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The Possibilities of Empire Broadcasts

A cable message advises that Mr. Maclurcan, the well-known Sydney amateur, has expressed the opinion in Britain, after a direct investigation on the spot and particularly an inspection of the low-power plant used by Mr. Gerald Marcuse, that there are no insuperable obstacles in the way of Empire broadcasts. The following article will serve to give a general view of the possibilities.

DESPITE definite difficulties everything points to a regular Empire broadcasting service before many months have elapsed. A recent cable message from London reports that Mr. Charles Maclurcan, the well-known Sydney amateur transmitter, who is visiting England, has stated that no great difficulties have to be overcome to accomplish Empire broadcasting, especially after inspecting Mr. Gerald Marcuse's low-power short-wave transmitter.

The scientific experimenters employed by the great valve-manufacturing concerns have now given us the wonderful shielded-grid valve which will tremendously increase the efficiency of short-wave reception, and it is by short-wave transmission and reception that Empire broadcasting will be accomplished. The time is now not very distant when, under favourable conditions, the Radio Broadcasting Company of New Zealand will be able to relay programmes and announcements from England, so that owners of the humble crystal set will be enabled to listen-in to London. This feat, as a matter of fact, was accomplished by 3YA in connection with Armistice Day celebrations.

At present the British Broadcasting Corporation is regularly relaying items from 2LO, London, by means of their short-wave station 5SW, Chelmsford, 50 miles from London. Reception at this side of the globe is not yet sufficiently satisfactory for the purpose of relaying except as a "stunt." True, the Australian stations occasionally relay the transmission from England, but it is admittedly only possible under most favourable conditions, and then it leaves much to be desired, owing to the unsteadiness of the volume.

An Australian writer says:—"In order to make a British programme audible the world over, the original programme from the London studio is at the same time radiated by a special high-power short-wave transmitting station situated 50 miles from the studio and main transmitter. So that, when you hear 2LO, London, relayed on this side of the world, you actually hear the London transmission taking place, but through the medium of 5SW, the special short-wave station of the British Broadcasting Commission. 5SW is situated at the works of the Marconi Company, at Chelmsford, in Essex. It is housed in the same building as the now historical 5XX, Chelmsford, which was superseded by 5XX, Daventry. The present station occupying this historical room transmits on a wavelength of 24 metres. It has the appropriate call sign of 5SW and is linked up with the control room of 2LO at Savoy Hill, London, by land line in the usual way, so that it would be an

easy matter for the B.B.C. to retransmit from 5SW the programme of any of the English provincial stations. The transmissions have so far been confined to London. The equipment used at 5SW is a special standard and experimental apparatus connected to main panels of a Marconi transmitter. Usually the transmitter is of the oscillator type and each power stage consists of two 10 kilowatt valves. The total power rating of the station is in the neighbourhood of 25 kilowatts. The aerial system used is of the Franklin type and possesses a number of original features based on experience with beam transmitters. This takes the form of five half-wave aerials and is suspended, but insulated from a wire, attached to the tops of two 50 feet masts. It is claimed that this system is highly efficient and undoubtedly it is as thousands of listeners in Australia can testify. Short waves, however, have their vagaries, and there are times when reception is marred by static conditions or acute high-speed fading, but, taken generally, the relays from 2LO, London, via 5SW, have been an undisputed success. Engineers both in England and Australia are working hard to overcome the difficulties that arise, and the time is rapidly approaching when the exchange of international broadcast programmes will be such a regular feature that the then blasé listener will be able to consult his evening paper and take his choice of London, Paris, New York, Berlin, or Moscow, through which every local station is scheduled to relay."

BRITAIN'S WONDER STATION.

Captain P. P. Eckersley, chief engineer of the British Broadcasting Corporation, is now generally regarded the world over as in the very front rank of broadcasting authorities. Prominent American radio men on visiting England a few months ago pronounced the quality of transmission by 2LO, London, in marked advance of anything in the United States where broadcast transmission has reached a remarkable degree of excellence. They paid unstinted praise to Captain Eckersley who was personally responsible for the creation of London's "wonder station." The following comments by Captain Eckersley on Empire broadcasting are, therefore, of special interest to us in the antipodes:—"The experimental transmissions of 5SW were initiated chiefly because experts in various parts of the world wished to investigate the best method of reception of short wave, high quality telephony transmissions. It has

incidentally furnished interest to Dominion, Colonial and foreign "fans" as well as occasionally affording listeners in distant parts of the world the opportunity of hearing, from their local station, relays of British programmes.

There are, in general, two problems. Firstly, to find the most suitable frequency of emission to give, in different parts of the world, an adequate signal at particular phases of the sun's shadow. Secondly, having got a signal, to find the best method of receiving it.

On the former point, 5SW has taught us nothing we did not know before. Particularly, Marconi engineers, as responsible for the tremendously successful beam telegraphy services, have previously made an exhaustive study of the best wavelengths to use at different times of the day and year. They are daily gaining more experience in the operation of their service, and 5SW is merely an additional check upon previous observations.

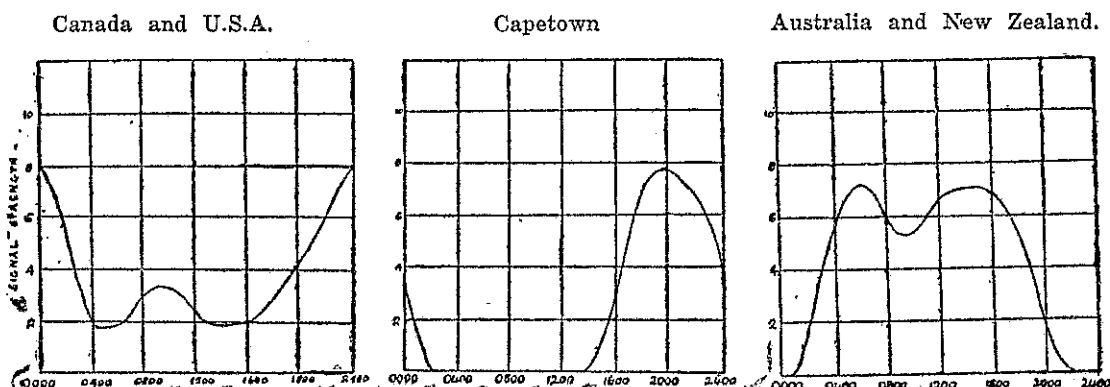
On the latter point, it is early days as yet to say that such-and-such a method is the best. The whole plan of attack involves producing a good ratio of signal strength to interference, and then trying to equalise what is, on single aerial reception, a most variable signal. Again, it is insisted that variability above a minimum, for telegraphy, does not matter; constancy, for telephone, is a sine qua non. In America some promising studies have been made, and elaborate systems are being installed to attempt to equalise signals. In England some fairly promising results have already been obtained; but it would be criminal foolishness to let these encourage one into saying that there is yet a guarantee of satisfactory service worthy of the object served.

Turning back, however, to the question of signal strength using a certain wave, the information—information, incidentally, which merely corroborates that previously obtained as to strength in different parts of the world at different times of the day—may be of interest to readers. For this reason three charts, concerning North America, South Africa, and Australia, are published herewith which give field strength against time of day for a thirty-six hours' test conducted just before Christmas, 1927.

The signal strengths are expressed in operators' nomenclature, and it may be taken that anything above R6—R7 is a robust signal, and, if it did not fade rapidly, sufficiently good for relaying.

Once more let it be insisted that it would not, by proper choice of frequency of emission, be at all impossible to guarantee a signal in any part of the world

about 80 per cent, of the time attempted. The problem now is to equalise that signal at the receiver. This problem is being tackled in many parts of the world (including Britain, where Marconi's and B.B.C. engineers are investigating a novel system of spaced aerials), and 5SW exists mainly to help others, and particularly American engineers, to take part in a world-wide and co-operative experiment. So far there are no guarantees of service.



The above graphs show the strength of reception on short wave test from 5SW in the various countries mentioned. The time indicated in the bottom line throughout is Greenwich Mean Time.

New Points For Listeners and Dealers-- By "Meter"

The aim of this section is to give listeners information of new and interesting devices and sets on the local market. It is free of advertising intent or influence and to the best of our ability will convey only absolutely reliable statements. Names, prices and sources of supply are mentioned for the benefit of readers and to save individual inquiry.

A member of the Wellington radio trade, speaking at the farewell dinner to Mr. J. H. Owen, attributed not a few of the complaints regarding the quality of transmission of 2YA, Wellington, to bad aerial and earth installation. I think dealers, when selling sets or parts for the home constructor of receiving sets should particularly stress the absolute necessity of a good aerial and earth. Instances have come under my own notice where beginners have spent £60 or £70 on a radio set and have put up any old span of copper wire in a slipshod fashion expecting to get the best out of their set with it. This is woeful ignorance, and it is absolutely incumbent on the radio salesman to stress the desirability of a first-class aerial. An aerial should be high, and above surrounding houses and trees. Personally I recommend not fewer than three good insulators on each end of the aerial, and above all the bare lead-in should pass into the house through an insulated tube. If insulated wire is joined on to the "tail" of the aerial the joint should be firmly soldered. The insulated lead-in wire should also pass into the house through an insulated tube. The reason for this is that in rainy weather the water runs down the lead-in wire, along the outside of the insulated wire and down the side of the house. Owing to the glazed surface of the lead-in tube the stream of water is broken up and the path to earth is broken. I have found that by placing an old circular rubber heel, wheel-like, on my lead-in wire about a foot outside from the lead-in tube, the rain, during a heavy rainpour, does not run down the lead-in further than this barrier where it drips off and falls to the ground. The rubber heel can be kept in position by adhesive tape or string wound round the lead-in wire just beneath it. To place the rubber heel on the lead-in wire without any difficulty a cut can be made from the rim of the heel to its centre thus enabling it to be slipped on to the wire in an

instant. Some folk think that merely winding the earth wire on to a waterpipe is quite efficient. Traders should inform these people that the earth wire should be either firmly soldered to the waterpipe or tightly clamped to it, but only with a special device sold for this purpose. Even some waterpipes make only an indifferent earth, possibly owing to the fact that they sink immediately into sandy or dry earth under a house. Traders will find that a copper plate about two feet square buried about four feet down in soft soil will make a good "earth." The earth lead in that case should comprise stranded wire and this should be spread out like wheel spokes on the copper plate to which each strand should be soldered. The soil all around this "earth" should always be kept moist. This "earth" is difficult to eclipse. But the main purpose of these remarks is the need for radio traders to impress on their customers the necessity for a first-class aerial and earth, and thus preserve the good name of their sets and broadcast reception in general. In a recent case I saw where a prospective purchaser had a first-class aerial and earth installed at a cost of about \$11 so that the receiving sets which were submitted to the buyer for demonstration were afforded a chance of operating under proper conditions. This prospective buyer, however, is an exception.

THE SAFETY LEAD-IN.

THE Lawrence & Hanson Electrical Co., Ltd., Wellington, have landed a new patent lightning-protection lead-in known as the Pressland Safety Lead-in which, it is claimed, ensures complete immunity from the danger of lightning without earthing the aerial. The device, by the way, is backed by an insured guarantee of \$100; every lead-in is supplied with a guarantee label, the counterfoil of which is to be signed by the user and returned to the insurance company named. The risk of lightning striking wireless aerials is realised by most people, and many forms of protective devices are fitted,

but it is not generally realised what little protection is gained by any method used inside the building. To obtain effective protection and freedom from danger, any device must be external to the building, and should provide a straight path from aerial to earth. An earthing switch fixed outside is a complete protection, but it has to be operated, and unless efficiently sheltered from the weather is a prolific source of loss of signal strength through leakage. The Pressland Safety Lead-in has been designed to give automatically complete protection at all times, and in all weathers, without the necessity of any form of switching. The principle on which the construction is based is that lightning always prefers a straight path, even if of higher resistance, than one at right angles, and this is provided by an annular spark gap completely enclosed and waterproof, and of small capacity to earth. Adequate insulation against surface leakage between aerial and earth terminals is provided by the well-known method of petticoat insulators. Dealers and others interested can obtain further information from the distributors, the Lawrence and Hanson Electrical Co., Ltd., Lower Cuba Street, Wellington.

THE NEW SHIELDED GRID VALVE.

THE new shielded-grid valve has created world-wide interest, for it has opened up fresh channels for greatly increased sensitivity in broadcast reception, not only on the normal broadcast band of wavelengths but on the short wavelengths—this latest wonder of the age. It would be, therefore, of interest to learn what a famous American radio inventor and writer as Lawrence M. Cockaday has to say of the shielded grid valve. He writes: "The advent of the shielded-grid valve, especially as a high-frequency amplifying device, has made radio engineers revise many of their notions concerning this form of amplification. Whereas the amounts of amplification per stage were once

of the order of units, now they are speaking of per-stage amplifications running anywhere from 25 to 50. There is a common misconception on the part of the public that this new type of valve may be incorporated in almost any existing set without much change. This is not true. The new device is so extremely sensitive that it entails certain very definite precautions of design in the receiver with which it is to be employed, and usually it will be found that a general redesigning of the set is necessary. The shielded-grid valve must be used in a completely shielded high-frequency amplifier, in order to give stable operation at the enormous amplification that it is capable of producing. One of the great difficulties encountered in the design of circuits and apparatus for use with this shielded-grid valve lies in the fact that although the effective input capacity of the new valve is extremely low, its capacity, looking out of the plate circuit, is of a very high order. This effect, when using conductively coupled tuning circuits, is naturally going to affect the complete amplification curve over the broadcast frequency range to a great extent, and if the design is not exceptionally carefully worked out the amplification curve will be far from being equal over the whole range, but will have a definite peak with a decided falling off at each end. Another condition in the new valve is its high output impedance. This affects materially the design of shunt-plate-feed circuits and again calls for special consideration in the inductance and capacity tuning arrangement. It is imperative that the coils used in the circuit have an efficient form factor and that their impedance when tuned to resonance be of the highest possible value. The coupling condensers used should be of a relatively low impedance. Other problems, such as shielding the control grid circuit from the plate circuit without increasing the effective capacity across the valve, and taking care of the mechanical design, must first be overcome before the high amplification that may be obtained theoretic-

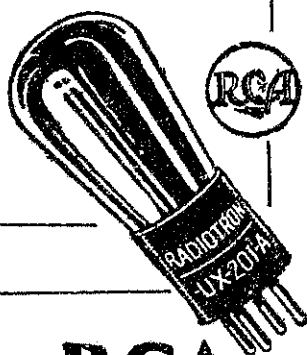
cally is realised in practice." The radio trade will advisedly carefully consider the above features before accepting the responsibility of adapting sets for use of the new valve. The valve must be suitably housed if the best results are to be obtained.

A SOCKET AERIAL.

A writer in the New York "Popular Radio" says:—"Due to the vastly augmented power of broadcasting stations, the replacement of the regenerative circuit by the tuned-high-frequency amplifier, and the greatly increased amplification of the average receiver of to-day, the socket antenna is now coming into favour, especially in congested areas. In principle, the socket antenna is a coupling device that permits radio signals, induced in the electric light to pass through a special plug and lighting current itself is held back by a condenser barrier. With former regenerative circuits this device did not always perform satisfactorily. To-day, however, with the non-regenerative receivers, or at least receivers in which regeneration is merely an accessory rather than the main means of gaining sensitivity and volume, this device performs surprisingly well. In the suburbs and rural sections it will often out-perform the usual antenna, because of the ideal antenna in the form of exposed electric light wires which it makes available." "Meter" has one of these socket devices for using the electric lighting circuit as an aerial, and has found it quite satisfactory for reception of New Zealand stations. It comes from the famous London Dubilier Company, and is tested up to some thousands of volts and is therefore quite safe to use on the ordinary 230 volt house-lighting system.

It is a good plan to keep a bottle of distilled water in the house to replenish the liquid in your wet batteries. The battery plates should have about one-third of an inch of the "acid" over their tops. Never use tap water for putting in your battery.

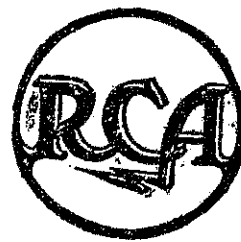
**Your
Set
Deserves
the
Best:
USE
Radiotrons**



**RCA
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"The Radiotron is the Heart
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**Do You Get
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IF your radio set's reception is weak, examine your valves. You will get far better results if you replace all of the valves with genuine R.C.A. Radiotrons about once a year. And there is a tested Radiotron especially made for use in every socket.



Amalgamated Wireless

Box 830

[A'sia] Ltd.

Wellington.

The Radio Atmosphere in Wellington

Pleasant Gathering Tenders Farewell to Mr. J. H. Owen

UNH complimentary dinner tendered on Wednesday evening last to Mr. J. H. Owen, president of the Wellington Amateur Radio Society, on his departure on a trip to England, was the occasion of a very interesting evening's speech-making on a number of aspects of broadcasting. The dinner was attended by, not only the executive of the society, but by a number of representative dealers and others interested in broadcasting. Mr. Ivan M. Levy, vice-president of the society, officiated as chairman.

Mr. Owen Honoured.

To Mr. W. S. Roche fell the honour of proposing the toast of Mr. Owen's health. Since Mr. Owen became president of the society it had increased, not only in membership, but also in prestige, and the speaker hoped they had been able at various times to give a good account of themselves, and be of some assistance to the Broadcasting Company. Mr. Owen had always been very energetic and most enthusiastic in the performance of his duties as president. When he visited England before he returned with a very interesting report of his experiences, particularly in relation to broadcasting, and he trusted he would do the same thing again, and that his trip would prove most enjoyable.

Mr. R. Leslie Jones, secretary of the society, read the text of an illuminated address, signed by members of the society, expressing appreciation of Mr. Owen's services in the cause of radio, and as president and chairman of the society, and wishing him and Mrs. Owen a pleasant trip. Messrs. T. McGinn and C. E. Grounds also spoke appreciatively of Mr. Owen's work.

Mr. Levy also endorsed the great interest Mr. Owen had taken in radio, and the benefit his active interest had been to the society. As they knew, broadcasting had just emerged from the crystal stage, in which connection they had had some important conferences, at which Mr. Owen's presence had been very valuable.

