam age took the spot-light. This was the period which saw the advancement from the old sailing ship on the seas to the steam propelled craft, and from the ox carts which treked across the plains to the railroad.

At the beginning of the twentieth century the automobile age came in. To-day we have the radio age and this new science has gripped public imagination to such an extent that nothing else in science or commerce can compare with it for supremacy.

The peculiar thing about the various ages is that all of them at their inception had as many doubters as believers.

Prejudices Removed.

Few believed that ships could be successfully propelled by steam engines. It was thought the engines would be too heavy to allow the ship to stay afloat.

The familiar cry at the beginning of the automobile age was "get a horse."

And now in the radio age one sometimes used to hear the protest: "I wouldn't have one of the things in the house." However, it may be said to the credit of radio that this science is winning the doubters with greater celerity than the other milestones of progress

Those who "wouldn't have one of the things in the house" are now getting them in as soon as possible. They are fascinated by radio even more than our forefathers were by the advent of steam travel and with the introduction of the automobile.

RECORD YOUR DIALINGS

A correspondent writes:

Might I make a suggestion. If you have room to print the following diagram, it would save listeners fishing round the dials for station. If they were only to dot down the readings of the dials once they had found the station, it would stop some of the howling. If they just chance to luck to pick up a station instead of keeping a record of their dialing it could be cut out and pasted to a piece of cardboard and would be handy at all times.

Call Letter.	STATION	Wave Length.	DIALS. 1	2	3	REMARKS
1YA	Auckland					
2YA	Wellington					
3YA	Christchurch					
4YA	Dunedin					

CAUTION WITH BATTERIES

A wire placed from one terminal of a battery to the other gives the current a path without resistance and is what is called a short circuit. This is harmful to any battery, and if the wire is left on for more than a fraction of a second it may ruin the battery. Such heavy current discharging from a storage battery may cause enough heat to warp the plates, which practically means the end of the battery.

In taking dry cells home for the shop be careful not to let any metal connect the two terminals. If you are careless in this matter you may think the dealer has cheated you, for any metal will ruin a battery in a moment.

When using tools inside your radio set do not let them rest anywhere near the battery wires. The B battery will usually make enough of a spark when short-circuited to let you know what has happened, but the A battery may not.

ESPERANTO

As no doubt many of our local readers are already aware, an Esperanto Club was founded in Wellington on August 31. It is a very significant fact that a great many of the membership are interested in radio, and that all of the club's office-bearers, without exceptions, are listeners. The spread of the language is the chief aim of the club. Students of the Radio Esperanto course who are resident in Wellington are thus afforded an additional opportunity to improve their knowledge of and to practice Esperanto. Full particulars are obtainable from the instructor, who also invites enquiries relative to Esperanto. Address all communications to "The Esperanto Instructor," N.Z. Broadcasting Co., Wellington, or care of "Radio Record." To ensure a reply enclose a stamped addressed envelope.

LESSON VIII.

(To be broadcast from 2YA on September 22, from 7.39 to 7.54 p.m.)

Bonan vesperon, studantoj!

THE VERB (continued).—PASSIVE PARTICIPLES: The passive is formed by the auxiliary verb **ESTI** and the passive participles of which there are three:—

Pres: **ata**, amATA, loved, being loved.
Past: **ita**, amITA, having ben loved.
Fut: **ota**, amOTA, about to be loved.

Primarily adjectives, they may become **nouns** in the same way as active participles, and receive the adverbial ending E, as mentioned in Lesson VII.

TABLE OF PASSIVE TENSES.—INFINITIVES: **esti amATA**, to be loved; **esti amITA**, to have been loved; **esti amOTA**, to be about to be loved.

Mi estAS amATA, I am being loved.
mi estAS amITA, I have been loved.
mi estAS amOTA, I am about to be loved.
mi estIS amATA, I was being loved.
mi estIS amITA, I had been loved.
mi estIS amOTA, I was about to be loved
mi estOS amATA, shall be loved.
mi estOS amITA, I shall have been loved.
mi estOS amOTA, I shall be about to be loved.
mi estUS amATA, I should be loved.
mi estUS amITA, I should have been loved
mi estUS amOTA, I should be about to be loved.
EstU amATA, be loved.
EstU amOTA, be loved (at some future date).

The English proposition following the passive verb is expressed by **de** for the agent, and by **per** for the instrument:—**Li estas batita De la patro PER bastono.** He has been struck by the father with (by means of) a stick.

Lesson IV. will comprise examples of the use of active and passive participles.

Bonan nokton!

NO CENSORSHIP IN U.S.A.

It was reported from Washington, U.S.A., on July 21, that the Government Radio Commission has no authority to impose censorship on broadcasting programmes, and any abuse in that regard must be dealt with through other agencies. Admiral Bullard, chairman of the commission, on the above date, informed W. R. Keagan, of St. Louis, who complained of the use of abusive and profane language by some announcers in the Middle West.

Replying to Mr. Keagan, Admiral Bullard said there is no authority in the law of 1927 empowering the Radio Commission to deal with the offences described, and that relief must be sought elsewhere.

The Improved Browning-Drake Receiver

In last week's issue we gave the full drawing of the wiring design of the improved Browning-Drake receiver. "Megohm" now gives the detail for the wiring and a description of the components. His article will be continued in next week's number.

The Wiring Diagram.

In order to show the wiring as clearly as possible in conjunction with the position of components, the wires are shown running as directly as possible from point to point, although they will not all occupy the exact, same position in the finished set, but should follow the same route in every case. Where possible, all filament leads are run under the baseboard as shown by the dotted lines. On the audio side, wires running between transformers and valves may be kept well up from the baseboard as may seem convenient. It is on the radio-frequency side that special care is required in wiring up. All R.F. leads should take the shortest possible route from point to point, just as shown, and their height from baseboard may be regulated where necessary in order to keep well away from other wire or component. The leads to the variable condensers will be much shorter than appears on the diagram, where the front panel is turned down flat for convenience of illustration. Square or other suitable wire, not less than 18's gauge, may be used for all connections. In the case of using American valves there will be the different way of connecting the sockets to allow for, but if the plate terminal of each is put in the same position as shown for the plate of the British, the remaining connections will present no difficulty. In the case of the detector, the plate terminal could be placed towards the tickler, in order to shorten the grid connection.