In Retrospect.

Mr. Owen feelingly responded to the presentation. He appreciated the honour done him to the depths of his heart. Mr. Owen proceeded to refer to the rapid advance made by broadcasting since twenty-four years ago he first encountered its magic when travelling across the Atlantic, and his vessel had been kept in touch with England and the United States by Morse. Ten years later, in the war years, wireless telephony became prominent, and subsequently the British Broadcasting Company sprang into existence, and was subjected to criticism (mostly adverse), from which it was not free till this day, for it still had its critics, and plenty of them, but they all knew the service given by that corporation was very remarkable. Since his visit of two years back, he was informed, the service had improved out of all recognition. This seemed to him to be impossible, but he would have the opportunity of testing the statement for himself in the very near future.

Mr. Owen proceeded to refer to the early days of broadcasting in Wellington, and his tremendous excitement when he first heard three words from Sydney. Subsequently sets had improved and the broadcasting field had rapidly developed. He considered the Broadcasting Company, in the short time they had been on the air, had done a great deal for broadcasting in New Zealand. (Hear, hear.) Their club had been critical, and sometimes

possibly a little too critical—perhaps a little harsh. Perhaps they were getting a little wiser in their generation now.

They recognised fully that they were row getting a very good service—(hear, hear)—and a service which was getting better every day. It had improved enormously since it first started.

He would not say there was no room for improvement, as they would all agree there was, but they must be kindly in their criticism and constructive. Mr. Harris had met them both privately and publicly, and had requested their assistance. The scheme recently outlined, by which the Broadcasting Company would be advised by service committees on various topics, was all to the good, and was splendid evidence of the desire of the Broadcasting Company to associate themselves with the clubs of New Zealand and get all the good advice they were able to give them. There should be the best of feeling between the club and the company, and any criticisms or views they had in regard to programmes should be advanced in a reasonable way. (Hear, hear.) During his absence he sincerely hoped the society would keep the good work going. It was a great pleasure to hear from their very energetic secretary that the membership of the club was advancing in leaps and bounds. Personally he did not expect that the club's membership would reach anything phenomenal—it did not seem to him that these clubs in any part of the world became very large—nevertheless, whatever their membership might be, it would be admitted that the members had the welfare of broadcasting thoroughly at heart. They desired all the good possible for the Broadcasting Company, and he was sure that if the clubs carried out their duties as clubs as they should do, they would encourage other members of the community, not only to join the club, but to become licensed listeners as well. In conclusion, he was sorry to be leaving the club temporarily, but he promised that he would be only too pleased to advise them of anything he saw or heard that would be to the benefit of radio.

The toast of Mr. Owen's health was then drunk with musical honours.

Amateur Radio Society Honoured.

Mr. G. G. McQuarrie proposed the health of the Wellington Amateur Radio Society and paid a tribute to the activities of the society in promoting better broadcasts. With all due respect to the Broadcasting Company, he thought the Amateur Radio Society had had a good influence and probably had given a bit of a fillip in keeping things up to the mark. The speaker also referred to the activities of the society's energetic secretary.

Mr. G. R. McCarthy (Mack's Radio), in seconding the toast, said that such a society was of the greatest possible use to dealers. He had realised this both in Europe and America, where he had had extensive experience. A well-organised and established league, to represent the listeners and approach the Broadcasting Company, was highly desirable. Such a society was required to deal with three major points: (1) Howling valves; (2) induction noises; and (3) broadcasting itself.

With a full knowledge of what had been done in Europe and America, he would like to say definitely that, considering the conditions obtaining in New Zealand, Mr. Harris had done exceptionally well.

He knew when London started with 2LO it was considered an absolute

feat to bring in Hamburg at a difference of 60 metres from 2LO's wavelength. Here listeners could bring in Australia while 2YA was operating, and in his opinion listeners did not realise how important that was and how much technical skill lay behind it. When he was in London he had sold four-valve sets at ninety guineas, and it was absolutely impossible to get anything else but 2LO, but here they could now cut out 2YA and bring in Australia. This was a tribute not to the set, because it was made to do that, but to the absolute efficiency and technical skill with which 2YA was operating.

Only a few weeks ago, for a wager, he had taken a set up to within 200 yards of 2YA's aerial and had completely cut out 2YA and brought in 2FC. This was due to the high efficiency at the back of 2YA's transmission, and this was an absolute tribute to the Broadcasting Company in the short time they had been on the air.

Mr. McCarthy proceeded to voice his one grievance, which was that during afternoons between three and five o'clock, when dealers were desirous of selling sets by demonstrating music, they would frequently have prospects disappointed through hearing a solemn voice saying "Take 1lb. of flour, etc." It was impossible to sell sets on a voice demonstration, and he did think the hours from three to five should be devoted to music, in order to help the dealers.

The Programmes Discussed.

Mr. Byron Brown (who also fills the role of Uncle Sandy in the Children's Hour), speaking as a newly-joined member, said he thought such a society was good, provided they offered their views from the point of view of constructive criticism, rather than destructive. He had been on the air for the last few months as an Uncle, and from his home at Otaki listened consistently to both Australian and American stations; and he said, without fear of contradiction, that 2YA's programmes gave them better stuff than anything in Australia. (Hear, hear.) He did like good programmes, and he did not like cheap matter, and 2YA on the average, and comparing it with all the Australian stations, on the basis of the average man of taste, and not that of a high-brow, definitely gave them better matter than Australia. He had been listening in to "Frisco a few nights ago, and had a beautiful reception, when he heard a Yankee give a lecture on "Handwriting and Character," in which he said, with a strong nasal twang: "If you have a name with two initial letters, and you habitually write the first larger than the second, then, ladies and gentlemen, and my friends throughout the atmosphere, you can feel assured that you have some stability of character." Mr. Brown said he had heard a few lectures from 2YA that were not of a very high standard, and one or two which he had shut off; but he had never heard anything as low down as that American station. (Hear, hear.)

"And I will tell you another thing that you never hear from any New Zealand station," said Mr. Brown, "and that is, you never hear any suggestion of filth, and you do hear that from Australia—suggestions that are not elevating, are not artistic, and are anything but pleasant to listen to. It is the sort of thing that attracts people to vaudeville shows night after night to hear, and we don't want it in our radio. I have not got any brief for 2YA—I could criticise it if I wished—but I do think it has tried, and I do think it is constantly improving. I will admit that, as far as the trio goes, it is very fine music indeed; but I will admit it is a little too highbrow, and there is a little bit too much of it. They should give us the sort of stuff people can get down to; we are not all highly educated. If they would only play down to the public there would not be this criticism, but I am not saying anything against them."

The Children's Sessions.

Mr. Brown went on to cite some of his experiences as an uncle. It was very difficult at first speaking through the microphone, and feeling a complete lack of response. As time went on, however, he came to visualise the homes into which his voice carried, and received many letters, as did other uncles and aunts, from children and their mothers. In one particular case he received a letter from a mother whose little girl was lying in an up-country hospital suffering from infantile paralysis. This letter asked him to put over some special little message for the invalid, which he did to the best of his ability. The lady wrote in a few days afterwards, saying that she had listened in at home, and on hearing the message slipped down to the hospital to see her girl. She found the little girl lying in a state of blissful beatitude, full of the message that "Uncle Sandy" had sent. "And," she exclaimed, "mother, I know I'm going to get better!" These were the little things that came to the uncles and aunts, said Mr. Brown, and showed them how their work was appreciated, and he mentioned it only to draw their attention to an amateur radio club to the kind of work that was being done by the radio uncles and aunts. This made him regret very much the loose criticism that he heard in the streets. Any man who criticised should first inform himself on the subject; by calling a man a scoundrel they could not make him one, nor did a man become inefficient

simply by calling him so. They should treat the performers as decent triers doing their best over the air. He had himself spoken for the British Broadcasting Company in England, not only on Empire subjects, but also in Shakespearian work, whenever he could fit in the time.

In the course of that work he had taken particular notice of the standard of work being done there; and, with the exception of one or two men who were outstanding, the work there was no better on the average than 2YA was producing every night of the week. He said this quite definitely—the average work there was not one iota better than 2YA was giving at the present time.

Mr. Harris, he knew, appreciated constructive criticism. No one in the Broadcasting Company knew everything about catering for the public—no one would ever know that—but any reasonable requests that were made would, he was sure, be met.

Another Point of View.

Mr. J. Ball, announcer of 2YA, spoke appreciatively of the society as a valuable accessory to broadcasting. He had been impressed, since his association with broadcasting, by the opportunity presented radio as a national service. He never spoke into the microphone without visualising the people in distant country homes in the heart of the backblocks, people in hospitals, etc., and feeling that by conveying to them something of the news of the day, something of the brightness of music, they were giving a service which warranted the co-operation of citizens.

As an illustration of the different points of view, Mr. Ball, referring to Mr. McCarthy's comment on the "1lb. of flour, etc.," said that he was recently in Wanganui and encountered a tailor whose workshop adjoined a radio dealer who had installed a loudspeaker. "—you and your radio," said the tailor. "I employ a dozen girls and pay them good money to sew, and the other afternoon, on going upstairs, I found every one of them busy, not in sewing, but in taking down your wretched recipes." (Laughter.)

Tribute by the Secretary.

Mr. R. Leslie Jones, secretary of the society, first paid a tribute to the work done by Mr. Owen as president in connection with the society. He was quite satisfied that, as the result of recent interviews with Mr. Harris and Mr. Bellingham, the listeners of New Zealand would receive substantial returns for their fees, and the programmes would be more in line with the desires of the public. The monotony of some items—although it was not actually monotony—would not be in evidence, and the trio would be given, as he had suggested, a frame of other music to bring out its own merit. A first-class orchestra was being formed, and he had stressed to the company the desire of listeners for first-class gramophone records to be put on the air. Listeners would have no cause for complaint in a few weeks' time.

He must confess to feeling guilty of saying some very hard things in the past regarding the company, and writing some very stiff letters, but he was very happy to say that he really believed that the future would be bright.

Mr. Harris had told him that the company now had the stations and staff, and purposed concentrating on programmes. He felt sure the future would bring forth good fruit.

The society had seven canvassers seeking members, and they were meeting with a good response. The society also desired a closer co-operation with dealers in connection with their regular meetings, and in interesting buyers in becoming members of the society, etc. In order to co-operate with this campaign, the "Radio Record" had donated 20,000 leaflets to be distributed by dealers to customers featuring the work of listeners or radio societies. Mr. Jones said he was satisfied that the public relations scheme, as submitted by the company, would be a wonderful thing when it was in full working order. These committees would make recommendations which would be a big help. The children's sessions were absolutely excellent; on the technical side the modulation in some cases might be improved, but the transmission of 2YA was not bad. The plant embodied the very latest features available up to the time of its shipment. He did not think the public realised what it fully meant to get a team of artists together. The Broadcasting Company was doing its best, and he thought it desirable that statements should not be allowed to go unchallenged which continually belittled the performers. Such practices would check people from going before the microphone to be pulled to pieces by every Tom, Dick, and Harry. The society would be doing good service in backing up the artists who came before the microphone to entertain the public.

Reasonable Criticism Welcome.

In responding to the toast, Dr. Robertson said there had been a lot of carping criticism lately, but no one could accuse the Wellington society of carping criticism, as their suggestions had been constructive, and put forward in a reasonable manner. He considered this was bearing fruit in the present satisfactory state of the company's performances and the prospects of better. There was always room for improvement, and the society, quite rightly, adopted the attitude that they must point out how to improve things. He would like to put on record the appreciation of the society for the work done by Mr. Billing at their meetings.

The "Radio Record."

Mr. J. H. Owen proposed the toast of the "Radio Record." He thought the "Radio Record" had filled a very much needed position in the radio world of New Zealand. It had consistently been fair in all its remarks. He had read it from the first number down to the last with the very greatest pleasure, and thought that in all its phases it reflected very great credit indeed upon the Editor. He meant every word that he said, and regarded it as a particularly well compiled journal. Its technical articles, he was sure, were very highly appreciated by a great many radio enthusiasts throughout the country; he had nothing to suggest in the way of improvement, but trusted that every listener would become a subscriber. It was quite in its swaddling clothes, but he wished it long life and prosperity, and should be in the hands of all.

Mr. G. R. McCarthy, on behalf of the dealers, said he would like to stress the point that the dealers could derive very great advantage and benefit from

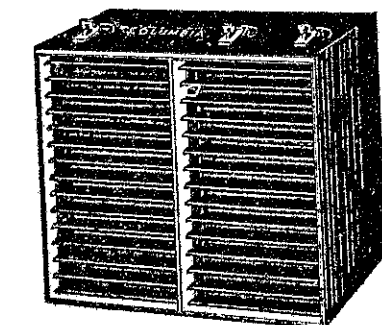
(Continued on Page 14.)

Columbia Batteries "Layerbilt"



Over 30 per cent. greater efficiency than any "B" battery of equal size and weight.

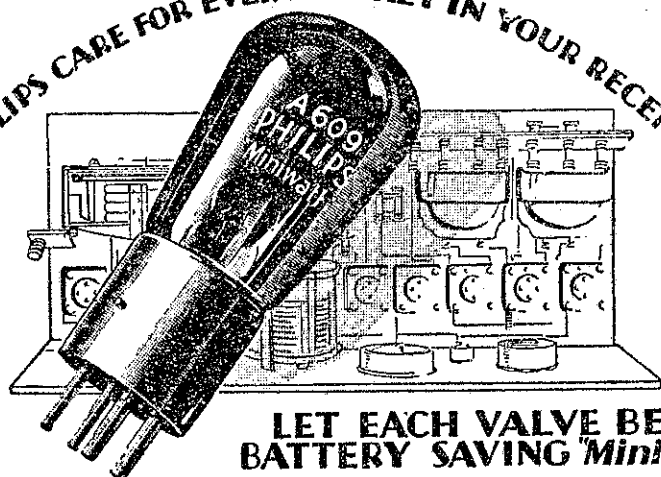
This cut-away section shows the interior construction of the new Columbia Layerbilt "B" Battery. Not a particle of space is wasted—every available inch is packed with electrical producing material.



Sectional view.

OBTAINABLE FROM ALL RADIO DEALERS.
ELLIS and Company, Ltd., Auckland.
Factory Representatives:

PHILIPS CARE FOR EVERY SOCKET IN YOUR RECEIVER



LET EACH VALVE BE A BATTERY SAVING Miniwatt

Whether your accumulator supplies two, four or six volts to your radio—whether you want a valve for the H.F., Detector, Audio, Power or Resistance Capacity sockets—there is a Philips "Miniwatt" specially designed for your purpose.

SOLD BY EVERY RADIO DEALER.

FOR 1 ACCUMULATOR CELL	FOR 2 ACCUMULATOR CELLS	FOR 3 ACCUMULATOR CELLS
4229 100 AMP. GEN. PURPOSE (2 VOLTS) .. 13/6	4229 100 AMP. GEN. PURPOSE (4 VOLTS) .. 13/6	4229 100 AMP. GEN. PURPOSE (6 VOLTS) .. 13/6
4203 110 AMP. AUDIO (2 VOLTS) .. 13/6	4203 110 AMP. AUDIO (4 VOLTS) .. 13/6	4203 110 AMP. AUDIO (6 VOLTS) .. 13/6
4203 110 AMP. POWER (2 VOLTS) .. 13/6	4203 110 AMP. POWER (4 VOLTS) .. 13/6	4203 110 AMP. POWER (6 VOLTS) .. 13/6
FOR 2 ACCUMULATOR CELLS	FOR 2 ACCUMULATOR CELLS	FOR 2 ACCUMULATOR CELLS
4229 100 AMP. GEN. PURPOSE (2 VOLTS) .. 13/6	4229 100 AMP. GEN. PURPOSE (4 VOLTS) .. 13/6	4229 100 AMP. GEN. PURPOSE (6 VOLTS) .. 13/6
4203 110 AMP. AUDIO (2 VOLTS) .. 13/6	4203 110 AMP. AUDIO (4 VOLTS) .. 13/6	4203 110 AMP. AUDIO (6 VOLTS) .. 13/6
4203 110 AMP. POWER (2 VOLTS) .. 13/6	4203 110 AMP. POWER (4 VOLTS) .. 13/6	4203 110 AMP. POWER (6 VOLTS) .. 13/6

PHILIPS
RADIO

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.

SUBSCRIPTION RATES.

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

ADVERTISING RATES.

Schedule of Advertising Rates available from all advertising agents in New Zealand, or write: "Advertising Manager," Box 1032, Wellington.

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.

Dominion Buildings, Mercer Street, Wellington.

FRIDAY, APRIL 13, 1928.

EMPIRE BROADCASTS.

The indication of Mr. MacLurcan, the well-known Sydney amateur, who is now on a visit to Britain, that he sees no reason why Empire broadcasts should not be a feature of life in the near future, will revive interest in this topic. Mr. MacLurcan expressed his views after paying a special visit to the transmitting station of Mr. Gerald Marcuse. This station has achieved good results with low power, and may take the credit for directly stimulating the British Broadcasting Corporation into welcome activity with 5SW. The regular reports by such well-known New Zealand amateurs as Mr. Sellens of reception from 5SW have definitely stimulated New Zealand interest in short wave work, and we have knowledge of a number who have followed Mr. Sellens into the short wave field. In another column we give a general review of the short wave position, which, though brief, covers the ground to the extent now available. Captain Eckersley, the engineering expert of the British Broadcasting Corporation, summarises the activities of 5SW, and the objectives aimed at, and, moreover, gives a series of graphs outlining the conditions of reception obtaining in connection with a test made before Christmas. These graphs indicate the hours during which effective reception was secured. Those hours in themselves were not extensive, and so far as New Zealand is concerned are not the most suitable for popular reception, but they are sufficient to indicate that the problems are being steadily tackled, and that possibly with the provision of higher power on the short wave band it will be possible on occasions for special transmissions to be effectively arranged and rebroadcast in this Dominion.