The aerial terminal connects to the midget series condenser, the other side of which connects to the tap on the aerial coil. From the earth terminal the lead runs along the baseboard, connects to bottom turn of coil, proceeds under coil and up to moving plates of aerial condenser. From the fixed plates of this condenser a wire runs to the grid of R F valve: soldered to this wire, as shown, are short connections running to top of aerial coil and neutralising condenser respectively This lead should be kept high and away from aerial coil The plate of R F. valve connects to the beginning of R.F transformer (marked A); the negative filament through the R.F bradleystat to the negative A lead connected to earth via the wire from aerial condenser to earth terminal, and proceeding under the baseboard in the other direction to the audio end. The positive filament lead proceeds under the baseboard to the positive filament terminal of each valve socket, and under the board a branch is taken to join the beginning of the R.F. transformer secondary coil, still under the board, and continuing up through a hole near the panel to moving plates of secondary condenser The fixed plates of this condenser are wired to the tickler end of transformer coil, and a branch soldered on to run to one end of grid leak and condenser, the other end of both being connected to grid of detector valve If the tickler has been wound in the direction shown, connecting as in the diagram, this will save the necessity of reversing the leads at a later stage One end of tickler, as shown, goes direct to detector plate, the other end is soldered to the connecting wire from "out primary" or its equivalent on the first audio transformer A fixed condenser of at least 001 mfd capacity s shown across the two ends of the primary winding of this transformer and as this condenser has a great influence on tone it should not be omitted It pays to experiment with different values and ascertain which is best suited; too large a capacity tends to woolliness especially on speech

There should be no difficulty in wiring up the audio side if the diagram is followed Many of the connections cross one another in the diagram, but it should be noted that none of these join at the intersection unless specially mentioned. and those shown dotted are under the baseboard A common terminal is provided for positive A and negative B, and for positive C and negative A. respectively The connection from positive A terminal goes under the board and connects there to the positive A wire running to each valve The negative A lead, shown running round the extreme edge of baseboard, may actually be brought further in, as there will be a narrow strip of wood under two sides of the baseboard, in order to raise it to leave room for wiring underneath Solder all joints where the wires are not connected to terminals. Care must be taken to place the loudspeaker or output jack high enough to clear the choke and Mansbridge condenser behind the panel. The exact position of the two variable condensers depends upon their exact size, but care must be taken to leave clear room for the sweep of the vanes, keeping the condensers as far apart as practicable.

Grid Leak and Condenser.

A good make of fixed grid leak of a value from 2 to 3 megohms, as recommended by the makers of the particular detector valve is to be used. The grid condenser will be a fixed one of small capacity, usually given as .00025, but experiment has shown that one of smaller value is in some cases an advantage. Condensers that slide into clips instead of being bolted down are handy, as different values can so easily be tried.

The R.F. Transformer Secondary Condenser.

With 75 turns on the secondary coil the value of this variable condenser should be .00025. The points mentioned in connection with the aerial tuning condenser apply equally to this one. Only the straight-line frequency type or its modified form should be considered. If a .00035 mfd. condenser is used, only 62 turns will be required on the secondary coil.

Audio Transformers.

In the set being described there are two audio transformers, Igranic shielded type, large size, 5 to 1 ratio. A 3 to 1 ratio was tried in the second stage, but gave less volume with no improvement in tone. Whatever make the constructor decides to adopt, care must be taken to see that they are of ample size and properly shielded. Good quality in transformers is highly imperative, as only a high-grade transformer is capable of giving good tone combined with volume.

Audio Valves.

A Mullard P.M. 4 in the first and a P.M. 254 in the second stage are in use in the set described. These valves take up to four volts for the filament, and have an impedance of 7000 and 3500 ohms. respectively. The H.T. voltage is up to 100 and 125 volts, respectively, but both valves give very good volume with less than the full H.T. voltage, so that an eliminator or B battery, giving a voltage approaching 100, will give good results. Grid bias must be provided for the audio valves. For the P.M. 4 at 75 volts, bias will be 4 volts, and at 100 volts 7 volts grid bias; for the power valve at 100 and 125 volts H.T the grid bias will be 12 and 17 volts respectively. A P.M. 4 can be used in both stages with good results, but with a decrease of volume.

The American U.X. 201A amplifier, taking 6 volts on the filament, is suitable for the first audio stage, and for the last stage the U.X. 112 or U.X. 171 power amplifiers, both requiring six volts on the filament and up to 150 (10) and 180 (40½) volts H.T., respectively, with appropriate grid bias as in parentheses. At 90 volts H.T the grid bias for these valves is 6 and 16½ volts, respectively.

Dry-cell valves requiring two volts on the filament are often the only means of obtaining filament battery power in remote districts, and quite good results can be obtained with them. For this purpose P.M. 2's and U.X. 120's can be used in the last audio stage and other suitable amplifier in the first stage.

(To be concluded.)

EFECTS OF LIGHTNING

FIRE UNDERWRITERS' REGULATIONS.

A Kelburn reader wishes to know the possible and probable effects fo lightning upon a set or user without an arrester in the aerial circuit. If the set was in use when lightning struck the aerial, the chances are that there would not be much left of the wiring of the set, as the track of the discharge would be through the aerial circuit to earth. This would offer an indirect path for the lightning to get to earth, and would also offer resistance. When lightning meets with any opposition to its progress the tendency is to branch off in all directions, seeking an easier path, and this tendency would probably lead it through the whole of the set wiring, which would at least receive considerable damage. A listener with headphones might get a severe shock direct from the 'phones, but in any case a person situated anywhere in a house without a wireless installation sometimes gets what is known as a "return shock" when the lightning discharge is close at hand. When a highly electrified cloud passes overhead it attracts to the nearest point of all conductors below it a charge of the opposite electricity to its own, so that a person standing about has a strong charge of electricity attracted from the earth to his head. When the discharge of the cloud takes place to a lightning conductor, chimney, or other high object near at hand, the charge in the person's head suddenly returns to earth, giving the "return shock," which may be slight or fairly severe, but not fatal.

Not very much is usually known about lightning, and on that account there is a tendency to overrate the danger from it. When we take into account the large number of aerials in use and the rare occasions upon which one is struck, the danger is shown to be fairly slight. But when an arrester is properly fixed on the outside of the building a lightning discharge will jump the arrester and find its way direct to earth, and, provided that the discharge is not abnormally large, there is a good chance that the set would be unharmed.

The function of an arrester is only to provide an easier path to earth than through the set when the latter is in use. When the set is not in use the putting over of the switch to earth the aerial should never be neglected, as by that means the set is protected, and the aerial, acting as a lightning conductor, affords an actual protection against the house itself being struck. When the aerial is so earthed the lightning arrester is out of action for the time being. The earthing switch should also be placed outside the house in a convenient position by the window.