How to Enjoy Radio Programmes

A recent issue of the British Broadcasting Corporation's journal, "The Radio Times," shows that the excellent fare it provides on the basis of the resources of the whole British Isles, does not free it from criticism. The writer of a section of notes says very feelingly:—Following my diatribe against those who listen indiscriminately to any and every item in the programmes, and then complain when they hit upon some transmission which does not take their fancy, a listener has sent me the following quotation:—

*Our Bill of Fare we here present:
Let each choose what he wishes.
Enough's a feast! You are not meant
To eat through all the dishes!*

I should like to have this framed and hung on the wall above the sets belonging to various friends of mine! The author of the rhyme suggests that it should be printed on every programme page of *The Radio Times*. I think it would be better, perhaps, if listeners were to memorise it and quote it on appropriate occasions.

The foregoing has some application to New Zealand conditions.

Shop 'Phone 22—385.

Private 'Phone 25—010.

RADIO ENTHUSIASTS

THE MOST DEPENDABLE BATTERY THAT MONEY CAN BUY IS THE

EXIDE

As installed at the 2YA Station, Wellington.
We have Batteries in all sizes from 9/- each.

Exide Battery users: Have your Battery charged by Exide experts. Collection and Delivery Service Daily, City and Suburbs.

EXIDE SERVICE STATION,
79 KENT TERRACE, WELLINGTON.

Shakespeare Day Will Give an Intellectual Treat to All

In next issue will be announced full details of the Shakespeare Nights at studios 1YA, 2YA and 3YA. The anniversary will be observed by 1YA on Tuesday (Monday being the Auckland station's silent day), but in the other two cases the special programmes of music and elocutionary items will be broadcast on Monday, April 23. Lovers of music and dramatic side of Shakespeare can safely look forward to an unprecedented treat.

ALL BLACKS ON TOUR

Radio enthusiasts within radius of 2YA will be able to participate in the farewell to be given the 1928 All Blacks prior to their departure for South Africa. On the occasion of the official farewell in the Wellington Town Hall, at 5 p.m., on April 12, a microphone will be installed and the official speeches of farewell broadcast.

Similarly, on the next day, when the team actually leave, the unusual feature of suspending a microphone above the crowd at the ship's side will be carried out, so that the final cheering and good wishes, etc., of New Zealand to her football emissaries will be broadcast.

NUMBER OF LICENSES

Inquiry from the Secretary of the Post Office shows that 18,000 people renewed their licenses for the full year, 1928-29 prior to March 31, thus demonstrating the popularity of the Department's move in accepting renewals before the actual beginning of the New Year, and so avoiding delay. Since April 1 very heavy mails and enrolments have been received, but it is not yet possible to give further figures.

CHURCH BROADCASTS

WORK OF THE 3YA COMMITTEE

The 3YA Church Committee held a session at the studio on Tuesday afternoon, when matters in connection with the broadcasting of religious services were attended to. The rules and constitution of the committee were adopted.

The service rotation of the various churches, as arranged until the end of the year, was agreed to, all Sundays, except when there happens to be a fifth Sunday in the month, being allocated. To the Lutheran Church was allotted the first fifth Sunday.

Arrangements in connection with Anzac Day were approved. The Citizens' Memorial service in King Edward Barracks in the afternoon, and the evening service in St. Paul's Church, to be conducted under the auspices of the Christchurch Ministers' Association, will be broadcast.

In regard to the children's sessions on Sundays, the committee decided that the children of whichever church was on the air at night should take part in the children's service in the studio.

CHURCH REPRESENTATION

ONE MEMBER EACH.

At a recent meeting of the Auckland Presbytery, the question of broadcasting religious services was discussed, and it was decided to appoint the Rev. W. D. Morrison-Sutherland as the Presbyterian representative on the Church Committee. At the same time, keen regret was expressed that the larger churches were not to have a more proportionate representation.

Adverting to the matter, according to an interview in the Christchurch "Star," the general manager (Mr. Harris) said that he was glad to learn that the Presbyterians had decided to join up with one representative. The Broadcasting Company felt that the respective claims of the various denominations could be better gauged and mutually settled by the committee being equally representative of the more prominent denominations. If the company took upon itself to define representation on the committee according to the numerical strength of the various denominations or on any other basis the object of the committee would be defeated.

It is proposed that the Advisory Committee will recommend the rotation of the various denominations according to circumstances, and each denomination will decide its particular church to be broadcast on the date set aside for that denomination.

A local committee of the character proposed could also deal according to local conditions with any rearrangement of dates between denominations, or substitution of one church for another of any particular denomination, to allow for the broadcasting of special or anniversary services.

MUSICAL AND DRAMATIC COMMITTEES

CONFERENCE IN WELLINGTON AND AUCKLAND.

For the purpose of co-operating in the musical and dramatic side of broadcasting, the Broadcasting Company is meeting in conference representatives of the various amateur organisations whose aim is to cater for the public's taste in these directions.

The first conference will be held in Wellington on April 17.

SPORTING

A VERY BUSY EASTER

Two days' racing at Auckland, four at Christchurch, and University athletic championships at Wellington (with re-broadcasts of two days' racing at Christchurch) provided busy days for the announcers, and much entertainment for sport-loving listeners who could not attend the field events during Easter.

CHILDREN'S SESSIONS

PUBLIC COMMITTEE FOR 3YA.

Following on the previously announced conferences between the Broadcasting Company and the church authorities and musical societies in regard to the formation of advisory committees, further co-operation in regard to children's sessions is now proposed.

Since the inauguration of the children's sessions as a regular feature of its programme, the Radio Broadcasting Company of New Zealand, Limited, has attracted numerous organisations and individuals interested in juvenile activities, and now proposes to extend this into a definite organisation. The company has decided to form a committee of representatives of the more prominent organisations which desire to co-operate with the company, in order that the facilities it has to offer for the children's sessions may be judiciously used to the mutual advantage of the associations concerned, and the furtherance of their ultimate objects as regards child welfare.

The conference is to be held at the company's studio, 202 Gloucester Street, on Thursday, April 12, at 4 p.m. Invitations have been sent to the following societies:—St. Saviour's Orphanage, Headmasters' Association, Marist Brothers, Convents, Boy Scouts, Girl Guides, Y.W.C.A. (girls' department), Y.M.C.A. (boys' department), Parents' National Educational Union, Presbyterian Orphanage, Methodist Orphanage, Mothers' Union, National Council of Women, Society for the Protection of Women and Children, Welsh Society (junior department), Scottish Society (junior department), Uncles Part 1: Scene 1, public place, Padua; and Aunts of the station.

LECTURES AT 4YA

Mr. G. J. Butcher, of Messrs. Turnbull and Jones, Ltd., will speak on "The Domestic Uses of Electricity" on Tuesday afternoon.

Mr. R. W. Marshall, manager of the Government Tourist Department, will give a talk at 7.30 p.m. on Tuesday.

Mr. H. Greenwood, librarian of the Dunedin Athenaeum, will give a review of the latest books at 7.30 o'clock on Friday evening.

Miss M. H. King, principal of the Otago Girls' High School, will lecture on "The Study of Literature" at 7.30 o'clock on Saturday evening.

TOC H. SERVICE

THE LAMP OF MAINTENANCE.

The special Toc H service, on the occasion of the dedication of the Lamp of Maintenance by His Grace the Most Reverend, A. W. Averill, D.D., Primate and Archbishop of New Zealand, at the Church of St. Matthew, on Sunday, April 15, 1928, will be broadcast. Readers will be interested in the symbolism of the lamp.

The Lamp is the symbol of Toc H, the flame of which symbolises unselfish service. The Lamp is granted by the Guard of the Lamp, London, when the group has reached branch status, such recognition being given by the Toc H authorities in London when the function of Toc H regarding life and service has been fulfilled.

The Lamp when granted is first lighted at the birthday festival on December 1 each year by H.R.H. Prince of Wales, patron of Toc H, and is then carried afield and given into the safe custody of those who henceforth must guard the Lamp and fulfil all those obligations for which the Lamp stands.

The Lamp is always dedicated in memory of the Elder Brethren, and in special memory of one of their number who stands out pre-eminently as a full type of true British manhood.

In this instance, the Lamp of Toc H it being dedicated in memory of Lieutenant-Colonel George Augustus King, D.S.O., Croix de Guerre, four times mentioned in dispatches, New Zealand Permanent Force, killed at Passchendaele, October 10, 1917, age 32. After the dedication, this lamp will be lighted for the second time by His Grace Archbishop of New Zealand, and henceforth will be lighted at each meeting of the branch of Toc H in Auckland.

The dedication of the Lamp of Maintenance will be in the hands of His Grace, the Most Reverend A. W. Averill, D.D., Primate and Archbishop of New Zealand. His Grace will be assisted by Padres K. MacFarland, R. Geo. Coats, and Rev. Canon Grant-Cowan, Vicar of St. Matthews.

HOSPITAL RADIO

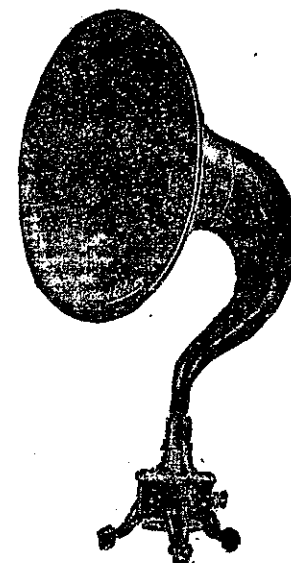
Several references to the pleasure afforded the inmates of the Wellington Hospital by the operation of the wireless installation recently made through the Wellington Amateur Radio Society, were made at a complimentary dinner given Mr. J. H. Owen, president of that society, on Wednesday evening last. Several speakers mentioned that former inmates of the hospital had expressed their great pleasure at the reception of the programme.

It was explained, however, by Mr. Ivan Levy that the installation was not yet perfected, on account of some difficulty being experienced through the electrical apparatus at the hospital itself. Certain extra shielding would probably be necessary before the installation could be officially opened. The whole hospital had not been equipped, but it was the intention of the society, once the present installation was effective, to hand it over and reply upon further public support, though probably some other organisation providing the funds for an extension.

Various speakers mentioned that the children and others in the hospital had greatly appreciated the service already provided, although the reception was only incidental to the testing operations.

The British Broadcasting Corporation publishes a new list of pronunciations decided upon by the Advisory Committee appointed to assist announcers. In the case of "antiquary," the accent is on the first syllable, the second syllable of "aquatic" rhymes with "hat"; in "armistice" the accent is on the first syllable, and in "artisan" on the last syllable. "Concerto" is "concherto," in "electricity" the first syllable is "all," not "eel," "elixir" is just "elixir," and "ideal" is three syllables, "i-dee-al."

THE CELEBRATED ETHOVOX LOUD SPEAKERS



This is the well-known Ethovox Loudspeaker which has become so popular because it reproduces speech and music with such remarkable purity and freedom from distortion. Its tone is deep and mellow, and it will deal with considerable volume. The demand for this model is so great that we have been able to effect economies in manufacture, and so reduce the price. The instrument is 26 inches in height, and the diameter of the flared horn is 15 inches. The magnet-system is adjustable. Rubber studs on the feet prevent the loudspeaker from damaging delicate surfaces on which it is placed. The graceful mahogany-coloured swan-neck and flared horn give the Ethovox a handsome appearance.

Ethovox 2000 ohms, with Metal Horn
Price £5 5s. 0d.

Ethovox 750 ohms, with Metal Horn
For use in conjunction with
Power Valves.
Price £5 5s. 0d.

The Ethovox is manufactured by Messrs. Johnson & Phillips, Ltd., Charlton, London.

If not obtainable at your Radio Dealers please write to the New Zealand Representatives—

**TOLLEY & SON,
LTD.,**

Electrical Engineers,
26 HARRIS ST., WELLINGTON.

Branches at:
Anzac Avenue, Auckland; Water Street, Dunedin; West Litchfield Street, Christchurch.

On Short-wave

EXPERIENCE WITH HARMONICS

SOME MORE STATIONS

Mr. F. W. Sellens (Northland) writes:—
I have had the same experience as your correspondent, Mr. S. R. Ellis (Okato) as regards harmonics of 4YA. This station can be heard at times on several of its harmonics. Several of the Australians also can be heard. 2BL on its eighth harmonic—about 43 metres—can be heard every evening. Once I heard 5CL. RFM can always be heard on its first harmonic at good strength.

Saturday, March 31.
On Saturday morning, March 31, 5SW opened up with the striking of Big Ben, followed by a talk on music. KDKA was weak and mushy in the

61G, Perth, was testing, and concluded the musical portion of his test at 1.17 a.m., West Australian time. KDKA was again weak, and spoilt by morse.
2XAF was very good; organ music was heard till 3.30, after which dance music from a hotel was relayed till they closed down.
3AR was testing, his strength and modulation were quite good.

Monday, April 2.
On Monday morning 2NM (Marcuse) was just audible. Music and talk was heard, but not intelligible.
3LO, as usual, was very good from 6 a.m. 4NW, Queensland, and RFM were heard during the evening.

Tuesday, April 3.
5SW and 2XAD on Tuesday morning were just concluding a test when I tuned 5SW in at 5.45 a.m.
At 6.30 a.m. 5SW started again. After the clock striking, Mr. James Leggett gave a talk on "Comedies." After some musical items Mr. Norman gave a talk on "German."
2YG, on about 32.5 metres, was testing during the evening, and announced as being the experimental

Our Mail Bag

Auckland Criticisms.

L. Workman, Adelphi Hotel, Kai-koura, writes.—At last I've had to give in to the impulse to express my views on the mad criticism which continues to flow from the Queen City. As far as the actual transmissions from 1YA are concerned, they are received on a 5-valve set working off an aerial with no insulators whatever and running over a metal waterpipe 12 feet before entering the set. The programmes are quite all right, to, but as we know, it's useless to try to please everybody. Somebody complains of the same artists being put on again and again, but it was not long ago that there was great outcry in Christchurch that 3YA was being used for the encouragement of budding amateurs because there were no set artists.

As far as I am concerned, the programmes are the best balanced I've ever heard. They knock the Aussies out by miles.

that it is the end of the financial year, and all radio licenses have to be renewed, I would like to tell you why I, for one, am not going to renew mine. At the start 2YA used to put on a very entertaining programme, and I was always sorry when ten o'clock came. Then they started to "educate" us to appreciate, in their opinion, better music. What have they done with "Bill Hart," the Studio Orchestra, the jazz evenings and other pleasing and popular items. We don't want gramophone items. We have our own gramophones, and one is apt to get a little tired of a gramophone. Well, sir, I could write much more in showing my disliking of the present programmes, but one thing I will say is this: When the company goes back to their old style of programme, I will rebuild my set, re-erect my aerial and willingly pay thirty shillings for what will then be great value for the money. Identity of a Station.

John E. Banks (Wellington).—While listening in very early this morning I picked up a station which I have not logged before. I had listened to all

by a lot of talking. More music followed, and I was able to recognise the piece they were playing. It was a piece called "Over the Waves," and the time was ten minutes to 2, New Zealand time. The station was fading badly, one minute being fairly clear and the next hardly discernible. Judging by the dial reading of the stations, I should say that the station was on about 230-240 metres. If any reader has heard this station I would very much like to hear from them as to its location.

M. O. Johnstone (Hick).—In a recent edition of the New Zealand "Radio Record" a reader reports having picked up a station on 230 metres. I, too, have heard this station, but never can find out who he is. Another reader said it was KFON, but he works on 242 metres, and I am pretty certain the announcer of this station is not an American. At 7.30 p.m. last night (Tuesday), I picked him up, and he was giving a speech session. He had a slight carrier wave.

The Auckland Position.

"Pukekohe."—I observe that in the latest issue of the "Radio Record" Mr. Salt, despite the fact that his tactics have been exposed, continues on his same course of action. He still seems to be pursuing a policy of presuming to represent the Auckland listeners. I am a close follower of newspaper correspondence and reports in regard to broadcasting in New Zealand, and there is one question Mr. Salt should answer: "How does he reconcile his position when he forwarded remits to the old Advisory Board in the name of the Auckland Radio Society, when a few months later he admitted that this society had been practically defunct for two years?" He is still posturing in much the same way. I would like to know how many bona fide listeners were present when the Auckland Listeners' League was formed, and how many were present when Mr. Salt was elected secretary, and the new member, Mr. Tiaris, was appointed to the executive? In brief, by what mandate have Messrs. Jacob and Salt the right to make sweeping statements in the name of the great body of Auckland listeners? Auckland listeners, of whom I am but one, are enjoying broadcasting in this country under the control of a properly constituted national organisation.

Getting Thirty Shillings Worth.

2 M.U.C.H. (Nelson): I have been reading some very interesting letters lately in your valuable paper, referring to programmes, good and bad. Personally I am receiving my thirty shillings' worth of entertainment from them, but I must confess that there are too many instrumental trios for my particular taste, and the majority of my listener friends are of the same opinion. I am not complaining about the artists themselves, as they are undoubtedly first-class musicians, but at the same time I think they are overdone. I feel almost certain that the majority of listeners would prefer to hear a few gramophone items instead of so many trios.

Now that the winter, with its cold and wet days, is drawing near, I feel sure that a Sunday afternoon concert from 2YA would be very much appreciated, say from 2 p.m. until 3.30 p.m., as the concert from 1YA only fills up a small portion of a dull afternoon.

I am pleased to see that 4YA is to broadcast the boxing contest on Saturday night. I heard the last one and must say that it was a great success. How about the other stations doing likewise?

I am not at all interested in the Broadcasting Company's balance-sheet or their method of engaging artists, as I suppose they have to get as much talent as possible for the cash available. And that is my reason for writing these lines. I want as much as possible for my money, although I am undoubtedly getting 'thirty shillings' worth at present.