The foregoing remarks show that in neglecting to instal a lightning arrester a certain amount of risk, though small, is being run, but there is another aspect of the case. The fire underwriters' regulations require that no less gauge than fourteens wire shall be used for the lead-in and earth connection, that an earthing switch shall be provided, and that a lightning arrester of good pattern be installed, and it is very much to listeners' own interests that they should comply with these three important regulations, as it is only in case of such compliance that the company insuring the property waives any right to make an increase in the premium on account of extra risk.

When a thunderstorm is close at hand it is wise to discontinue listening, earth the aerial, and disconnect both aerial and earth wires from the terminals of the set as a simple precaution, but there should be no nervous apprehension about it.

ANSWERS TO CORRESPONDENTS

A correspondent inquires as to the effect of an aerial 150ft. long when used for crystal reception. There appears to be nothing against using such an aerial for crystal reception, and several readers have reported good results from aerials of similar dimensions.

A number of letters have been received asking for an article on oscillating crystals, and this will appear in due course.

SHORT-WAVE HINTS

In operating a short wave set there are a number of points to be considered in addition to those common to both broadcast and the short wave. The following hints are given as the result of practical experience, and may be of assistance to readers who are starting out on short-wave reception.

Keep detector filament voltage as low as possible. This makes for quiet working and smooth oscillation.

The plate voltage must also be kept down, and probably from 20 to 30 volts HT will give satisfactory results.

Very often better results are obtained by discarding the earth connection. In most circuits it is then necessary to connect the A battery side of the secondary tuning coil to the earth terminal.

If the set shows any tendency to squeal when off oscillation point, try lowering filament voltage with the rheostat and also try a larger grid condenser.

The radio choke is not at all critical. 'Megohm" has used half a dozen, some elaborately wound on rest-tubes, with 100, 150, and 200 turns, but 100 turns of 30's roughly wound on an empty cotton spool with a small centre, answers as well as any.

Where plug-in coils are used, the secondary condenser should be small in capacity, and may be made so by removing plates from a variable condenser until only five are left. This spreads out the stations on the dial and makes tuning less critical.

There is no need to shorten a 100ft. aerial for short-wave reception, and a greater length than this is said to be quite suitable.

Loose aerial coupling and tight reaction coupling are usually best.

For the guidance of those contemplating the construction of a set using movable plug-in coils, the following are approximately the three sets required to cover the range from 20 to 100 metres with a small secondary condenser as mentioned above:—

No. of Turns. Pri.	Sec.	Reac.	Metres
3	15	6	50-100
3	8	6	30-55
3	4	4-6	20-35

In houses with an alternating current lighting supply there is sometimes trouble in getting rid of the a.c. hum, and working with an earth connection is sometimes impossible in such a case. The hum has been removed in a particular case by placing a metal plate four or five inches square a few inches above the detector valve in a horizontal position and connecting the plate to ground by means of a thin wire. Other cures must be sought to overcome individual troubles of this kind. Switching the a.c. supply off is sometimes feasible in the daytime.

THE SHORT-WAVE ADAPTER

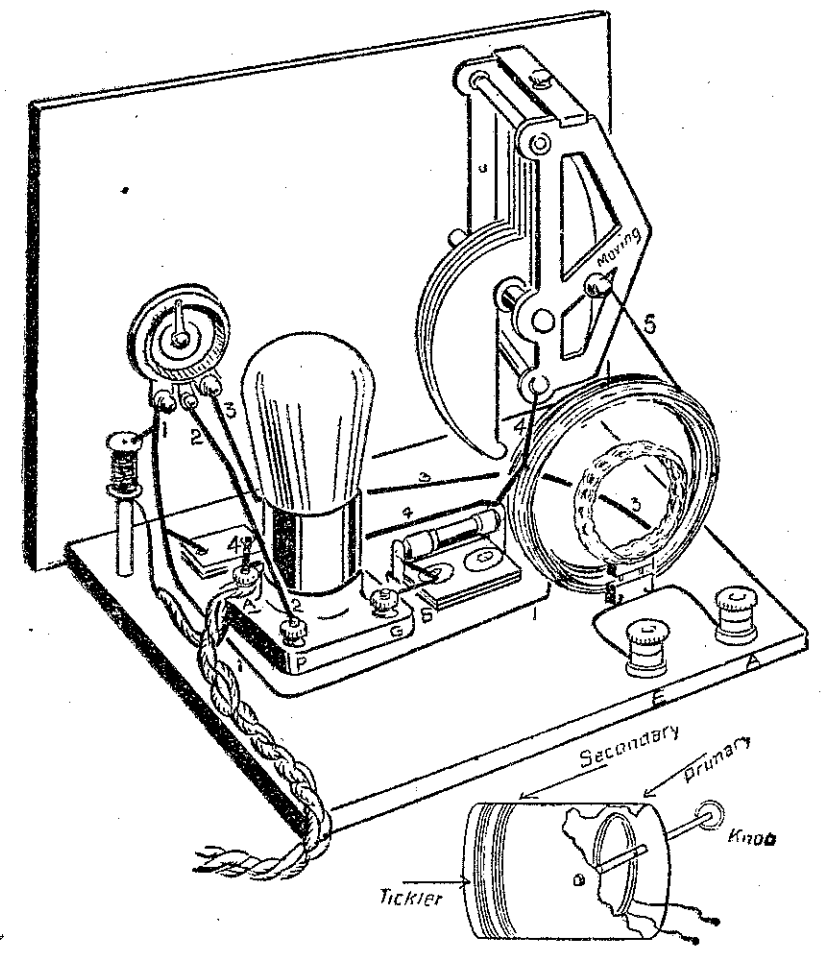
FURTHER DETAILS FOR CONSTRUCTORS

The short wave adapter described in No. 5 of the "Record" has aroused the interest of a large number of readers, several of whom have written asking that the theoretical circuit diagram, already published, be supplemented by an illustration of how the adapter looks when made up. A somewhat indistinct illustration has been supplied by the original contributor of the article, and from this a drawing has been made on which the connections have been distinctly marked. "Megohm" has written up the additional hints that follow.

As described in the original article, the coils may be arranged in different ways to suit the constructor and to give the necessary range of wave-length. The three coils are shown at the right of the illustration, the small near one is the primary, for which five turns are specified. The next coil is the secondary of ten turns, and close behind is the tickler of six turns.

The method of fixing the two latter coils to the baseboard is not shown, but the constructor will soon plan a suitable way with celluloid strips and cement, keeping the lower portion of the coils clear of the baseboard by about half an inch. This arrangement of coils is said to tune up to Schnectady's 89 metre transmission, but there is no statement as to the lowest wave-length that can be tuned in, but this will probably be about 45 metres.

A small inset drawing is given of a suggestion for winding the coils upon a short tube three inches diameter, of celluloid or bakelite.



The tickler and secondary of six and ten turns respectively are wound with 26's double cotton-covered wire as already specified, a space of one-eighth inch being left between the two coils. At one and a quarter inches from the secondary coil a hole is drilled in each side of the tube to take a quarter inch ebonite rod, to which the primary coil of five turns is attached, the ends being brought out to connect to aerial and earth. If the set will not tune as low as is required, the primary turns may be reduced to three. The ebonite rod is passed through a hole in the front panel clear of the moving part of the condenser, and is rotated by means of a knob.

The wiring is shown as clearly as possible, but does not indicate the exact position of the wires as regards height from baseboard. Leads 4 and 5 from the condenser are shown connected to the top of the secondary coil for clearness, but they could actually be put in this position to keep clear of the leads on the baseboard.

Taking the connecting wires in turn, No. 1 comes from one end of the resistance and to it is soldered the wire from the top of the radio choke, then a soldered branch to the .0001 mfd. fixed condenser, situated behind the valve. The lead marked 1 then proceeds along the baseboard to one end of the tickler coil. The flexible cable contains three wires, and reference to the theoretical diagram will show where each is to be connected according to the corresponding valve pin to which it is attached on the plug. One of these flexible wires goes to the lower end of the choke, and the other two each to a filament connection on valve base. To show the lead (4) to fixed condenser, grid leak, grid condenser, secondary coil and tuning condenser, the left-hand filament terminal has been made negative. This No. 4 lead comes from the fixed condenser to each point as mentioned and finishes at the fixed plate terminal of the secondary condenser. Lead No. 2 goes direct from arm of resistance to plate terminal of socket. No. 3 connects the other end of the resistance to the remaining end of tickler. It is possible that the connections on tickler will have to be reversed when the set is first being tested. No. 5 connects the remaining end of secondary coil to the moving plates of secondary condenser, and No. 6, a very short lead, connects grid of valve to grid condenser and leak. The aerial and earth terminals are connected to respective ends of the primary coil.

The choke is shown wound on a piece of dowel-stick fitted with flanges of celluloid or other insulating material. A sewing-cotton reel may be used, but should have a centre of small diameter. The choke must be kept away as far as possible from the tuning coils.

As .00025 is a rather large capacity condenser to use for short wave work, a high ratio vernier dial should be procured, and a type should be chosen that gives absolutely correct movement, free from any backlash, looseness or uncertain action of any kind, for any such shortcomings will be very apparent when tuning-in short wave. Friction-drive is very suitable for noiseless working. Some types of geared condensers will give a grating sound when moved, and this makes tuning-in more difficult, so any condenser of this class should be tested before final adoption.

The parts required for construction of the adapter are as follow, approximate price being shown.

	s.	d.
Panel, ebonite, about 10 x 7	5	0
Baseboard, about 10 x 8 ..		
Variable condenser with vernier, .00025	20	0
Tapped resistance potentiometer	10	6
Grid Leak 1/6, grid condenser 2/3	3	9
Fixed condenser, .0001	2	3
Coils, or wire to make them		
Valve socket	2	0
Terminals, each		4

All the coils, including the choke, could be made by the constructor, but the tuning coils can be bought if desired. A set of three Hammarlund-Roberts short-wave coils, unmounted, for waves of 9 to 90 metres, is listed at 20/-. Short-wave coils are not much in evidence in catalogues to hand. Hammarlund short-wave receiving coils are wound in long lengths with 16's insulated wire, ten turns to the inch, and any length can be cut as ordered, thus if 15 turns are required, 1½ inches would be supplied. Price 2/3 per inch. Connections or plug-in arrangements would have to be added to these by the constructor. The price given for the variable condenser is only an average one. There are cheaper makes, but in such a vital component, quality is more important than price.

For short-wave reception the best results are often obtained by discard-

(Continued on page 15).

ing the earth connection, and from the end of the secondary coil that is directly connected to the negative A filament terminal a wire is run to the earth terminal, to which no other connection will then be made.

The potentiometer control of the tickler as shown is quite a recognised method that is in use in some circuits for broadcast reception.

A certain amount of careful adjustment will be required to get the adapter working at its highest efficiency.

Constructors are advised to adopt the alternative tuning method as shown, enlarging the baseboard suitably. For reception around 30 metres, at present perhaps the most important, the turns recommended are primary 8, secondary 4, reaction 4 to 6.

A more usual way of tuning a short wave set would be to cut out the resistance on potentiometer, leaving tickler connected to top of choke. Plate of valve would then be connected direct to tickler instead of to potentiometer, and a small variable condenser added to the panel would be connected up in place of the .0001 by-pass condenser.

ABOUT HEADPHONES

HINTS ON THEIR USE

The best way to tell if a pair of 'phones is in good condition is to put the 'phones on and place the end of one of the leads between the teeth. Rub a key or nail upon the other lead, and the weak galvanic currents set up in the body will cause a scraping sound in the earpieces, which will correspond with the rubbing of the key. Such a current is very weak, and is a better test of continuity than the usual dry-cell test.

The headphones can be put to a great variety of uses in connection with the testing of various parts of the set, and really comprise a most efficient and delicate testing instrument. For example, if it is doubtful whether another pair of 'phones or a coil have a break in the windings, it is only necessary to connect them up in series with a battery or dry cell, and with a pair of known good 'phones, when the making and breaking of the circuit (if continuous) will give rise to clicks in the headphones.

Many people think that 'phones will look after themselves without any attention, and this is a great mistake. If they are dropped, the jar will almost certainly knock some of the magnetism out of the magnets, which of course impairs their efficiency. Therefore, when you have finished listening-in, do not throw the 'phones on the table, but hang them on a rail on a dry wall.

When trying to get a station that is only just out of hearing, instead of frantically twisting condenser knobs, or adjusting your crystal or filament current, why not try loosening or tightening the caps of your 'phones? The tension on the diaphragm has a lot to do with signal strength.

For crystal sets the 'phones may be connected without consideration of polarity, but when connecting to any valve circuit, and this includes amplifiers also, the coloured cord should be connected to the 'phone connection on the set that joins the positive of the high tension. If there is a cord marked with red, that will be the positive, or if only one cord is marked with any colour, that will probably be the positive.