AVERAGE CHARACTERISTICS OF RECEIVING RADIOTRONS

GENERAL										DETECTION					AMPLIFICATION									
MODEL	USE	CIRCUIT REQUIREMENTS	BASE	MAXIMUM OVERALL HEIGHT	MAXIMUM OVERALL DIAMETER	"A" SUPPLY	FILAMENT TERMINAL VOLTAGE (AMPERES)	FILAMENT CURRENT (AMPERES)	FILAMENT VOLTAGE (AMPERES)	DETECTOR GRID RETURN LEAD TO	GRID LEAK (MEG OHMS)	DETECTOR BATTERY VOLTAGE	DETECTOR PLATE CURRENT (MILLIAMPERES)	AMPLIFIER BATTERY VOLTAGE	AMPLIFIER BATTERY CURRENT (MILLIAMPERES)	AMPLIFIER PLATE CURRENT (MILLIAMPERES)	A.C. PLATE RESISTANCE (OHMS)	MUTUAL INDUCTANCE (MICROHENRIES)	VOLTAGE AMPLIFICATION FACTOR	MAXIMUM OUTPUT POWER (WATTS)				
RADIOTRON WD-11	Detector or Amplifier	Transformer Coupling	WD-11 Base	4 1/8"	1 1/4"	Dry Cell 1.5 V. Storage 2 V.	1.1	.25	—	+	3 to 5	22 1/2 to 45	1.5	90	4 1/2	2.5	15,000	425	6.6	7				
RADIOTRON UX-12	Detector or Amplifier	Transformer Coupling	Large Standard UX Base	4 1/8"	1 1/4"	Dry Cell 1.5 V. Storage 2 V.	1.1	.25	—	+	3 to 5	22 1/2 to 45	1.5	90	4 1/2	2.5	15,000	425	6.6	7				
RADIOTRON UX-12-A	Detector or Amplifier	Transformer Coupling	Large Standard UX Base	4 1/8"	1 1/4"	Storage 6 V.	5.0	.25	—	+	3 to 5	45	1.5	90	4 1/2	2.5	15,000	425	6.6	7				
RADIOTRON UX-19	Detector or Amplifier	Transformer Coupling	UX-19 Base	3 1/2"	1 1/4"	Dry Cell 1.5 V. Storage 2 V.	3.3	.063	—	+	2 to 9	45	1	90	4 1/2	2.5	15,000	425	6.6	7				
RADIOTRON UX-19-A	Detector or Amplifier	Transformer Coupling	UX-19 Base	3 1/2"	1 1/4"	Storage 6 V.	3.0	.063	—	+	2 to 9	45	1	90	4 1/2	2.5	15,000	425	6.6	7				
RADIOTRON UX-20-A	Detector or Amplifier	Transformer Coupling	Large Standard UX Base	4 1/8"	1 1/4"	Storage 6 V.	5.0	.25	—	—	—	—	—	Following UX-200A Characteristics apply only for Detector Connection	—	—	30,000	666	20	—				
RADIOTRON UX-201-A	Detector or Amplifier	Transformer Coupling	Large Standard UX Base	4 1/8"	1 1/4"	Storage 6 V.	5.0	.25	—	+	2 to 9	45	1.5	90	4 1/2	2.5	11,000	733	8	15				
RADIOTRON UX-22	Radio Receiver	Special Shielding (See Note)	Large Standard UX Base	5 3/8"	1 1/4"	Dry Cell 1.5 V. Storage 2 V.	3.3	.132	—	—	—	—	—	135	1 1/2	1.5	10,000	800	6	55				
RADIOTRON UX-22-A	Radio Receiver	Special Shielding (See Note)	Large Standard UX Base	5 3/8"	1 1/4"	Dry Cell 1.5 V. Storage 2 V.	3.3	.132	—	—	—	—	—	135	1 1/2	1.5	850,000	350	300	—				
RADIOTRON UX-25	Amplifier	Transformer Coupling	Large Standard UX Base	4 1/8"	1 1/4"	Transformer 1.5 V.	1.5	1.05	—	—	—	—	—	90	6	3.5	9,400	875	8.2	20				
RADIOTRON UX-25-A	Amplifier	Transformer Coupling	Large Standard UX Base	4 1/8"	1 1/4"	Transformer 2.5 V.	2.5	1.75	—	—	—	—	—	135	9	6	7,400	1,100	8.2	70				
RADIOTRON UX-27	Detector or Amplifier	Transformer Coupling	Large Standard UX Base	4 1/8"	1 1/4"	Storage 6 V.	5.0	.25	—	+	2 to 5	100	2	135	1 1/2	2	7,000	1,170	8.2	160				
RADIOTRON UX-27-A	Detector or Amplifier	Transformer Coupling	Large Standard UX Base	4 1/8"	1 1/4"	Storage 6 V.	5.0	.25	—	+	2 to 5	100	2	135	1 1/2	2	150,000	200	30	—				
RADIOTRON UX-41A	Power Amplifier	No L.S.C. Required	Large Standard UX Base	4 1/8"	1 1/4"	Storage 6 V. Transformer 5 V.	5.0	.25	—	—	—	—	—	135	9	7	5,000	1,600	8	120				
RADIOTRON UX-41B	Power Amplifier	No L.S.C. Required	Large Standard UX Base	4 1/8"	1 1/4"	Storage 6 V. Transformer 5 V.	5.0	.25	—	—	—	—	—	135	22 1/2	6.5	4,700	1,700	8	195				
RADIOTRON UX-41A-1	Power Amplifier	L.S.C. Except at 90 V.	Large Standard UX Base	4 1/8"	1 1/4"	Storage 6 V. Transformer 5 V.	5.0	.25	—	—	—	—	—	90	18 1/2	10	2,300	1,300	3 1/2	130				
RADIOTRON UX-41A-2	Power Amplifier	L.S.C. Except at 90 V.	Large Standard UX Base	4 1/8"	1 1/4"	Storage 6 V. Transformer 5 V.	5.0	.25	—	—	—	—	—	135	22 1/2	6.5	2,500	1,500	3 1/2	230				
RADIOTRON UX-210	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	250	18	10	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-A	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-B	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-C	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-D	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-E	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-F	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-G	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-H	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-I	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-J	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-K	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-L	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-M	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-N	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-O	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-P	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-Q	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-R	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-S	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-T	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-U	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-V	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-W	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-X	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-Y	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-Z	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AA	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AB	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AC	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AD	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AE	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AF	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AG	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AH	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AI	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AJ	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AK	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AL	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AM	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AN	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AO	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AP	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AQ	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AR	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AS	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AT	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AU	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—	400	31 1/2	18	2,500	1,300	3 1/2	230				
RADIOTRON UX-210-AV	Power Amplifier	L.S.C.	Large Standard UX Base	5 3/8"	2 1/4"	Transformer 7.5 V.	7.5	1.25	—	—	—	—	—											

(1) Note other use of this Radiotron above (below)
* Inner Grid - 1 1/2 Volts; Outer Grid +45 Volts, .15 Milliamperes
† Outer Grid - 1 1/2 Volts; Inner Grid +22 Volts, .6 Milliamperes
‡ Applied thru plate coupling resistance of 250,000 Ohms

Note: All grid voltages are given with respect to cathode or negative filament terminal

Max. Values not to be exceeded

A. C. Plate Voltage
B. C. Plate Voltage
C. C. Plate Voltage
D. C. Plate Voltage
E. C. Plate Voltage
F. C. Plate Voltage
G. C. Plate Voltage
H. C. Plate Voltage
I. C. Plate Voltage
J. C. Plate Voltage
K. C. Plate Voltage
L. C. Plate Voltage
M. C. Plate Voltage
N. C. Plate Voltage
O. C. Plate Voltage
P. C. Plate Voltage
Q. C. Plate Voltage
R. C. Plate Voltage
S. C. Plate Voltage
T. C. Plate Voltage
U. C. Plate Voltage
V. C. Plate Voltage
W. C. Plate Voltage
X. C. Plate Voltage
Y. C. Plate Voltage
Z. C. Plate Voltage

afternoon; a beam station was also causing some interference, being nearly the same wave.
2XAD was enjoyed from 3 till 3.31 p.m. at good speaker volume, about the best heard from this station. The Palmolive people were responsible for most of the items during this period.
Later on 2XG, on about 33 metres, was heard on his word tests—"Write down."
RFM was on the air during the evening.

Sunday, April 1.
On Sunday morning I got up early enough to hear the conclusion of the programme from PCJJ, the last item being the Dutch National Anthem, sung by a choir.

short-wave station of 2BL, Sydney. Modulation and strength was good, but morse spoilt reception.

RFM was heard, but spoilt by static.

Wednesday, April 4.

PCJJ was very good on Wednesday morning.
5SW, Chelmsford, announced that they would not be transmitting on Friday, April 6, or Monday, April 9.

A lecture and musical items were heard till 7 a.m., when it was announced: "Now we are going to Liverpool," and "Liverpool calling" was heard.
Just before closing down at 7.25 a.m., the Wireless Orchestra was coming through very well.
(Continued Foot of Next Column.)

Then somebody raised a wail about the State taking over the stations. Australia has a State controlled station, and anybody who listens to Australia will know which one I mean when I mention the dull roar which comes over with a programme which quite often is not worth battery power. As for our dear friend who is going to have great fun pulling to pieces the Broadcasting Company, let him have a shot; he must be a very influential bird, too, by what we hear of him. Somebody told me that we only got the broadcasting Company's view through the "Record," but I said no, because our sets tell us our side of the story, and they tell it well, too, if they are decent sets. Wishing the "Record" and Broadcasting Company every success.

The Programmes.

N. S. Francis, Lower Hutt.—(Seeing

Thursday, April 5.

On Thursday morning the talk was apparently from Chelmsford, as I did not hear the clock or "London calling," but the announcement, "5SW, Experimental station, Chelmsford, England."

At 10.30 p.m., a stranger was tuned in on about 30.5 metres. This proved to be a Japanese station relaying the programme of JOAK, as that call was heard several times. The call of the short-wave station was not heard while I was listening from 10.30 p.m. till about 10.45 p.m. It was probably JHBB experimenting on a lower wave than they used on previous tests.
Friday, April 6.

PCJJ was heard at good strength and modulation till they signed off at 6.35 a.m.

5SW and 2XAD were having a chat. The latter station could not be picked up direct, and only faintly heard through 5SW.

London was heard through 5SW from 6.30 a.m. till just before they closed down.

Till 8.30 a.m. they were audible on the speaker, volume gradually getting weaker. After this, I only listened in at intervals. At 11.15 a.m. the Wireless Orchestra were just audible, but talk was not intelligible.

2XAF were relaying orchestral music when first heard during the afternoon, and later an organ recital from Albany, New York, was heard which was very enjoyable. They closed down at 12.12 a.m. R.S.T. (4.42 p.m. N.Z.T.).

the Australian stations close down some time before, and was commencing from zero on the dials, intending to work up, on the off chance of picking up a stray station, when I got the carrier wave of this station at zero on both dials. I could not get low enough to get good, clear reception, but I heard orchestral music, followed

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AUCKLAND, WELLINGTON, CHRISTCHURCH, DUNEDIN, AND

INVERCARGILL.

From the Woman's Point of View.

By VERITY.

TO-DAY AND TO-MORROW

They Say:

That the Dean of Dunedin, accompanied by Archdeacon Fitchett and Mr. Whitehead, warden of the Ecclesiastical College, will be in Wellington during the meeting of the General Synod, to be held in about a week's time.

That many people will miss Dr. G. W. Hartly and Mrs. Hartly, who, accompanied by their family, intend leaving immediately for a British and European tour. They will go via Australia, and expect to be away from the Dominion for a comparatively lengthy period.

Beautiful Napery.

Beautiful linen appeals to every discriminating house lover more than any other possession. So much so that if for instance a really distinguished hostess were told that she must make her choice between silver or china or table linen or glass (meaning that the item chosen might be the most valuable possible, and the other three very moderately priced), it is certain that her choice would not be silver, nor china, and certainly not glass, but table linen. An obvious choice, after all, since plated silver can be beautiful, and inexpensive glass and china can have the decorative beauty of rarer example. But there is no substitute for quality in table linen. Nothing can imitate fine, even threads closely and skilfully woven—nothing can imitate (not even when it is starched and glazed to the uttermost), the soft satin smoothness, the suppleness and weight, of best quality pure linen damask. The linen closet is the treasure chest in truth of the fastidious hostess. Beautiful napery is always heavily soft—it falls very much the way satin does, and it has almost a satin sheen, but heavier, softer, finer. We all know, of course, that nothing is more delicious to the face than a heavy damask towel, or more becoming to the bathroom towel-racks.

The Hour of Ceremony.

Dinner in every important house has always been the hour of ceremony. The test of a practised hostess is in dinner giving; the test of a perfectly appointed house in its table equipment is the quality of its linen damask. Linen that is beautiful because of its texture is something that the unknowing seldom, if ever, appreciate.

The hostess without tradition is apt to think if her table cloths and napkins are thickly embroidered and heavily lace-trimmed, they are something to be proud of. Perhaps they are. Perhaps again they are not. It is true that lunch cloths, supper-cloths and tea-cloths, runners, mats and doyleys, can be trimmed as much as purse can pay for. A hampering qualification this last, since it must be pointed out that the more elaborate the trimming, the greater the necessity for fine quality. In other words, trimming must always be in addition to quality, and not an attempted camouflage of its lack.

As an example of bad taste, nothing could exceed a certain picture film, that in one of its scenes attempted to show a fashionable and luxurious dinner-table. Anyone knowing anything at all could see that the over-trimmed table-cloth was of such tawdry cheapness that no woman of taste could possibly give it house-room. One of the characters left the table holding a napkin which stood out like a square of paper muslin, small in size, stiff in texture, and bordered with the cheapest but very ornate lace.—Miss Bueclough, 4YA.

Disconcerting!

Among the fund of Scottish anecdotes told by Sir Archibald Geikie, the famous geologist, is one concerning a minister who had been appointed to a Scottish country parish. During his first round of visits on his parishioners he called at a small farm, but found only the farmer's son at home. He was shown into the parlour with due ceremony. Glancing round the room his eye finally rested on the bookcase. "Are these all the books your father has in the house?" he inquired of the boy. "Aye," was the stolid reply. "Now tell me," went on the minister, "which of them does he use oftenest?" "That one," replied the boy, at the same time pointing to a large leather-covered Bible, which seemed to be well worn. "Oh, the Bible," said the minister, beaming; "I'm glad of that. How often does he use it?" "On Sunday mornin'," was the reply. "Oh, only once a week?" said the minister. "Well, well, does he read it aloud to you all, or just to himself?" "Na," came the disconcerting reply, "he sharpens his razor on't."

Curacao.

Peel very thinly the rinds of two Seville oranges and one lemon. Add ½ lb. sugar candy and one bottle unsweetened gin. Infuse in a covered vessel for three weeks, stirring daily. Strain and bottle, covering the cork with wax.

A Unique Honour.

Few people feel more sympathy with Lady Haig in the loss of her husband than Mrs. Mary Bell, who for four and a half years shared the duties of maid of honour to Queen Alexandra with Lady Haig, and who had a double wedding with the Haigs in the Buckingham Palace Chapel. Before her marriage Lady Haig was Doris Vivian, Lord Vivian's sister, and we used to take it in turns to act as maids of honour to Queen Alexandra. It was the Queen who suggested that they should have a double wedding in the private chapel at Buckingham Palace. This was an honour accorded to no other commoners either before or after.

A Woman Politician.

The recent return to Parliament of Lady Iveagh has immensely strengthened feminism in the House of Commons, placing at the service of English womanhood one of the cleverest female brains in these enlightened days. She has already given such a taste of her quality that the House knows that she will go a long way. In her speech on the Prayer Book measure she addressed the House of Commons as one to the manner trained, and in a style worthy of a descendant, as she is, of the great Speaker Onslow.

A Bostonian having read Shakespeare for the first time observed gravely: "I don't suppose that there are twenty men in Boston to-day who could have written that book."

The Letters of Annabel Lee

My Dear Elisabeth:

Once more the Scottish City may plume itself upon being the birthplace of a risen star. To the long list of men hailing from Dunedin, who have achieved distinction in this Dominion and the wider world beyond, is to be added the name of the latest appointment to the Judiciary. The wearer of the august robes of equity must needs be a very perfect knight indeed, if adequately he is to fulfil the claims of his high calling; the calibre of those who have gone before setting high standard for the manners and morals of men. Mr. Justice Smith is known to be able and fearless, a humanist who is not hide-bound in theory, but, possessing a strong sense of honourable obligation, is ever ready to attack the nearer duty to humanity with energy and conviction. One predicts for him a shining career upon his proud pedestal; and if, by ill chance, for some transgression we or our friends one day should figure before him in the doleful Chamber over which he holds omnipotent sway, let us hope he will insist on the suppression of names, although perhaps that particular privilege is reserved for the Lower Court, wherein do congregate lesser lights of the criminal constellation.

Which reminds me of Lady Macbeth, that splendid treader of the downward path. A long way to leeward has swung the pendulum of taste, when London is asked to listen to this greatly tragic lady speak her magnificent lines clad in the latest mannequin mode of 1928. Unduly iconoclastic, it would seem, thus to disturb a conception based upon the divine art of Ellen Terry as, swathed in classic draperies of a grace and import sublime, majestically bearing aloft a mediaeval lamp, she intoned that over true tale, "... What's done cannot be undone!" Other days, other ways; but having had a standard set by an Irving and a Terry, a Belieu and a Brown-Potter, it would perhaps be the better part of wisdom to let well alone as far as this particular tradition of the English stage is concerned.

Richard the Good being encountered by chance on a recent evening, in an unwonted mood of frivolity, I was gathered in for a cinema show, whither we travelled by tram, incidentally observing how strangely

"MON VIE A SON SECRET"

(Translated from the French).

One sweet, sad secret holds my heart in thrall;
A mighty love within my breast has grown,
Unseen, unspoken, and of no one known;
And of my secret, who gave it, least of all.
Close as the shadow that doth by her fall
I walk beside her evermore alone,
Till to the end my weary days have flown,
With naught to hope, to wait for, to recall.

For her, though God hath made her kind as secret,
Serene she moves, nor hears about her feet
Those waves of love which break and overflow.
Yea! She will read these lines, where men may see
A whole life's longings, marvelling, "Who is she
That can so move him," and will never know.

—Felix Arvers.

TO-DAY AND TO-MORROW

From the New Diary of Samuel Pepys. The Real "You."