If 'phones are continually connected the wrong way round on valve sets, the permanent magnets will be gradually weakened, and loss of volume will result, making distant reception more difficult.

A new transformer exhibited at the radio exposition in Brussels is screened in perforated metal, which, it is claimed, prevents its magnetic field from affecting a radio set. In addition to this, it carries a patented safety device which indicates by a distinct change of colour whenever high voltage is causing its windings to become too hot. The operator and the set are thus protected.

The Children's Corner

By "ARIEL"

Dear Radio Children,—This week I have found another picture for you to paint, as you are all so fond of painting. It is rather a dear wee baby isn't it? There is plenty of scope for your talent too. What a lovely patch-work quilt you will be able to make! Send it in by Sept. 28. In next week's Corner we will have our fourth Zoo animal, the "Faydout." It is beginning to look really like a Zoo now, and I thrill with pride every time my glance falls upon our wonderful collection. When we have duly caught and caged the "Faydout," how would it be to have a "Squealer" for the next animal by October 5? I think you will find him fairly easy to get on to paper. He is a kind of first cousin to the "Howler," and spoils the pleasure of wireless listeners if he is allowed to continue his career uncheckd. In England they track him down with a special car which contains a special set for guiding the operator right to the house containing the receiving-set in which the "Squealer" has gone to roost. The guiding-set tells the operator when he is getting hotter or colder in his search. Wouldn't it be great fun to have a car like that and set off at night tracking the "Squealer" to his lair?? When he is found, the owner of the set is told how to get rid of him and how to avoid him in the future.

Here is a little true story of a boy and how he made his dream come true through wireless. He was only a small boy, very, very poor, who sold papers in the streets of one of the big towns in England. One terrible day he was taken ill. He had no home, so was taken to one of the large Hospitals, and was so kindly treated that he made a resolve to do something to show his gratitude. He grew to be a man, and from selling newspapers he finally became editor of a big London daily. It was then that he started a fund for putting head-phones at the head of every bed in every hospital in London. It was a big thing to do, wasn't it? Just think of the hundreds and hundreds of patients who were made happier just because one small boy never forgot that someone had been kind to him when he was poor and miserably ill. His name was John Hugh Jones, but hospital patients always call him Dr. Radio. Now get out your paint boxes and drawing pens again, and let us see whether there are any new artists.—Love Ariel.

OUR COMPETITIONS

1. **Wireless Zoo. "Squealer," closing date October 5. (Prize, 5s.).**
2. **Painting, closing date September 28. (Prize, a book).**
3. **The best story, closing date October 12. (Prize, a book).**
4. **The best poem, closing date October 19. (Prize, a book).**

NEW COMPETITIONS.

Here are two lovely new competitions for you—both of them writing ones this time. They need not be sent in until October 12 and October 19, so that gives you a whole month to think about them. So many radio children write such splendid little letters that I'm sure they can write stories, too. Now for No. 1. I want you to take any advertisement picture from any paper you like, and write a story about it. Cut out the advertisement and pin it to the front of your story, so that I will know what it is all about. The following story is an example for you—I thought you would be very interested to read it, as it was written by a little girl who lives away in the country at Mangahoe, Te Kuiti. Her name is Catherine Sale, and she is only 10 years old. She chose the advertisement for Post Toasties, which you must all know quite well, and wrote her story about the five little elves in the maize. Just see whether you can do as well. :—

A POEM ABOUT A PET.

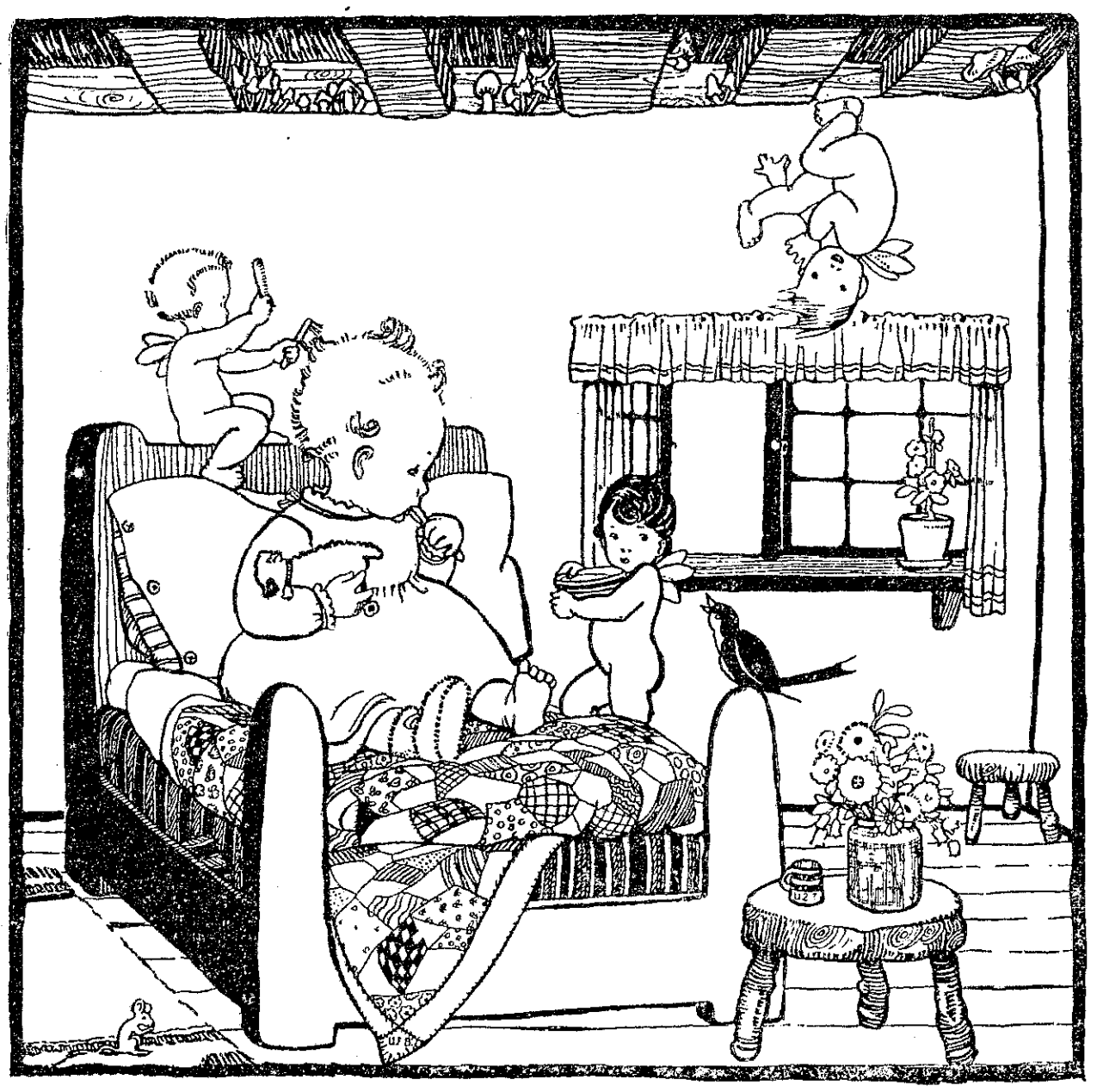
No. 2 is a poetry competition. Lots of you have pets, for you have already told me about them. Write a little poem about your pet lambs or dog, or pussy or anything else.