"To the office and there found a stir, which I do inquire into, and find it is a subscription list for wyreslesse, which is to be given to the hospitals, and a mighty good idea, too, though it cost me a shilling or two. Whatever I thought amiss of the charity of the town in my ignorance, I perceive I was wrong. Never have I had better proof of the kindness of the folks hereabouts, for everywhere they do subscribe that the wyreslesse music may be conveyed to the poor sick people in their beds in hospital, so that though the patients' feet cannot be set a-jiggling, they may have the refreshment of joyous music in their ears, which shall do much to help them towards recovery of health, which is best served by merriment, lightness of heart, and the praying of God's goodness."

How to Make Tea.

Put the tea into cold water and bring this to boiling point, or a few seconds longer, according to the quality of the tea and the taste of the tea-drinker. Pour through a strainer into a warm teapot. The advantages of this method are a revelation to anyone who follows it.

Cheese Pancakes.

Prepare a thin batter as for pancakes, and set aside for 1½ hours. Stir in 3 tablespoonfuls of grated cheese, make quite thin pancakes, and fry in hot fat. Then sprinkle with a little grated cheese and roll. These are very good as a savoury.

Your face is more nearly you than anything else in your whole personality. Your clothes may belie you, your body deny your soul, but your face exposes you. You may have been born without beauty, but the woman does not live who cannot be made pleasant to look upon. Your thought, your impulse, your courage, your whole way of thinking and living, are in your face, and your intelligence is reflected by the condition of the face, the care you give it, and whatever charm you have. Everything should be done to enhance the face, but the moment you step over the enhancement, the effect is grotesque. Artificiality is beauty bankruptcy. It is better to have an ugly face than an artificial one.

Tell-tale Eyes.

When you say to yourself that a woman is beautiful, is it not generally the expression of her eyes first, and her smooth contour next? The eyes will tell you how young, how well, how happy she is. If she is not all three, then know that she is extremely clever. She knows the secret of looking young and beautiful, the proper way to treat the muscles round the eyes to maintain their mobility and firmness. Sunken eyes, drooping lids, wrinkles and puffiness under the eyes are the real enemies of beauty. Particular care should be taken of the eyes, to keep them strong, clear, and bright, and to keep the skin round them smooth, firm, and young. Eyes can be strong, clear, and beautiful to the last day of one's life if they are properly cared for. There is a method of resting, cleansing and exercising the eyes which is the result of long research and practice by one of the most famous oculists in the world.

A special eye cream nourishes the delicate tissues and muscles round the eyes, eradicating those fine lines that come from strain and neglect. Eye cream should be applied liberally at night, patting it in under and above the eyes with the cushion part of the second and third fingers to firm and tone the relaxed, tired muscles of the eye. Look up as you pat under the eyes. Devote a few minutes to each eye, and allow cream to be absorbed during the night.—Miss Bueclough, 4YA.

A National Broadcast.

The Welsh National Council of Music, the National Museum of Wales, and the Corporation of Cardiff, co-operating with the B.B.C., have evolved a scheme for a "National Orchestra of Wales" to perform in public and to broadcast nationally.

The B.B.C. undertakes to support the scheme financially, and the Cardiff Corporation provides the Assembly Rooms at the City Hall on two nights a week with permission to charge for admission at popular prices.

The Council of the National Museum of Wales has for one experimental year given the museum for a daily hour of free music, and on four days of each week a midday (or afternoon) orchestral concert will be broadcast from there.

The orchestra will begin with a personnel of thirty on a permanent salary basis. Mr. Warwick Braithwaite, conductor of the Cardiff Musical Society and Musical Director of the Cardiff station of the B.B.C., will be the first conductor.

A New Invention.

Anybody who wishes to carry on his or her new correspondence in inviolable secrecy can buy one of the most ingenious machines ever invented. It has a typewriter at each end, with most complicated machinery in the centre. You typewrite the message at one end; it then passes through something over a million combinations, and appears typewritten at the other end as a maze of letters. No one letter ever appears twice the same in the code, so that it is impossible to obtain a key.

When the meaningless array of letters reaches the proper recipient, however, who is, of course, armed with a similar machine, he types the received message, and it is decoded without the slightest hesitation or error.

One of the greatest triumphs for the British manufacturer is a new calculating machine that will add, subtract, and change pounds sterling into dollars, francs, and lira all at the same time, and perform algebraic calculations with a turn of a handle.

Negative Goodness.

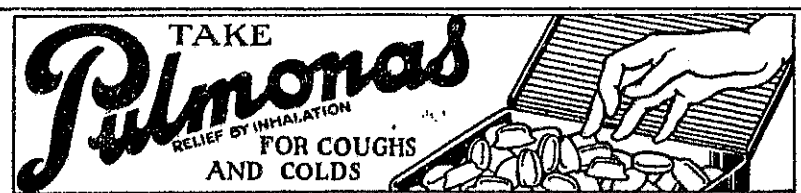
"Sometimes," says a well-known woman novelist, "people are given an easy-going temperament, and have not the energy to go wrong." That reminds one of the saying of that cheerful philosopher, Oliver Wendell Holmes, to the effect that, just as there were positive blondes and negative blondes, the latter being fair simply through the absence of colour, so there were positively and negatively good people, the negative variety being those who had never done anything actively bad. The present generation never reads the Breakfast Table series; but it often happens that one sees the thoughts of Autocrat, Poet, or Professor revived in another form, though doubtless without intentional plagiarism. Was it not Gilbert Frankau who spoke of young men, "Too bored to sin, too decadent to bound"?

Baked Bananas: A Jamaica Recipe.

Bake bananas, not too ripe, in their skins, as you would apples, till the skin turns slightly brown. Slit skin and take banana out; serve hot, with cream and sugar or milk. Easy and most nutritious.

Walnut Filling.

½ lb. minced walnuts, 1-3 cup milk, 1 egg, ¼ cup castor sugar, essence of vanilla. Mix egg, sugar, and milk, and stir in double cooker until thickened. Add nuts and flavouring.



Some Features of Next Week's Programmes

FROM 1YA

"SAMSON AND DELILAH"

The major portion of Tuesday evening's programme will be given over to an operatic scene from "Samson and Delilah" (by Saint-Saens). The excerpts will be produced under the direction of Madame Irene Ainsley. The artists taking the various parts will be Madame Irene Ainsley, Mr. Robert Peter and Mr. Walter Brough. During the evening the Bosworth-Hemus-Towsey Trio will be heard in several piano-forte trios, including selections from Bizet's "L'Arlesienne." Mr. Cyril Towsey will render the "Ballad in A Flat" (by Chopin). "They call me Mimi," from "La Boheme," and "My Dearest Heart" will be amongst the soprano solos to be rendered by Mrs. J. Parry, while orchestral music will be relayed from the Majestic Theatre.

Mr. A. B. Chappell, M.A., will continue his popular talks on "Old New Zealand" on Tuesday. The title he has chosen for this evening is "Missionary Beginnings."

On Wednesday evening the Auckland Municipal Band, under the able direction of Mr. Christopher Smith, will again be heard on relay from the Auckland Town Hall. The band will perform its usual concert of popular and classical selections, and will be assisted by the Hazell-Sutherland Duo, who will render a variety of contralto and baritone solos, and a bracket of vocal duets, including the well-known "Galloping Duet," from "Floradora."

The programme for Thursday evening will be of a popular and varied nature. Miss Martha Williamson will make a welcome reappearance before the microphone. Her contralto items include "Tis the Hour of Farewell," by Lehmann, and "The Bird with the Broken Wing," by Gibson. Mr. Barry Coney's robust baritone voice will again delight listeners with "Devon Mine" and "I'm a Cornish Man." Mr. T. T. Garland, the well-known entertainer, will include among his humorous sketches at the piano, "A Suburban Service," by Grossmith. The Bosworth-Hemus-Towsey Trio will play Haydn's Trio No. 9, 1st Movement, and a selection from Wagner's "Lohengrin." Soprano solos to be sung by Miss Dorothy Youd include "When all was Young," from "Faust" (Gounod). The Bohemian Trio's items will include a variety of popular selections, both vocal and instrumental.

On Thursday, Mr. Fred Barker will continue his informative and interesting novelty talks, "A Wayside Philosopher to his Friend," the subject for his lecture this evening being "Enthusiasm," and in conjunction with Mr. Culford Bell, will perform the famous Quarrel Scene from "Julius Caesar."

The old English song cycle, "Flora's Holiday," will be performed on Thursday by Mr. Barry Coney's Quartet, comprising Miss D. Youd, Miss M. Williamson, Mr. G. Barnes, and Mr. Barry Coney.

Madame Mary Towsey's vocal quartet, comprising Miss Gwendyth Evans, Madame Mary Towsey, Mr. John Bree and Mr. Reginald Newberry, will again render a variety of quartets, trios and solos, their quartet numbers being "Swing Low, Sweet Chariot" and "Prayer," from "Moses in Egypt" (by Rossini). Hawaiian instrumental music will be dispensed by Lagall's well-known Hawaiian Orchestra, while Mr. Rustace Tregilgas will include among his cornet solos, "Star of England," by Farrell, and Handel's "Ombra Mai Fu."

An outstanding item on the programme of Friday should be "Le Nil," by Leroux, sung by Madame Mary Towsey, with cello obbligato by Miss Laika Hemus.

Catering for the elocutionary side of the programme, "Ellen Jones of Aberdeen" and "The Four Floors" will be among the items to be given by the well-known Auckland elocutionist, Mr. J. P. Montague.

Selections from "Cavalleria Rusticana" and the 2nd and 3rd Movements of Trio No. 9 by Haydn will be played by the Bosworth-Hemus-Towsey Trio.

The popular vocal trio, the Snap-Three, will harmonise in a number of the latest song hits, including "My Blue Heaven," "Russian Lullaby," and "Just Like a Butterfly."

Saturday evening's programme will be given by the Auckland Municipal Choir, who will present a varied programme of vocal music. They will be assisted by Mr. Maughan Barnett, Auckland City Organist. Following this programme, dance music will be relayed from the Dixieland Cabaret, where the "Internationals" will perform under the able direction of Mr. Clyde Howley.

At the conclusion of the Beresford Street Congregational Church service on Sunday, the Municipal organ recital will be heard on relay from the Town Hall, Mr. Maughan Barnett being the organist.

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Three-Act Comedy "JANE"--From 2YA on May 3

On Thursday, May 3, a special feature from 2YA will be the presentation of the three-act comedy "Jane," under direction of Mr. A. Stanley Warwick. The full cast will be as follows:—Miss Violet Wilson, the well-known radio performer, as Jane; Miss K. Keddel, Mrs. Chadwick; Miss Mary Langdon, Lucy Norton; Miss Grace Henderson, Mrs. Pixton; Mr. Peter Dornan, Chas. Shackleton; Mr. Ed. Gardiner, Mr. Kershaw; Master Ian Watts, Claude; Mr. F. N. Hastings, Mr. Pixton; Mr. A. Stanley Warwick, William.

The comedy is an exceptionally humorous one, and a splendid evening's entertainment can be looked forward to with every confidence.

FROM 2YA

SCOTTISH EVENING

On Monday, April 16, the Ariel Singers will again be heard from 2YA. Following up their "Old English" evening of last month, their programme will consist entirely of "Old Scottish" music. Mr. J. M. Caldwell (bass) is recently from Glasgow, and will be heard in some of the songs so dear to every native of that place. The quartet arrangement of "Ay Waukin' O!" by Mr. Hugh Robertson, conductor of the famous Glasgow Orpheus Choir, should also be worth hearing. Monday's Scottish programme should, taking it in its entirety, be one of the best ever pre-

Mr. Cedric Gardiner, who has won favour with his humorous elocutionary items, will be on the programme, and Mr. Johannes Andersen, librarian of the Turnbull Library and one of the foremost authorities on the birds of New Zealand, will deliver another of his most interesting lectures.

The Apollo Singers have provided an attractive programme for the evening of Friday, the 20th instant. This will include two popular quartets: "Annie Laurie," arranged by A. Sample, the most popular Scotch air that has ever been written, and "Evening's Twilight," by Hutton, a very beautiful melody. They will also present a fine range of solo numbers as under:—Mr. S. E. Rodger, "Londonderry Air," by Weatherly, a very pleasing Irish song, and

Mr. A. G. Thompson's Dulcet Quartet, the Studio Trio (in concerted and solo items) and Mr. George Ferris (elocutionist) will be responsible for the major portion of the programme on Wednesday. The vocal items will comprise selections from well-known operas. Two quartets will be the "Soldiers' Chorus," from "Faust," and Balfe's "Happy and Light."

One fine item on Wednesday's programme will be a scene from "Il Trovatore," when the "Miserere" will be sung by Miss Nellie Lowe and Miss Mary Shaw, the duet being complete with chiming effect.

"From Rushy Beds of Silver Nile" is a very pretty and attractive song in which a sprite of old Egypt, in a very sprightly way, describes and laughs at mere man's efforts. Mr. A. G. Thomp-



CHEERIO RADIO CLUB OF 2YA.

—S. P. Andrew Photo.

(Left to right)—Back Row: Kathleen Hume, Phyllis Lindsay, Zena Willis, Gerda Brigden, Gretchen Hume. (Front Row): Doreen Bibby, Marjorie Dinneson, Joyce Dinneson, Phyllis Bridge, Joyce Twist. (Absent): Irene Wilson, Joyce and Maurice Lambert, Gwenda Webb, Ruby Gray.

sented by the Ariel Singers. On April 23 the anniversary of William Shakespeare's birthday, these popular artists will again be heard in a vocal programme composed entirely of settings of Shakespeare's poems.

Also contributing to the evening's entertainment will be Mr. A. Stanley Warwick, elocutionist, Mr. L. W. Rothwell, flautist, and Mr. H. J. Dutton, cornetist.

A splendid variety in their numbers has been arranged by the Orpheus Quartet for April 17. "The Commotion of Love" is a very bright number, as is also "Awake, Aeolian Lyre," Mrs. Alice Harris sings an old English song, "The Loyal Lover"; Arthur Coe sings "Love, Could I Only Tell Thee," from "The Geisha"; Lily Mackie sings "I Know a Bank" and "The Mountain Lovers." There will be two duets, "When I Know that Thou Art Near Me," for soprano and baritone, "As I Saw Fair Clara Walk Alone," for the gentlemen of the party.

Associated with the Orpheus Quartet will be Mr. Temple White, who is to give one of his popular organ recitals; Mr. Lad Haywood with Italian mandolin; Mr. Tichenor, who will be heard in humorous items; and Mr. W. J. Matson, of the band of the 1st Battalion Wellington Regiment, who will contribute trombone solos.

Another programme of the type which is proving so much to the taste of listeners-in during recent weeks will be submitted by the "Mellow Fellows" on Thursday, April 19. Everybody may listen, for there are items to suit all. The more staid members of the party will delight those who prefer what is to-day termed "highbrow" music, and the frivolous younger set is catered for in selections such as "De New Year" and "While the Salaris Sleeps." Even grandfather can become reminiscent while listening to "The Old Brigade." For those who need the tonic of a good laugh, the Funny Fellow has thoughtfully arranged to tell some stories (passed by the censor), and father and mother may live their youth over again without telling any secrets in "When You and I Were Seventeen."

"If I Might Only Come to You," by Squire. Miss Chudley, "Swing Low" and "I Stood by de Ribber Jordan," by Burleigh, negro melodies. Mr. E. W. Robbins, "For You Alone," by Geith, a well-known and very pleasing song. Miss Goodwill, "Pinella," by Tschakowsky. Miss Chudley and Miss Goodwill will also be heard in the duet, "I Would That My Love," one of Mendelssohn's dainty melodies.

The vocal items of the programme at 2YA on Saturday, April 21, will be provided by the popular Melodie Four male quartet. Several melodious songs which should prove popular have been chosen by the four members, and these songs include "Roadways" (Lohr), "The Watchman" (Squire), "Alice, Where Art Thou," and "The Gypsy Love Song." Amongst the quartets which will be presented are "Tom, Tom, the Piper's Son" and "Mosquitoes." The former deals with the oft-repeated rhyme of childhood days in a humorous yet tuneful fashion. "Mosquitoes" contains many original touches, and the humming of this irritating pest is exceedingly well produced by the four voices. Mr. Chas. Brazier will also entertain with banjo solos.

On Sunday evening, April 22, 2YA will relay from His Majesty's Theatre the concert of the Wellington Municipal Tramways Band. The work of this band, under the able conductorship of Mr. T. Goodall, is always acceptable to listeners, while a first-class vocal programme is assured.

FROM 3YA

LIZA LEHMANN'S "DAISY CHAIN"

Popular vocal items, interspersing a bright and varied instrumental programme provided by the Christchurch Municipal Band, will comprise the entertainment on Monday evening. Miss Nancy Bowden, Miss Rita Lucas and Mr. W. H. Inkster will be the singers and Mr. Hiram Dunford will give elocutionary items.

some favourite songs, other artists will be the talented and versatile Miss Naare Hooper (elocutionist), Mr. W. Hay (flautist) and the members of the Studio Trio.

Musical comedy will comprise the programme for Friday evening. The vocalists responsible will be Miss Mildred Russell's Aeolian Quartet. The play chosen for the occasion is "The Dollar Princess," which abounds in good tunes—solos, duets and quartets. The light music of this evening should be very popular.

To make her appearance again on Friday evening will be Miss Kinsella, elocutionist. She has a variety of recitations to give. The Studio Trio is also on the programme this evening, and Mr. George Bennett will play popular melodies on his accordion.

"Why are Flowers Scented?" Mr. Robert Wain, the well-known Christchurch nurseryman, will discuss this question at 3YA on Thursday.

The Avonian Minstrels, the four male voices who delighted all listeners on a recent Saturday evening, will be one of the attractions at the radio vaudeville on Saturday, April 21. The quartets will include two old plantation songs. Solos will also be sung. The members of the quartet are Messrs. J. Filer, E. Rogers, F. Olds and D. Claperton.

FROM 4YA

A HUMOROUS EVENING

The service to be broadcast on Sunday evening is from St. Paul's Anglican Cathedral, where the preacher will be the Rev. Canon Nevill.

Tuesday evening's programme will be provided by the St. Kilda Band, under the conductorship of Mr. James Dixon, and by assisting artists. A fine programme of band music has been arranged, including some excellent arrangements of Irish music. Miss Dorothy Skinner, contralto, will sing "Angus Macdonald," among other numbers. Mr. P. C. Cooper, bass, will be heard in "Simon the Cellarer," Miss Anita Winkel in elocutionary items, and Mr. Reg. Richards in baritone solos.

Pastor W. D. More will give a humorous address on Tuesday evening.

A first-class humorous concert will be heard from 4YA on Thursday evening. Well-known entertainers in the lighter type of music will be singing.

Miss Dorothy West, light soprano, will sing three numbers from the musical comedy, "Going Up." Miss Mollie Andrews, light mezzo-soprano, will sing "Romance" and "In Yorkshire," from the musical play "Our Miss Gibbs."

Mr. Allan Young will entertain with humorous stories and will give two very popular elocutionary numbers. Mr. Chas. Rowand will present a group of humorous songs and Mr. Carl Moller will delight listeners in his inimitable style with several elocutionary numbers. Mr. J. B. McConnell, light baritone, will feature some of the latest popular song successes.

Messrs. Sheehy and Campbell, well known entertainers with Hawaiian guitars, will present some of the lively and dreamy melodies from Waikiki on Thursday, and during the evening orchestral music, under Monsieur de Rose, will be relayed from the Octagon Theatre.

An excellent programme has been arranged for Friday evening. Mr. J. B. Macpherson, bass, will sing the prologue from "I Pagliacci." Miss Florence Sumner, soprano, and Miss Irene Hornblow, L.R.A.M., contralto, will present vocal numbers. Miss Aroha D. Allan, L.T.C.L., will provide some piano-forte solos, and Miss Sheila Neilson some elocutionary items.

An entertaining programme will be heard on Saturday night. Several quartets by the 4YA Harmonists will be heard, also two instrumental trios. The vocalists on this programme include Miss Roma Buss, Mr. R. S. Mitchell, and Mr. F. M. Tuohy.

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NOTES AND COMMENTS

(By "Switch.")

Professor Rogotti, of Milan, with two assistants, transported a radio receiver to the inside of the world-famous volcano Vesuvius, to test the radio-receiving qualities of this somewhat sparsely populated area. The tests seem to prove that radio reception is impossible near the eruptive cone of the volcano, while at a distance of 300 feet from the cone reception was rather poor. The experimenters wore masks, as a protection against the stifling gases from the erupting cone.

A new valve that has been patented by an Englishman is claimed to be capable of acting as a radio stage, detector, and three audio amplifier stages, all combined in the one valve, thus actually capable of giving loudspeaker strength of inter-State stations with one valve. There are seven contact pins to the valve.

It has been suggested that in order to discriminate valves and bases, each valve be given a colour. For instance, the detector socket may be coloured green. All detector valves should have green bases, and it would then be a simple matter to fit it into its own socket.

Howling in the loudspeaker may frequently be traced to the B battery, especially where more than one audio stage is used. This is due to the high resistance of the faulty battery, producing a coupling effect between the audio stages, which, in turn, creates an audio frequency beat note. Then, a microphonic valve is often the delinquent. The source of this trouble lies with the faulty construction of the valve elements. A microphonic valve becomes very exasperating when regeneration is over sensitive. The detector valve is usually to blame. Anti-vibration valve holders help considerably, but it is usually imperative to change the valve.

In the course of his speech at the Reichs Rundfunk Gesellschaft's reception held recently in Berlin, Dr. Hans Bredow, Commissioner of Broadcasting, said that with over 12 per cent. Berlin holds the leading position among big cities in the percentage of radio subscribers to population, London coming next with 8 per cent., and then New York with 6 per cent. Thirteen per cent. of the total number of German households are subscribers to broadcasting. The Commissioner also referred to the position achieved in European broadcasting by England and Germany, quoting from the "B.R.C. Handbook" for 1928. In conclusion, Dr. Bredow mentioned the efforts towards world broadcasting, which, he said, would be promoted by Germany's constructing a great short-wave station.

Ailsa Craig, the island rock at the mouth of the River Clyde, Scotland, where most of the good curling stones come from, is to be equipped with a transmitter and receiver. Apart from the keepers of the lighthouse, the only other occupants are myriads of sea birds.

The use of wired wireless as a means of distributing programmes over the telephone or electric light wires, instead of through the ether, appears to be increasing both in America and on the Continent. It offers the most practicable scheme for ensuring a choice of alternative programmes in large towns where selectivity upon a wireless receiver is rendered difficult by the presence of the local broadcast stations. Several programmes are fed simultaneously into the same conducting wires on a common carrier wave, and are separated out at the receiving end, simply by plugging in the appropriate filter circuit. The currents so received are enormously stronger than the wireless waves picked up on the outside aerial.

Broadcasting stations in America are endeavouring to do away with the numerical call sign and jumble of letters, suggesting that a name would be more suitable. The argument is that if things were identified same as broadcasting stations, we should need a reference library if our friend told us he would be sailing for Great Britain on the 405,958,837. Certainly ships have license numbers, but they have names also, and they are known and recognised by their names.

New legislation in France will provide for the imposition of a new tax on receiving sets, ranging from 5 francs a year on crystal sets to 25 francs for valve sets. This measure will throw an interesting sidelight on the actual number of listeners in France. M. Bokanowski, the Minister of Posts and Telegraphs, has placed the number at 95,544, which represents the number of receiving sets declared, whereas competent outside observers have estimated it at nearer half a million. This is probably the more accurate figure. A measure to tighten up the collection of the tax is also under consideration. As things now stand transmissions are practically limited to all the dull recital of market prices, stock exchange quotations, news, such music as has become public property owing to the lapse of copyright, and lectures.

France is to have a Communist broadcasting station. M. Vaillant Couturier, Communist Deputy, is the donor of the station, which is to be known as the Red Star.

Sunday, April 15

1YA AUCKLAND (333 METRES)—SUNDAY, APRIL 15.

- 3 p.m.: Afternoon session—Selected gramophone items.
4.0: Literary selection, by the Announcer.
4.10: Further selected gramophone items.
4.30: Close down.
6.0: Children's song service, conducted by Uncle Leo, assisted by cousins from Ponsonby Baptist Sunday School.
6.45: Close down.
6.55: Relay of special Toc H. service and dedication of lamp, from St. Matthew's Church. Preacher, Archbishop Averill; organist, Mr. W. Philippott.
8.30: Relay of Municipal Band recital from the Town Hall, under the conductorship of Mr. Christopher Smith.
9.30: Close down.

2YA WELLINGTON (420 METRES)—SUNDAY, APRIL 15.

- 6 p.m.: Children's service, conducted by Uncle Ernest.
7.0: Relay of evening service from the Vivian Street Baptist Church. Preacher, Rev. F. E. Harry; choirmaster, Mr. A. R. Don; organist, Mr. Chas. Collins.
8.30 (approx.): Relay of Port Nicholson Silver Band concert from the Opera House.
Close down.

3YA CHRISTCHURCH (306 METRES)—SUNDAY, APRIL 15.

- 5.30 p.m.: Children's song service, conducted by Uncle Sam, assisted by members of Oxford Terrace Baptist Sunday School, under the leadership of Mr. Wilfred Drayton.
6.30: Relay of evening service from Oxford Terrace Baptist Church. Preacher, Rev. J. Robertson, B.A.; organist, Mr. Melville Lawry; choirmaster, Mr. Vic. Peters.
8.0: After the church service the following concert will be broadcast from the studio.
Baritone solo—Mr. A. G. Thompson, "O Pure and Tender Star of Eve" from "Tannhauser" (Wagner).
8.4: Soprano solo—Miss Mary Shaw, "Lord, We Pray Thee" (Mozart).
8.8: Tenor solo—Mr. T. G. Rogers, "Be Thou Faithful Unto Death" (Mendelssohn).
8.12: Violin solo—Mr. Laurian Beck, "Romance, No. 1" (McFarren).
8.16: Contralto solo—Miss Nellie Lowe, "Our Blest Redeemer" (Newton).
8.20: Vocal quartet—Dulcet Quartet, "God is a Spirit" (Bennett).
8.24: Instrumental trio—Mr. Laurian Beck, Miss Nellie Ellwood, and Miss Aileen Warren, "Allegro and Moderato from Trio, Op. 181" (Gurlitt).
8.32: Baritone solo—Mr. A. G. Thompson, "Crossing the Bar" (Willeby).
8.36: Soprano solo—Miss Mary Shaw, "None but the Weary Heart" (Tschai-kowsky).
8.40: Cello solo—Miss Nellie Ellwood, "Bouree" (Handel).
8.45: Contralto and baritone duet—Miss N. Lowe and Mr. A. G. Thompson, "Glory to Thee, My God, This Night" (Gounod).
8.49: Tenor solo—Mr. T. G. Rogers, "The Light Divine" (Bonheur).
8.53: Instrumental trios—Mr. Laurian Beck, Miss N. Ellwood, and Miss A. Warren, (a) "Traumerai" (Schumann); (b) "Laguna Lullaby" (Hope); (c) "Waltz" (Taylor).
9.2: Contralto solo—Miss Nellie Lowe, "God's Slumberland" (Gray).
9.6: Vocal quartet—Dulcet Quartet, "How Lovely Are Thy Messengers" (Mendelssohn).
God Save the King.

4YA DUNEDIN (463 METRES)—SUNDAY, APRIL 15.

- 5.30 p.m.: Children's song service, conducted by Big Brother Bill.
6.30: Sacred service and concert by the International Bible Students' Association.
8.0: Relay from His Majesty's Theatre of concert by the Kaikorai Band, under the conductorship of Mr. E. Franklin.
9.15: Close down.

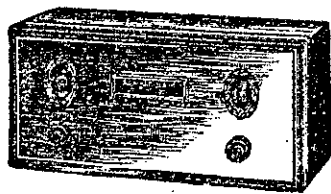
Monday, April 16

1YA AUCKLAND (333 METRES)—MONDAY, APRIL 16.

SILENT DAY.

2YA WELLINGTON (420 METRES)—MONDAY, APRIL 16.

- 3 p.m.: Chimes of the General Post Office clock, Wellington.
3.1: Selected gramophone items.
4.25: Sporting results to hand.
4.30: Selected gramophone items.
4.55: Sporting results to hand.
5.0: Close down.
6.0: Children's hour—Auntie Gwen, stories, songs, and birthday greetings.
7.0: News session, market reports, and sports results.
7.40: Lecturette—Rev. J. R. Blanchard, B.A., "A Bush Tragedy and its Sequel."



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Wellington.

- 8.0 Chimes of the General Post Office clock, Wellington.
8.1: Overture—"El Capitan March" (Sousa).
8.5: Quartet—Ariel Singers, "Ye Banks and Braes" (traditional).
8.9: Flute solo—Mr. L. W. Rothwell, "Souvenir" (Drdla).
8.14: Bass solo—Mr. J. M. Caldwell, (a) "Kirkconnell Lea" (traditional); (b) "The Piper o' Dundee" (traditional).
8.20: Instrumental trio—Symons-Ellwood-Short Trio, "First and Second Movements, Trio in G" (Hurlstone).
8.30: Soprano solo—Miss Jeanette Briggs, "Ma Heart is Sair for Somebody" (traditional).
8.34: Piano solos—Miss Gladys Morgan, (a) "Whims" (Schumann); (b) "Arabesque" (Jephson).
8.41: Quartet—Ariel Singers, "Ay Waukin' Ol" (arr. Robertson).
8.45: Violin solo—Miss Ava Symons, "Second Romance" (Tours).
8.50: Elocution—Mr. Stanley Warwick, "Kicking Strap's Race" (Wood).
8.55: Saxophone solo—Mr. Jack McEwen, "Golden Sunset" (Finder).
9.0: Mezzo-contralto solos—Miss Ngaire Coster, (a) "I'm Owre Young to Marry Yet" (traditional); (b) "O Can Ye Sew Cushions?"
9.1: Weather report.
9.2: Cornet solo—Mr. H. J. Dutton, "At Dawn" (Code).
9.7: Bass solos—Mr. J. M. Caldwell, (a) "Leezie Lindsay" (traditional); (b) "The De'il's Awa Wi' the Exciseman" (traditional).
9.13: Flute solo—Mr. L. W. Rothwell, "Chasse aux Papillons" (Fontbonne).
9.18: Soprano solo—Miss Jeanette Briggs, "Callers Herrin'" (traditional).
9.22: Instrumental trio—Studio Trio, "Viennese Popular Song" (Kreisler); "To the Spring" (Grieg).
9.32: Elocution—Mr. Stanley Warwick, "Orange Blossoms" (Rohmer).
9.37: Violin solo—Miss Ava Symons, "Slumber Song" (Scott-Barnes).
9.42: Tenor solo—Mr. Roy Hill, "Afton Water" (traditional).
9.46: Cornet solo—Mr. H. J. Dutton, "The Lost Chord" (Sullivan).
9.51: Duet—Misses J. Briggs and N. Coster, "O Wert Thou in the Cauld Blast?" (Mendelssohn).
9.55: Saxophone solo—Mr. Jack McEwen, "Valse Melodic" (La Forrest).

3YA CHRISTCHURCH (306 METRES)—MONDAY, APRIL 16.

- 3 p.m.: Afternoon session—Selected studio items.
4.25: Sports results.
4.30: Close down.
6.0: Children's session—Uncle Jack, birthday greetings, stories, and songs.
7.15: News session.
8.0: Chimes.
Studio concert by Christchurch Municipal Band, under the conductorship of Mr. A. J. Schnack, and assisting artists.
Mezzo-soprano solos—Miss Rita Lucas, (a) "To the Forest" (Tschai-kowsky); (b) "Damon" (Stange).
8.4: March—Band, "Boulder City" (Hume).
8.12: Bass solo—Mr. W. H. Inkster, "The Link Divine" (Piccolomini).
8.16: Selection—Band, "Gems of Welsh Melody" (Hume).
8.28: Contralto solo—Miss Nancy Bowden, "The Sands of Dee" (Clay).
8.32: Intermezzo—The Band, "In a Persian Market" (Ketelby).
8.42: Recitation—Mr. Hiram Dunford, "Mary Ann".
8.48: Hymn—The Band, "Rock of Ages".
8.54: Mezzo-soprano solo—Miss Rita Lucas, "Cradle Song" (Kreisler).
8.58: Sketch—The Band, "Who Dat Calling?" (Truman).
9.10: Weather report and forecast.
Lecturette—Dr. Stanley Foster, "The Y.M.C.A. and its Work".
9.22: Orchestral selection—Royal Albert Hall Orchestra, "Zampa" (Herold).
9.32: Bass solos—Mr. W. H. Inkster, (a) "Shipmates of Mine" (Sanderson); (b) "Dawn Skies" (Drummond).
9.36: Selection—The Band, "Pirates of Penzance" (Sullivan).
9.46: Contralto solos—Miss Nancy Bowden, (a) "Caprice" (Furnell); (b) "When the House Is Asleep" (Haigh).
9.52: March—The Band, "Jack o' Lantern" (Rimmer).
10.0: Recitation—Mr. Hiram Dunford, "A Modern Sermon on Old Mother Hubbard".
10.4: March—The Band, "Rank and File".
God Save the King.

4YA DUNEDIN (463 METRES)—MONDAY, APRIL 16.

SILENT DAY.

Tuesday, April 17

1YA AUCKLAND (333 METRES)—TUESDAY, APRIL 17.

- 3 p.m.: Selected gramophone items.
3.30: Lecturette, by representative of Messrs. Turnbull and Jones, "Electric Cooking".
3.45: Selected gramophone items.
4.0: Literary selection by the Announcer.
4.10: Further gramophone items.
4.30: Close down.
6.0: Children's hour—Uncle George, assisted by Mrs. Humphrey-Steward and pupils. Opening chorus, children, "A Hunting We Will Go." Song, Norma Stevens, "Be Still, Blackbird" (Phillips). Piano, Vera Harding, "Tiny Birds" (Greig). Song, Doreen Atkins, "Mighty Like a Rose." Letters and birthdays. Piano, Marie Spicer, "Humoresque" (Dvorak). Song, Gladys Wallace, "I Took a Penny to the Market Square" (Milne). Recitation, Uncle George. Chorus, children, "Pack Up Your Troubles".
7.15: News and market reports.
8.0: Chimes.
8.1: Relay of Majestic New Orchestra, under the direction of Mr. J. Whiteford-Waugh.
8.11: Soprano solo—Mrs. Parry, "They Call Me Mimi" from "La Boheme" (Puccini).
8.16: Instrumental trio—Bosworth-Hemus-Towsey Trio, "Trio No. 4, First Movement" (Mozart).
8.26: Baritone solo—Mr. Walter Brough, "Friend" (Davies).
8.30: Contralto solo—Madame Irene Ainsley, "Chant Hindoo" (with cello obbligato by Miss Lalla Hemus), (Bemberg).
8.35: Pianoforte solo—Mr. Cyril Towsey, "Ballade in A Flat" (Chopin).
8.40: Tenor solo—Mr. Robert Peter, "Eleanore" (Coleridge-Taylor).
8.45: Relay of entracte from Majestic New Orchestra, under Mr. J. Whiteford-Waugh.
8.55: Lecturette—Mr. A. B. Chappell, sixth of a series of talks on "Old New Zealand—Missionary Beginnings".
9.12: Soprano solo—Mrs. Parry, "My Dearest Heart" (Sullivan).
9.16: Instrumental trio—Bosworth-Hemus-Towsey Trio, selection, "L'Arlesienne" (Bizet).
9.26: Operatic scena from "Samson and Delilah," produced under the direction of Madame Irene Ainsley.

For some years permission to perform this opera within the British Isles was withheld, owing to the fact of its being a Biblical subject. When it was at last produced at Covent Garden in 1909, it met with instantaneous success, so rich is it in melody. The scene Madame Ainsley is presenting will embrace all the best-known numbers in the opera—Delilah's assurance of her people and her vow to the High Priest that she will bring about the destruction of Samson and thus the fall of Israel, and the scene with Samson, when she weaves over him her spell, and wrests from him the secret of his power.