If you haven't a pet, write some verses about some everyday thing that you use, such as a thimble, a comb, or a pen-knife. Think of something for yourselves. Below are two little poems to give you an idea of how to set about them. Prizes of nice books will be given for each of these competitions.

THE LITTLE WRIGGLY DOG.

Kim wasn't very clever, and he wasn't big at all;
He was just a little wriggly dog, who, though he was so small,
Was quite a fierce protector, and when people passed him by
They'd go all carefully to see the look within his eye.
And when he went up close to them, the bravest heart would quail
Until he smelt that they were nice, and wagged his stumpy tail.
We used to go adventure walks—the kind when you explore,
For they said "You mustn't go alone, across the great big moor;
But we don't mind a bit if you will always go with Kim,
For though he's just a little dog, you're always safe with him."
But Kim got tired of chasing things, his spirit went, they say,
To other happy hunting grounds another world away.
And we wrote on a little stone (near where the roses grow)
"This was a dear and wriggly dog who's resting here below."

PAINTING COMPETITION—CLOSING DATE SEPTEMBER 28.



THE PENCIL'S STORY.

(By Florence Hoatsen.)

"I am a little pencil, and my name is H and B.,
I lie upon the mantelpiece for everyone to see;
I'm handled forty times a day, it is a weary life;
And when my wits are rather dull I'm sharpened with a knife!

"I scrawl when Tommy has me, and I draw all sorts of things,
From submarines and aeroplanes to cabbages and kings;
I write a lovely letter when Miss Phyllis is about,
And if by chance I make mistakes Miss Phyllis rubs them out.

"And if I slip and tumble down I'm certain to be missed,
For mother wants me badly when she does the washing-list,
And father makes me keep the score when he begins to play—
I'm just a little pencil, but I have a busy day.

"I really never am allowed to grow up as I ought,
I'm getting shorter every day (it's awful to be short),
And when the knife begins on me I ache in every joint,
I put it in that way because you're sure to see the point.

"I'm very glad I'm useful, though my speech is always dark,
But every time they handle me I always make my mark!
But sorrow seems to follow me in spite of many a friend,
For when I'm meditating I am bitten at the end."

A DOUBLE ACROSTIC

Find the correct answers, write them in order one under the other, and the first and last letters will give you the name of a person we all love.

1. An old-fashioned drink.
2. A man mentioned in the Bible.
3. A girl's name.
4. An Old English pronoun.
5. An exclamation of dismay.

Solution next week.

LIMERICKS

ONLY FANCY.

There was a faith-healer of Deal
Who stated that pain is not real;
If I sit on a pin
And puncture my skin,
I dislike what I fancy I feel.

NO WONDER!

There was a young man of Madrid
Who ate forty eggs for a quid,
When they said "Are you faint?"
He replied "No, I ain't,
But I don't feel as well as I did."

NEXT TO NOTHING.

There was a young lady of Lyn
Who was so exceedingly thin,
When she drank lemonade,
One hot day in the shade,
She slipped through the straw and fell in.

"FALSE" ECONOMY.

There was an old man of Tarentum
Who gnashed his false teeth till he bent 'em.
When asked what it cost,
And how much he lost,
He replied "I don't know, I just rent 'em!"

SOUND ADVICE.

Be true to your teeth, or your teeth will be false to you.

A mile above the earth, a singer entertained a Times Square crowd in New York recently. The loud-speaker, which carried his voice downwards, operates on the 1000-watt output of a group of power valves.

EPITAPHS.

Here lies poor Burton;
He was both hale and stout;
Death laid him on his bitter bier,
Now in another world he hops about.

Here lies John Bun;
He was killed by a gun;
His name was not Bun, but Wood,
But Wood would not rhyme with gun,
But Bun would.

BREAKFAST.

Now I'm little 'course I have
Porridge (with a spoon)
Sometimes, for a treat, an egg;
I'll be bigger soon.

Then I'll have hot sausages
And bacon (with a knife),
And never eat another scrap
Of porridge all my life!

MOST UNFORTUNATE!

Teacher: "Did you make that face at me?"

Tommy: "No, sir; you just happened to walk in front of it."

TONGUE TWISTING.

Say this quickly six times:
Watch a watch wash!
Watch which watch wash?
Why watch the watch washing that's watching the watch?
Then try this one:
She was a thistle-sifter.
She had six sieves of sifted thistles.
And six sieves of sifted thistles.

A RARE BIRD.

Who is the queerest person you have ever seen?

An author, because his tale (tail) grows out of his head.

"THE MISCHIEVOUS ELVES."

Once upon a time there lived in Fairyland five little elves, whose names were Tip Toe, Romper, Whiz, Pip, and Top. One day Romper said to the other elves, "Let us go to the king's palace to-night and steal the fairy queen." "But, where shall we hide her?" said Whiz. "I think a good plan would be to climb up the stem of one of those tall maize plants and lay her in the middle of it," said Pip. "Yes, just the place!" cried Tip Toe, and so the plan was arranged. That night the wicked little elves stole off to the palace and took the fairy queen while she was sleeping, and hid her in the maize. Then they ran away to the forest and hid. Next morning, when the king and the fairies and the elves found that their queen had been stolen in the night, they did not know what to do. They hunted and hunted, and could not find her.

At last the king offered a wonderful wand to the one who found his queen. When the naughty little elves heard the news they at once got out of their hiding places and ran to the maize. They took the fairy queen to the king and said that they had found her in the maize. The king was very pleased, and when he found the whole five had brought her he gave them each a wonderful wand. Everyone was so pleased that the queen was found that they had a great feast, and the naughty little elves were there, too. They brought a beautiful little fairy house. Tip Toe, Romper, Whiz, Pip, and Top had many adventures with their wands.