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Cast—Delilah, Madame Irene Ainsley; Samson, Mr. Robert Peter; High Priest, Mr. Walter Brough; Old Hebrew, Mr. Walter Brough.
Aria—Delilah, "Fair Spring is Returning."
Trio—Delilah, Samson, and Old Hebrew, "I Come to Render My Homage."
Aria—Delilah, "O Love from Thy Power."
Duet—Delilah and High Priest, "All Hail, Thou Priest So Mighty."
Duet—Delilah and Samson, "O, Thou My Well Beloved."
10.0: God Save the King.

2YA WELLINGTON (420 METRES)—TUESDAY, APRIL 17.

3 p.m.: Chimes of the General Post Office clock, Wellington.
3.1: Selected gramophone items.
4.25: Sporting results to hand.
4.30: Selected gramophone items.
4.55: Sporting results.
5.0: Close down.
6.0: Children's hour—Uncle Jasper and St. Mark's School Choir. Choruses, duets, sketches, songs, stories, and birthday greetings.
7.0: News session, market reports, and sports results.
7.40: Lecturette—Representative, Agricultural Department, "For the Man on the Land."
8.0: Chimes of the General Post Office clock, Wellington.
8.1: Overture—"The Conqueror" (Ord Hume).
8.5: Quartet—The Orpheus Quartet, "Awake, Aeolian Lyre" (Danby).
8.9: Italian mandolin—Mr. Lad Haywood, (a) "Bouree" (Angelici); (b) "A Vous Madame" (Angelici).
8.16: Contralto solo—Miss Lily Mackie, "Mountain Lovers" (Squire).
8.20: Instrumental trio—Symons-Ellwood-Short Trio, "Second and Third Movements, Trio in E Minor" (Hubert Parry).
8.30: Duet—Messrs. Len. Barnes and Arthur Coe, "As I Saw Fair Clara" (Hayden).
8.34: Cello solo—Mr. Geo. Ellwood, "Lullaby" (Scott).
8.39: Soprano solo—Mrs. Alice Harris, "Loyal Lover" (Old English folk song).
8.43: Humour—Mr. Geo. Tichener, "Impressions" (Grey).
8.47: Trombone solo—Mr. W. J. Matson, "The Switchback" (Sutton).
8.52: Tenor solo—Mr. Arthur Coe, "Love, Could I Only Tell Thee" (Capel).
8.56: Quartet—The Orpheus Quartet, "Blue Bells of Scotland" (folk song).
9.0: Weather report.
9.1: Relay of organ solos from Taranaki Street Methodist Church—Mr. H. Temple White, (a) "Romanza" (Wolstenholme); (b) "Allegretto" (Wolstenholme); (c) "Fantasia" (Brosig).
9.15: Baritone solo—Mr. Len. Barnes, "Vision Fugitive" (Massenet).
9.20: Instrumental trio—Studio Trio, "Reve Angelique" (Rubinstein); "Serenade" (Drigo).
9.30: Contralto solo—Miss Lily Mackie, "I Know a Bank" (Shaw).
9.34: Cello solo—Mr. Geo. Ellwood, "Danse Arabe" (Gazennour).
9.39: Duet—Mrs. Alice Harris and Mr. Len. Barnes, "When I Know" (Abt).
9.43: Humour—Mr. Geo. Tichener, "That's How I Mean to Propose" (Francis Day and Hunter).
9.48: Italian mandolin—Mr. Lad Haywood, (a) "Shaking the Blues" (Berlin); (b) "Ooh, Maybe, it's You" (Berlin).
9.54: Humour—Mr. Geo. Tichener, "My Dictionary" (original).
9.59: Trombone solo—Mr. W. J. Matson, "Send Forth the Call" (Round).
10.4: Quartet—The Orpheus Quartet, "The Commotion of Love" (Wilson).

3YA CHRISTCHURCH (306 METRES)—TUESDAY, APRIL 17.

SILENT DAY.

4YA DUNEDIN (463 METRES)—TUESDAY, APRIL 17.

3 p.m.: Town Hall chimes.
3.1: His Master's Voice recital.
3.30: Social notes and news.
3.40: Studio music.
4.0: Address on the "Domestic Uses of Electricity," by Mr. G. J. Butcher, of Turnbull and Jones, Ltd.
4.15: His Master's Voice recital.
4.30: Close down.
6.0: Town Hall chimes.
6.1: Children's hour—Big Brother Bill.
7.15: News session.
7.30: Address on "A Happy Holiday Round Dunedin," by a "Holiday-maker."
8.0: Town Hall chimes. Concert by the Kaikorai Band, and items by assisting artists.
8.1: March—Kaikorai Band, "Invercargill March" (Lithgow).
8.5: Contralto solo—Miss Winnie McPeak, (a) "Hail, Caledonia" (Stroud); (b) "O Can Ye Sew Cushions?" (arr. Lees).
8.10: Overture—Kaikorai Band, "Unfinished Symphony" (Schubert).
8.20: Bass solo—Mr. E. G. Bond, "An Indian Dream" (Allan).
8.23: Recitation—Miss Madge Yates, "Vive La France."
8.28: Fox-trots—Kaikorai Band, (a) "If You See Sally" (Donaldson); (b) "Bandy Bandelero" (Wallace).
8.35: Vocal duet—Messrs. C. Edwards and R. B. Macdonald, "The Crucifix" (Faure).
8.49: Baritone solo—Mr. R. B. Macdonald, "Ka Mate" (Hill).
8.45: Selection—Kaikorai Band, "Maritana" (Wallace).
9.0: Tenor solos—Mr. Chas. Edwards, (a) "Drink to Me Only With Thine Eyes" (Mellish); (b) "The Birth of Morn" (Cone).
9.6: Weather report and forecast.
9.8: E Flat bass solo, with band accompaniment—Mr. W. Coughlan (champion of champions), "Lend Me Your Aid" (Gounod).
9.17: Contralto solo—Miss Winnie McPeak, "In Praise of God" (Beethoven).
9.21: Waltz—Kaikorai Band, "The Merry Widow" (Lehar).
9.30: Recitations—Miss Madge Yates, (a) "Greetings" (Wallace); (b) "Memory" (Cross).
9.39: Bass solos—Mr. E. G. Bond, (a) "A Sailor's Paradise" (Richards); (b) "Malvern Hills in Spring" (Clarke).
9.45: Grand chorus—Kaikorai Band, "Hallelujah Chorus" (Handel).
9.51: Baritone solo—Mr. R. B. Macdonald, "Farewell in the Desert" (Adams).
9.55: March—Kaikorai Band, "BB and CF" (Hume).
10.0: God Save the King.

Wednesday, April 18

1YA AUCKLAND (333 METRES)—WEDNESDAY, APRIL 18.

3 p.m.: Afternoon session—Selected gramophone items.
4.0: Literary selection by the Announcer.
4.10: Further selected gramophone items.
4.30: Close down.
6.0: Children's hour—Uncle Tom. Opening chorus, Uncle Tom. Story for tiny tots. Song, Eric Purdy, "Annie Laurie." Letters and birthdays. Recitation, Rona Collins, "The Hollow Tree." Sketch, Uncle Tom, "Humorous Ditties." Song, Eric Purdy, "My Dusky Maid" (Smith). Story-time.
7.15: News and market reports.
8.0: Chimes.

8.1: Relay of Auckland Municipal Band, under the direction of Mr. Christopher Smith, assisted by the Hazell-Sutherland Duo, who will perform the following items from the studio:—
Contralto solos—Miss Phyllis Hazell, (a) "Ombra Mai Fu" (Handel); (b) "Softly Awakes My Heart" from "Samson and Delilah" (Saint-Saens).
Baritone solos—Mr. Frank Sutherland, (a) "Mountain Lovers" (Squire); (b) "Tommy Lad" (Margeson).
Vocal duo—Hazell-Sutherland Duo, (a) "Galloping Duet" from "Flora-dora" (Stuart); (b) "You You Alone" (Ghecl).
10.0: God Save the King.

2YA WELLINGTON (420 METRES)—WEDNESDAY, APRIL 18.

SILENT DAY.

3YA CHRISTCHURCH (306 METRES)—WEDNESDAY, APRIL 18.

3 p.m.: Afternoon concert session—Selected studio items.
4.25: Sports results.
4.30: Close down.
6.0: Children's session—Uncle Peter and Mother Hubbard, birthday greetings, songs, and stories.
7.15: Addington stock market reports.
7.30: News session.
Lecturette—Mr. C. G. Pegg, physical director of Y.M.C.A., Christchurch, "Keeping Fit."
8.0: Chimes.
Overture—"Dance of the Hours" (Ponchielli).
Operatic programme by Mr. A. G. Thompson's Dulcet Quartet, Christchurch Broadcasting Trio (instrumentalists), Miss Aileen Warren (piano solos), and Mr. George Ferris (elocutionist).
8.5: Baritone solo—Mr. A. G. Thompson, prologue to opera, "Il Pagliacci" (Leoncavallo).
8.10: Violin solo—Miss Irene Morris, "Andantino" (Martin-Kreisler).
8.15: Soprano solo—Miss Mary Shaw, "Cavatina de Leila" (Bizet).
8.19: Trombone solo—Mr. Ray O'Daniels, "The Switchback" (Sutton).
8.24: Contralto solo—Miss Nellie Lowe, "Ave Maria" (Mascagni).
8.29: Instrumental trio—Christchurch Broadcasting Trio, "First Movement from Trio, Op. 66" (Mendelssohn).
8.41: Tenor solo—Mr. T. G. Rogers, "Lend Me Your Aid" (Gounod).
8.46: Banjo harmony duets—Messrs. Perce Skinner and Stan. Birch, "Middy March" (Alford).
8.51: Recital—Mr. George Ferris, "The Lounger" (in Cockney lingo) (Anon.).
8.56: Vocal quartet—Dulcet Quartet, "Soldiers' Chorus" from "Faust" (Gounod).
9.0: Weather forecast.
9.1: Overture—"The Magic Flute" (Mozart).
9.5: Operatic scene—Soprano and tenor duet, Miss Mary Shaw and Mr. T. G. Rogers (with chiming effect), "Miserere" from "Il Trovatore" (Verdi).
9.10: Baritone solos—Mr. A. G. Thompson, (a) "From Rushy Beds of Silver Nile" (Balfe); (b) "Turn Once Again" (Balfe).
9.17: Violin solo—Miss Irene Morris, "Chanson Louis XIII. and Pavane" (Couperin-Kreisler).
9.32: Soprano solo—Miss Mary Shaw, "O, Mio Babbino Caro" (Puccini).
9.36: Trombone solos—Mr. Ray O'Daniels, "A Little Love, a Little Kiss" (Slesu); (b) "The More We Are Together" (Campbell and Connelly).
9.41: Contralto solo—Miss Nellie Lowe, "Softly Awakes My Heart" (Saint-Saens).
9.46: Instrumental trios—Christchurch Broadcasting Trio, (a) "Cantabile" from "Samson and Delilah" (Saint-Saens); (b) "Serenade" (Herbert).
9.56: Tenor solo—Mr. T. G. Rogers, "In Her Simplicity" (Thomas).
9.59: Banjo harmony duets, Messrs. Perce Skinner and Stan. Birch, popular melodies (MS.); "Great Little Army" (Alford).
10.2: Recital—Mr. George Ferris, "Rabbits" (Australian East End lingo) (Dennis).
10.6: Vocal quartet—Dulcet Quartet, "Happy and Light" (Balfe).
God Save the King.

4YA DUNEDIN (463 METRES)—WEDNESDAY, APRIL 18.

SILENT DAY.

Thursday April 19

1YA AUCKLAND (333 METRES)—THURSDAY, APRIL 19.

3 p.m.: Afternoon session—Selected gramophone items.
4.0: Literary selection by the Announcer.
4.10: Further selected gramophone items.
4.30: Close down.
6.0: Children's hour—Peter Pan, assisted by the Bayfield School Choir. Two-part song, choir, "The Volga Boatmen." Song, Gladys Keefe, "Scots Wha Ha'e." Recitation, Dallas Lethaby, "When the Minister Comes to Tea." Three-part song, choir, "Star of Peace." Letters and birthdays. Two-part song, choir, "Absent." Recitation, Frances Phillips, "Mrs. Skinner." Song, Joyce Edwards, "Love's Old Sweet Song." Peter Pan answers questions sent to the Witch Doctor. Four-part song, choir, "Abide With Me." Story-time.
7.15: News and market reports. Book review.
8.0: Chimes.
8.1: Relay of overture from Rialto Theatre Orchestra, under the direction of Mr. Henry Engel.
8.11: Contralto solo—Miss Martha Williamson, "Tis the Hour of Farewell" (Lehmann).
8.15: Humorous sketch—Mr. T. T. Garland, "A Suburban Service" (Gros-smith).
8.21: Instrumental trio—Bosworth-Hemus-Towsey Trio, "Trio No. 9, First Movement" (Haydn).
8.31: Baritone solo—Mr. Barry Coney, "Devon Mine" (Gould).
8.35: Vocal trio—The Bohemian Trio, popular selections.
8.42: Soprano solo—Miss Dorothy Youd, "When All Was Young" from "Faust" (Gounod).
8.46: Elocutionary—Mr. Fred Barker, "A Wayside Philosopher to His Friend—Enthusiasm."
9.6: Weather report and forecast.
9.8: Relay of entracte from Rialto Theatre Orchestra.
9.13: Contralto solo—Miss Martha Williamson, "The Bird With the Broken Wing" (Gibson).
9.17: Violin solo—Miss Ina Bosworth, "Nocturne in E Flat" (Chopin-Sarasate).
9.20: Tenor solos—Mr. Geo. Barnes, selected.
9.28: Humorous sketch—Mr. T. T. Garland, "An Amateur Performance" (Jackson).
9.33: Baritone solo—Mr. Barry Coney, "I'm a Cornish Man" (Henty).
9.37: Vocal trio—The Bohemian Trio, "Latest Selections."
9.43: Elocutionary—Mr. F. Barker and Mr. Culford Bell, "Quarrel Scene" from "Julius Caesar" (Shakespeare).
9.49: Soprano solo—Miss D. Youd, "Nobil Signore" (Mayerbeer).
9.53: Instrumental trio—Bosworth-Hemus-Towsey Trio, selection from "Lohengrin" (Wagner).
10.3: Song cycle—Mr. Barry Coney's Quartet, "Flora's Holiday" (Lane-Wilson).
10.15: God Save the King.

2YA WELLINGTON (420 METRES)—THURSDAY, APRIL 19.

3 p.m.: Chimes of the General Post Office clock, Wellington.
3.1: Selected gramophone items.
4.25: Sporting results to hand.
4.30: Selected gramophone items.
4.55: Sporting results to hand.
5.0: Close down.
6.0: Children's hour—Uncle Sandy and pupils of Miss Marie Peterson. Song and chorus, Cousin Gerda, "Learn to Smile" (Hirsch). Piano solo, Cousin Lily, "Barcarolle" (Offenbach). Song, Cousin Una, "Obstination" (Potinailles). Song, Cousin Violet, "The Pipes of Pan Are Calling" (Monkton). Song, Cousin Leila, "Danny Boy" (Weatherby). Duet, Cousins Eva and Gerda, "Come, Sing to Me" (Thompson). Birthday greetings, Uncle Sandy. Song,

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What is considered to be the first radio-picture club was recently formed in Moose Jaw, Saskatchewan, Canada, with a group of radio amateurs and engineers as the nucleus. The broadcasting station of the district, CIRM, is transmitting, each Monday night, elementary radio pictures, to be picked up by experimenters in the city. Anyone else interested in radio-picture transmission can, by building a simple set, as outlined by CIRM, follow suit and make an attempt to receive pictures. Mr. D. R. P. Coats, manager of CIRM, is convinced that they are at the beginning of a new era in radio, and says someone must start the ball rolling.

The amalgamation of the Sydney stations 2FC and 2EL has brought scores of letters to the two stations concerned, though but a few days have passed since the commencement of the experiment. On a recent Saturday, while 2FC broadcast the races 2EL supplied an uninterrupted musical programme, and listeners of both classes were well catered for. Under the old arrangements both stations would be broadcasting the results of the races, and it is this duplication of programmes that led to the amalgamation of the two stations.

Phenomenal Success

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Programmes Continued

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- Cousin Joyce, "A fat l'il feller with his mammy's eyes" (Gordon). Song, Baby Joyce, "The Lonesome Apple" (Erb). Song, Cousin Una, "The Indian Love Call" (Friml). Chorus, cousins, "Funiculi Funicula" (Denza).
- 7.0: News session, market reports, and sports results.
8.0: Chimes of the General Post Office clock, Wellington.
8.1: March—Salvation Army Silver Band, "Flag of Freedom" (Coles).
8.5: Quartet—The Mellow Fellows, "While the Sahara Sleeps" (Baer).
8.9: Selection—Salvation Army Silver Band, "Gems from Mozart" (arr. Hawkes).
8.19: Baritone solo—The Baritone Fellow, "Sleep and the Roses" (Tait).
8.23: Euphonium solo, with band accompaniment—Bandsman T. Allison, "The Village Blacksmith" (Weide).
8.30: Exclamation—Some Fellow, "Jones of the Lancers" (Smith).
8.34: March—Salvation Army Silver Band, "Glory of the Combat" (arr. Coles).
8.40: Reminiscences—The Two Old Fellows, "When You and I Were Seventeen" (Bosoff).
8.44: Meditation—Salvation Army Silver Band, "Hanover" (arr. Ball).
9.0: Weather report.
9.1: Elocutionary—Mr. Cedric Gardiner, (a) "Dulcie—I Love Thee" (Anon.); (b) "If" (Caine).
9.7: Band—Salvation Army Silver Band, "In This Hour of Softened Splendour" (Pinsuti).
9.11: Bass solo and quartet—The Bass Fellow and the Other Fellows, "The Old Brigade" (Trotter).
9.15: March—Salvation Army Silver Band, "Canada West" (arr. Leiden).
9.20: Song—The Tenor Fellow, "The Fold" (Squire).
9.24: Hymn—Salvation Army Silver Band, "Aberystwyth" (traditional).
9.27: Jumble sale—The Funny Fellow, "Stories" (original).
9.32: March—Salvation Army Silver Band, "Seaham Harbour".
9.37: Quartet—Fellows, "De New Year" (Scott-Gatty).
9.41: Selection—Salvation Army Silver Band, "Elijah" (Mendelssohn, arr. Hawkes).
9.51: Elocution—Mr. Cedric Gardiner, "The Serial Picture" (Allsop).
9.56: March—Salvation Army Silver Band, "The Firing Line" (Coles).
10.0: God Save the King.