London Tests Heard Faintly---Flying To Britain Looming

New Browning-Drake Design

THE RADIO RECORD

Published Weekly

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The "Why" Of Wireless

The Scientific Facts Set Out Simply

In this series of articles "Electron" is explaining in simple language the "why" of wireless, with the object of giving readers an understanding of its principles, so that they may intelligently get the best out of their sets.

HOW SOUND WAVES ACT.

When a train is shunting several interesting things may be noticed. If the train is stationary and the engine is caused to move backwards suddenly the whole train will not move instantly. The first thing to happen is that the springs of the buffers between the engine and the first carriage will be compressed. This causes the first carriage to move backwards. Then the springs between the first and second carriages become compressed, and the second carriage then moves, and so on. There is therefore a pulse of compression runs down the train at a speed depending on the stiffness of the springs and the weight of the individual carriages If the engine had moved forwards instead of backwards a tension pulse would have run down the train at the same speed, the springs being extended instead of being compressed If not the engine had moved backwards and then forwards the result would be a compression wave running down the train closely followed by a tension wave running down at the same speed Note that the two impulses do not cancel each other out. If the engine is now set in a state of vibration or oscillation the results would be a continual series of waves alternately compression and tension running down the train If the period of oscillation is great then we say that the frequency is small or low and there will be a large distance between the successive waves on the train We say in this case that the "wavelength" is great If, on the other hand the frequency is high, then the distance between waves or the wave-length is small

In the case of wireless waves the speed of the waves is high, in the vicinity of 186,000 miles per second, whereas that of sound is slow, being only 1100 feet per second Electrical oscillation are produced in a special way to be described later, but sound waves are produced by merely vibrating some mechanical object such as a drum or stretched string quickly enough for the air waves set up affecting our ears and enabling us to recognise "sound " Notes of high frequency are recognised as "high" notes. such as the piccolo, flute, soprano, etc., and low frequency as "low" notes, as the low notes of an organ euphonium, bass voice, etc These notes are never "pure," that is, they never consist solely of a single wave of definite frequency, but are always accompanied by other waves of frequencies, 3, 5, 7, or any odd number of times the original and fundamental frequency The difference between two similar notes played by the different instruments, such as violin and cornet, are simply in the number and proportion of these "overtones" or "harmonics." It is difficult to get a mechanical object to move quickly enough to respond to these exceedingly rapid vibrations, with the result that in some wireless receivers, and in many gramophones, the "quality" is mutilated, although the "notes" are reproduced perfectly This is particularly the case with the letter "s," which consists of very high-frequency vibrations, and is beyond the capabilities of all but the very best gramophones. The letter "s" is reproduced with great clearness by most wireless sets, thus showing that it is superior to the majority of gramophones in reproducing power.

HOW THE TRANSMITTER TRANSMITS.

When any person sings, speaks, or plays an instrument, air waves of a special type are set up which travel through the air in approximately straight lines. When these waves strike any object they make it oscillate at the same rate and in the same way as the original cause of their existence. In the telephone the transmitter or microphone consists of a thin metal or carbon plate, behind which is a loosely-packed quantity of carbon powder An electric battery is connected so as to pass a current through this powder from the front plate to a block at the back. Normally, this current is small, because the "resistance" of the powder is great, but when the plate is pressed inwards the particles of the powder being then compressed will make better contact with one another, and will allow a bigger current of flow. The current flowing is therefore proportional to the movement of the microphone plate.

AND THE RECEIVER RECEIVES

When an electric current is flowing through a wire, and that wire is wound round a piece of iron or steel, as in a reel of cotton, the steel "core" will become magnetised, while the current is flowing, the North pole being at one end and the South pole at the other If the core is made of a piece of steel which is already magnetised, then the current will have the effect of either strengthening or weakening the original magnet. This is important to know, because in valve sets there is always a fairly strong current flowing in the plate of the last valve, and passing through the phones or loudspeaker. If this current is passed through the speaker in the wrong direction it will have a tendency to demagnitise the magnet core and render the speaker useless. For this reason, therefore, most speaker cords have one of the connections marked with a red thread, and this should always be connected to the plus side of the "B" battery.

The telephone consists of a horse-shoe type of magnet, fitted with two little bobbins of wire as described. Over the poles of the magnet is placed a thin sheet of iron, which is always attracted to, but is never allowed to touch, the magnet. When a current passes through the coils the disc is attracted; and it will be seen that when the disc or diaphragm of the microphone moves inwards, that of the receiver moves inwards also, if the current from the microphone is allowed to pass either directly or per the medium of the broadcasting station through the receiver. The receiver will therefore produce sound waves exactly similar to those which struck the microphone.

WHAT IS "FREQUENCY?"

There are several difficulties to the perfect reproduction of music, the most important of which is that all vibrating or oscillating bodies have a natural frequency like that of a clock pendulum, a swing bridge or a string of a piano. These bodies will vibrate most easily when the object causing them to vibrate is itself vibrating at their natural frequency. In the case of a microphone or telephone, this would be disastrous since some notes would be exaggerated, and others would be suppressed. This fault is present in some poor loudspeakers, and can always be easily recognised by some notes, usually fairly low, always being predominant It is got over in the transmitting microphone by stretching the diaphragm so tightly that its natural frequency is very high—almost at the upper limit of the waves which the human ear can recognise, and as this is where most receivers are comparatively insensitive, the slight accentuating of these waves is an advantage. Loudspeakers get over the disadvantage by doing away with the magnets moving the disc directly—they have the piece which is operated by them in the form of a very stiff flat spring, which has the same effect as the stretched diaphragm of the microphone, and the diaphragm is now very thin and light often in the form of a cone of thin paper or other light material. There is nothing magical about the cone shape. It is merely used because it has more mechanical rigidity than a flat disc, and can therefore be made thinner and lighter, and can therefore respond to the higher frequencies more easily.

The adjusting screw on most loudspeakers is to adjust the distance between the magnets and the operating disc or flat spring. The nearer the two are the stronger the magnetic pull, and consequently the louder the signal. If too near, however, the diaphragm will hit the magnets and cause distortion, and by means of the screw we can have the two close together for weak signals to get maximum strength and yet separate them when getting loud music from the local station.

Induction.

It has been pointed out that when an electric current flows round a coil of wire magnetised is produced. The converse is also true; that is, if the amount of magnetism passing through a coil varies an electro-motive force will be set up in the coil, and a current will flow *while the magnetism is changing.* What is more, this E.M.F. is proportional both in magnitude and direction to the way in which the magnetism is varying. For example, when the magnet is inserted, the induced current will flow in a certain direction—when the magnet is withdrawn the current will reverse. A very common method of inducing currents is to pass an oscillating current round a coil, and the magnetism produced by this current is made to pass through a neighbouring coil in which a similar current is thus induced. This is not a method of getting something for nothing, because the current flowing in the second coil or secondary has itself a magnetic effect which will react with the primary.

Even if we have a single coil through which an oscillating current is flowing the magnetism produced will produce an oscillating E.M.F. in the coil itself, and this will always be found to oppose the current causing it. For instance, when the main current is rising the induced E.M.F. opposes this rise to a large extent. Note that it cannot altogether prevent the current flowing, because the induced E.M.F. is due to the fact that the main current (and hence the magnetism) is *increasing.* But it can delay the rise considerably.

When the main current is stopped the effect of the induced current is to oppose this stoppage, and it tries to keep the current flowing. This peculiar property is very similar to a heavy truck on wheels. When the truck is pushed it will not start instantly at full speed, but will accelerate slowly. When flowing at a steady speed it offers little resistance, but when it is required to stop, it will tend to keep on flowing.

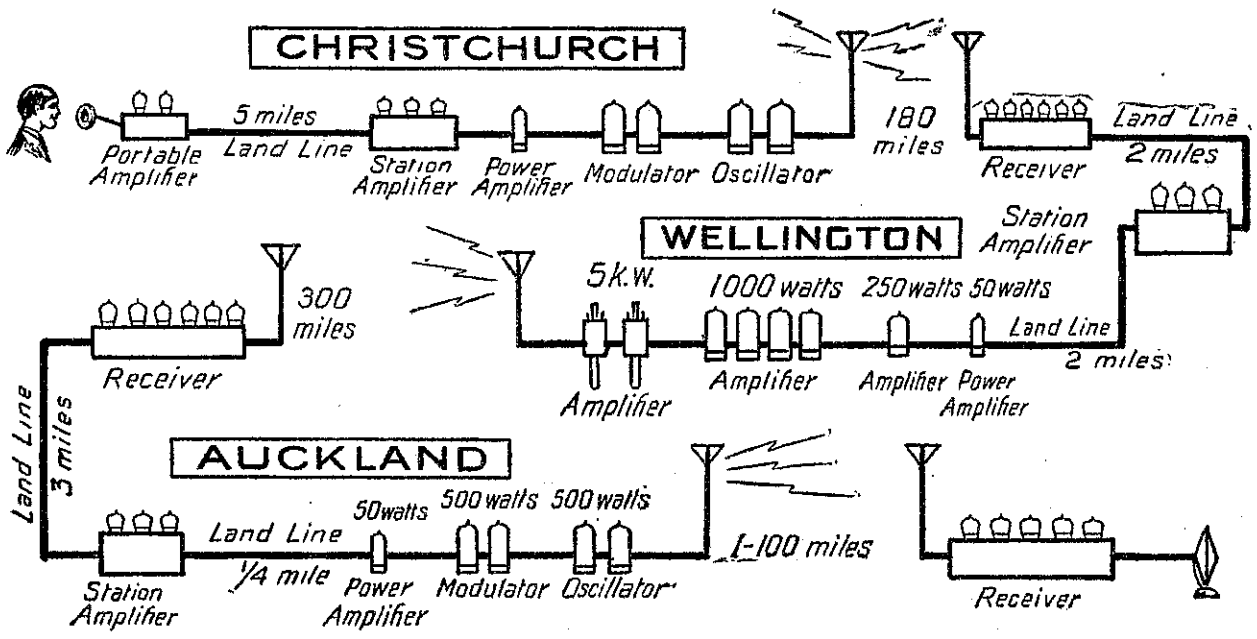
If an oscillating force of low frequency is applied to the truck, it will oscillate without much difficulty, but if the frequency is raised the truck will be too heavy to respond, and will therefore remain practically stationary. In the same way a coil of many turns will allow a low frequency current to flow through it with little hindrance, but will effectually prevent high frequency currents from penetrating. When the purpose of the coil is to cause as large a delay as possible, and thus to "throttle" down the current, it is called a "choke" coil. The interesting thing about a choke is that while acting like an insulator or non-conductor to high frequency currents it will let "direct" currents flow through it with little hindrance. The uses of both choke coils and coils inducing an oscillating current into a neighbouring coil are numerous in wireless, and will be explained in detail later.

Capacity and Condensers.

If two metal plates are placed close together separated by a thin sheet of paper soaked in melted paraffin wax and connected to a battery, current will flow into the plates for an instant. It seems as if the electricity hoped that the paraffined paper would break down (as it sometimes does if the pressure becomes too great) and allows a continuous current to flow. The electrons crowd themselves on the plate in the hope of getting across the gap just as a crowd of people will crowd on the side of a ferry steamer which is approaching a wharf The similarity goes further than this, because if the distance between the two plates is decreased the electrons will pack themselves more and more closely. The ability of an arrangement like this to condense the electricity has led men to call it a "condenser," and, of course, condensers can be obtained in many different forms. The "capacity" of a condenser is the amount of electricity it can store when there is a pressure of one volt between the plates. If the quantity thus stored is one coulomb we say the capacity is one "Farad." This capacity is much too large for wireless purposes, and the unit chosen is one-millionth of a Farad, called a "micro-Farad." The usual variable condensers used in wireless are of the order of one-thousandth of a micro-farad, or .001 m.f.

(To be continued.)

Faithfully Passed Through Forty Valves



This sketch shows how the broadcast description of the races in Christchurch reached the listener in Auckland after passing through over forty valves and jumping two air gaps of magnitude. Consider just what happens. The observer is watching the race. His quick eye detects the course of incidents, and his brain and ready tongue find words to describe what his eye sees. His speech passes to the microphone and, amplified by two valves, flashes across five miles of land wire to the tation (3YA). The three valve station amplifier, the 50 watt power amplifier, the 500 watt modulator, and the 500 watt oscillator valves all play their part before the sound impulses which left the announcers mouth flash into the air to bridge the 180 mile gap to Wellington. And so on. Follow the picture through and see just what does happen. From Wellington the same process is repeated to finally reach Auckland. Again the harnessed electricity carries the sound waves forward so that the listener all through the furthest north can know the winner of the race before even, in some cases, the numbers are definit ely hoisted. That's radio.

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