3YA CHRISTCHURCH (306 METRES)—THURSDAY, APRIL 19.

- 3 p.m.: Afternoon concert session—Selected studio items.
4.25: Sports results.
4.30: Close down.
6.0: Children's hour—Chuckie. Birthday greetings, stories, choruses, and songs by scholars from Sydenham School.
7.15: News session.
7.30: Lecture—Mr. G. A. Holmes, B.Sc., under the auspices of the Canterbury Progress League, "The Development of Farm Economics at Lincoln College."
8.0: Chimes.
Overture—New Light Symphony Orchestra, "A Hunt in the Black Forest" (Voelker).
Concert by Madame Gower-Burns's Grand Opera Quartet, who will present "The Daisy Chain," by Liza Lehmann.
8.5: Vocal quartet—Grand Opera Quartet, "Foreign Children."
Contralto solo—Mrs. Ann Harper, "Fairies."
Baritone solo—Mr. Bernard Rennell, "Keepsake Mill."
Soprano solo—Madame Gower-Burns, "If No One Ever Marries Me."
Tenor solo—Mr. Harold Prescott, "Stars."
Vocal quartet—Grand Opera Quartet, "Seeing the World."
Contralto solo—Mrs. Ann Harper, "The Ship that Sailed into the Sun."
Soprano solo—Madame Gower-Burns, "The Swing."
Baritone solo—Mr. Bernard Rennell, "Mustard and Cress."
Tenor solo—Mr. Harold Prescott, "The Moon."
Vocal quartet—Grand Opera Quartet, "Thank You Very Much, Indeed."
Vocal quartet—Grand Opera Quartet, "Blind Man's Bluff."
9.0: Weather report and forecast.
9.1: Overture—Royal Opera Orchestra, "Eugene Onegin" (Tchaikowsky).
9.5: Recitation—Miss Naare Hooper, "A Nightmare" (Gilbert).
9.9: Flute solo—Mr. W. Hay, "Im Rosenduft" (Stickmister).
9.13: Tenor solo—Mr. Harold Prescott, "When the Bloom is on the Rye" (Stevens).
9.17: Instrumental trio—Christchurch Broadcasting Trio, "Andante Espressivo and Scherzo, Op. 66" (Mendelssohn).
9.27: Contralto solo—Mrs. Ann Harper, "Rest at Midday" (Hamilton).
9.31: Pianoforte solo—Miss Aileen Warren, "La Fileuse" (Raff).
9.35: Soprano solo—Madame Gower-Burns, "Tell Me, My Heart" (Bishop).
9.40: Flute solo—Mr. W. Hay, "Valse Gracieuse" (Sabathiel).
9.45: Baritone solo—Mr. Bernard Rennell, "A Cartload of Hay" (Emmit-Adams).
9.49: Instrumental trios—Christchurch Broadcasting Trio, (a) "Elegie and Consolation" (Atherton); (b) "Valse of the Flowers" (Tchaikowsky).
9.59: Recitations—Miss Naare Hooper, (a) "Oh, to be in Iceland Now" (Doe); (b) "Ze Kick Ball" (Hodges).

There are New Zealand listeners who are always "cracking up" the Australian programmes. This is what a Sydney listener writes to the Sydney "Wireless Weekly":—"What about putting on more entertainers and less of picture show music, as there is nothing in listening to a lot of laughing? I don't wonder people get tired of wireless. One time we had theatre acts from 2BL Studio. All my friends say they all enjoyed them; but even they are taken off. I suppose the fights are put on instead. We know they cannot please everybody, but it is time they gave us better programmes than what they give us at present. Another had practice is to stop music, etc., to give out race results, etc. It looks like if wireless is only for the sporting class."

An Australian listener writes as follows, about the Australian stations, to the Sydney "Wireless Weekly":—"It is time that the A class stations woke up. One can quite agree with the P.M.C., when he states that the programmes are not up to the mark. Sundays, to these stations, seems to be a day when they can put over anything without getting justified complaints. Thank goodness that the great majority of sane listeners are beginning to wake up, and demand a little return for their hard-earned license money. Not only Sunday programmes, but the whole week of entertainment from the A class stations leaves much to be desired." And yet some New Zealanders quote the Australian programmes as a paragon.

Sometimes noises are caused by faulty valves themselves, and if the noises are only weak, maybe caused by the last audio valve. This is easily tested by the substitution of the valve. A most common source also lies with the grid leak; and this is capable of causing hissing noises which in the case of a multi-valve set will develop into quite a roar owing to the amplification. The poor connection of a valve pin with the valve socket is also often productive of the trouble. Not infrequently the loudspeaker or telephones are at the back of the trouble, owing to fracturing of the wires close to the ear pieces or unit. This sounds improbable, but is quite true:—crackling noises on a sensitive multi-valve set were induced by a bad contact in the lead-in of a next door aerial, used in conjunction with a crystal set. The soldering of this poor connection increased the crystal users' signal strength over 50 per cent.

At the last meeting of the Radio Council of Austria the subject of an improved news service was discussed, and the Austrian Newspaper Proprietors' Association is being approached with a renewed appeal that they should allow more news to be distributed in this way. There were also complaints that too much time is now occupied with the popular language courses in English, French, and Italian, and the proposal is under consideration that after the present season there should be only conversation lessons in these languages, beginners getting their preliminary instruction elsewhere, if they have not followed steadily the present courses. For the present there will, of course, be no alteration, and tens of thousands are taking the language courses of Professor McCallum, M. Riviere, and Signor Traversa with regularity and enthusiasm.

Distorted reception is bound to occur with faulty audio frequency transformers. Although the windings of primary and secondary may be continuous without a break, yet it so happens that a few turns become shorted owing to break-down of the insulation covering the wire. This sets up small parasitic eddy currents which manifest themselves in the form of distortion in the final reproduction.

A lady organizer applying for a broadcasting contract in America said she knew 8000 tunes by heart. The lady in question also offered to play continuously for twenty-four hours without a break, and with no repeated numbers.

An Australian short-wave listener reports having heard JHBL, the station of the Hiraio Radio Laboratories of Abrikikem, Japan. He says, "Many seem to get the call sign mixed up. When I first sent in a report on this station's transmission, it was using crystal control, and operating on a wavelength of 39.6 metres, but now it is operating on 87.5 metres, and signs off every night in code, and gives the times of transmission. It comes through louder than the Russian station, RFN. It uses R.A.C. Announcements are in both Japanese and English. The other night it announced that it would relay Kobe."

"Canned Music" (Patea), writes: "I prefer to spell 'loudspeaker,' as I have written it here. I notice many papers make it 'loud speaker'—two separate words. Which is correct, and why?"—as a loudspeaker is a distinct portion of a radio receiving equipment, and for the same reason that "motor-car" is spelt as one word, "Switch" can conceive no good reason for splitting it into two words. One never dubs the article a "soft speaker," even if it does not reproduce loudly. The adjective "loud" has no separate place in this case, but becomes joined to denote a certain article.

- 10.4: Pianoforte solo—Miss Aileen Warren, "Cradle Song, Op. 49, No. 4" (Brahms-Grainger).
10.8: God Save the King.

4YA DUNEDIN (463 METRES)—THURSDAY, APRIL 19.

- 7 p.m.: Town Hall chimes.
7.1: Request gramophone concert.
7.40: News session.
8.0: Town Hall chimes.
8.1: Light orchestral music from Octagon Theatre, under the direction of Mons de Rose.
8.11: Humorous song—Mr. Percy James, "Tut, Tut" (Mills).
8.17: Banjo solos—Mr. Jack McNeil, (a) "Take Your Pick" (Mandel); (b) "Caprice of the Butterflies" (Bickford).
8.24: Humorous sketch—The Two Blue Ducks, "Querulous Quacks—First Episode."
8.30: Light soprano solo—Miss Roma Buss, "The Love Nest," from "Mary" (Hirsch).
8.34: Saxophone solo—Mr. J. McCaw, "Saxema" (Weidoeft).
8.38: Humorous song—Miss Billie Lorraine, "Ain't It a Grand And Glorious Feeling" (Ager).
8.42: Humorous song—Mr. Billy Gay, "There's a Trick in Pickin' a Chicken" (Goetz).
8.46: Orchestral interlude from Octagon Theatre.
8.55: Humorous sketch and duet—Miss Billie Lorraine and Mr. Percy James.
9.5: Weather report and forecast.
9.7: Humorous entertainment—Mr. Percy James.
9.12: Banjo solo—Mr. Jack McNeil, "Highflyer" (Morris).
9.15: Humorous address—Pastor W. D. More.
9.30: Soprano solos—Miss Roma Buss, (a) "Tact," from "Floradora" (Stuart); (b) "The Lilac Domino" (Cuvillier).
9.36: Saxophone solos—Mr. J. McCaw, (a) "One Fleeting Hour" (Lee); (b) "Blushes" (King).
9.43: Light vocal solo—Miss Billie Lorraine, "It All Depends On You" (Brown).
9.47: Humorous sketch—The Two Blue Ducks, "Querulous Quacks—Second Episode."
9.57: Humorous songs—Mr. Billy Gay, (a) "Mamma's Gone Young, Papa's Gone Old" (Weston); (b) "I Can't Get Over a Girl Like You" (Brookes).
10.5: God Save the King.

Friday, April 20

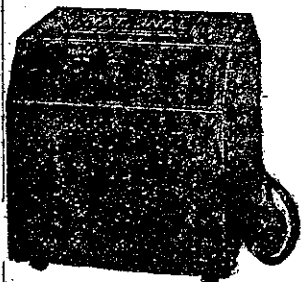
1YA AUCKLAND (333 METRES)—FRIDAY, APRIL 20.

- 3 p.m.: Afternoon session—Selected gramophone items.
4.0: Literary selection by the announcer.
4.8: Further selected gramophone items.
4.30: Close down.
6.0: Children's hour—Nod. Song, Nita Webb, "Dolly Dear"; playette, four children, "Holly Tree Inn" (Dickens); song, Nod, "Jingles"; letters and birthdays; recitation, Rosalie Daniels, "One, Two, Three"; duet, Nita Webb and Cinderella, "Second Minuet" (Besley); story-time.
7.15: Lecture—Mr. Geo. Campbell, "Motoring."
7.30: News and reports.
8.0: Chimes.
8.1: Orchestral selection, "Ballet Music From Faust" (Chaminade).
8.8: Vocal trio—Madame Mary Towsey, Mrs. K. Atkinson and Miss M. Atkinson, "Chariot" (Burleigh).
8.12: Instrumental—Ingall's Hawaiian Orchestra, (a) "Hawaiian Memories" (Heagney); (b) "Lullaby Land" (Prival).
8.20: Baritone solo—Mr. John Pree, "The Wind on the Heath" (Lohr).
8.24: Cornet solo—Mr. Eustace Tregilas, "Star of England" (Farrell).
8.29: Elocutionary—Mr. J. F. Montague, "Ellen McJones of Aberdeen" (Gilbert).
8.34: Contralto solo—Miss Gwyneth Evans, "A Castilian Lament" (Del Riego).
8.38: Instrumental trio—Bosworth-Hemus-Towsey Trio, "Trio No. 9—2nd and 3rd Movements" (Haydn).
8.48: Tenor solo—Mr. Reginald Newbury, "Goodbye" (Tosti).
8.52: Vocal trio—Madame Mary Towsey, Mrs. K. Atkinson and Miss M. Atkinson, "As Torrents in Summer" (Elgar).
8.56: Weather report and forecast.
8.58: Relay of entracte from Strand Theatre Orchestra, under the direction of Eve Bentley.
9.3: Vocal trio—The Snappy Three, (a) "My Blue Heaven" (Donaldson); (b) "Russian Lullaby" (Berlin).
9.11: Cello solo—Miss Lalla Hemus, "Romance" (Squire).
9.15: Baritone solo—Mr. John Pree, "The Temple Bells" (Finden).
9.19: Instrumental selections—Ingall's Hawaiian Orchestra, (a) "Hilo March" (Lilikalanani); (b) "Hawaiian Rainbow" (Craville); (c) "Aloha-oe" (Lilikalanani).
9.29: Soprano solo—Madame M. Towsey, "Le Nil" (Leroux) with cello obbligato by Miss Lalla Hemus.
9.33: Cornet solos—Mr. E. Tregilas, (a) "Il Bacio" (Ardite); (b) "Ombra Mai Fu" (Handel).
9.41: Vocal trio—The Snappy Three, (a) "Just Like a Butterfly" (Whiting); (b) solo; (c) "You Don't Like It Not Much" (Austin).
9.50: Elocutionary—Mr. J. F. Montague, (a) "The Lost Opportunity"; (b) "The Four Floors."
9.56: Contralto solo—Miss Gwyneth Evans, "To-night" (Zarda).
10.0: Instrumental trio—Bosworth-Hemus-Towsey Trio, selection from "Cavalleria Rusticana" (Mascagni).
10.10: Vocal quartet—Madame Mary Towsey's Quartet, "Prayer—Moses in Egypt" (Rossini).
10.14: God Save the King.

2YA WELLINGTON (420 METRES)—FRIDAY, APRIL 20.

- 3 p.m.: Chimes of the G.P.O. clock, Wellington.
3.1: Selected gramophone items.
3.30: Lecture—Miss Marion Christian, "Gas Cooking."
4.25: Sporting results to hand.
4.30: Selected gramophone items.
4.55: Sporting results to hand.
5.0: Close down.
6.0: Children's hour—Uncle Ernest and Madame Mueller's pupils, choruses, duets, songs and stories.
7.0: News session, market reports and sports results.
7.40: Lecture—Mr. E. P. Crowther, "A Royal Hobby."
8.0: Chimes of the General Post Office Clock, Wellington.
8.1: Overture—"Lynwood March" (Ord Hume).
8.5: Quartet—Apollo Singers, "Annie Laurie" (traditional).
8.9: Hawaiian trio—Palmer's Hawaiian Trio, (a) "My Regular Girl" (Warren); (b) "You're So Easy to Remember" (Woods).

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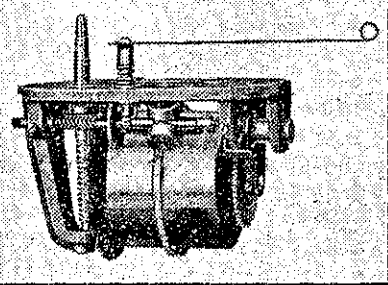
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Programmes Continued

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- 3.16: Baritone—Mr. S. E. Rodger, "Londonderry Air" (Weatherley).
 8.20: Trio—Symons-Ellwood, "1st Movement of Trio in G" (Rabinstein).
 8.30: Soprano—Miss Moana Goodwill, "Fifinella" (Tschakowsky).
 8.34: Piano—Miss Agnes Duncan, (a) "Clair de Lune" (Debussy); (b) "The Fountain" (Jouan).
 8.40: Tenor—Mr. E. W. Robbins, "For You Alone" (Geehl).
 8.44: Concertina—Mr. R. Stratmore, (a) "Life's Dream is O'er" (Thomas); (b) "Eileen Alannah" (Asher) (Swan-Allans).
 8.46: Hits and Harmonies—The Glad Idlers, (a) "There's a Trick in Picking a Chicken" (Tobias); (b) "Underneath the Bed" (Wood).
 8.56: Lecturette—Editor—Announcer, "Imperial Affairs."
 9.11: Weather report.
 9.12: Hawaiian Trio—Palmer's Hawaiian Trio, (a) "High, High, High Up in the Hills" (Abraham); (b) "Moon Beams" (Woods).
 9.18: Contralto—Miss Hilda Chudley, "None But the Lonely Heart" (Tschakowsky).
 9.22: Trio—Studio Trio, "Berceuse" (Hinsky); "Syncopation" (Kreisler).
 9.32: Baritone—Mr. S. E. Rodger, "If I Might Only Come to You" (Squire).
 9.36: Piano—Miss Agnes Duncan, "Scherzo" (Giere).
 9.40: Duet—Misses H. Chudley and M. Goodwill, "I Would That My Love" (Mendelssohn).
 9.45: Hits and Harmonies—The Glad Idlers, (a) "Just Breezin' Along With the Breeze" (Gillespie, Simons and Whiting); (b) "The Glad Idlers' Trip" (MSS.).
 9.55: Concertina—Mr. R. Stratmore, "Medley Harry Lauder's Songs."
 10.0: Quartet—Apollo Singers, "Evening's Twilight" (Hatton).

3YA CHRISTCHURCH (306 METRES)—FRIDAY, APRIL 20.

- 3 p.m.: Afternoon concert session—Selected studio items.
 4.25: Sports results.
 4.30: Close down.
 6.0: Children's hour—Aunt Pat. Songs, choruses by the Girls' Citizen League. Birthday greetings and stories.
 7.15: News session.
 8.0: Overture—Mayfair Orchestra, "The Dollar Princess" (Fall). Musical comedy excerpt programme by Miss M. Russell's Aeolian Quartet. Christchurch Instrumental Trio, Mr. George Bennett, accordion, and Miss Dorothy Jenkin, recitations.
 8.5: Opening chorus and soprano solo—The Aeolian Quartet, (a) "Were the Household"; (b) "A Self-made Maiden."
 8.11: Recitation—Miss Dorothy Jenkin, "That Terrible Tommy."
 8.15: Contralto and bass duet—Miss M. Russell and Mr. W. J. Richards, "The Riding Lesson."
 8.24: Banjo solo—Mr. Arthur Hodgson, "Collette."
 8.28: Tenor solo and vocal quartet—Mr. Gregory Russell and Aeolian Quartet, (a) "Dream of Love"; (b) "Shall I Do?"
 8.33: Instrumental trio—Christchurch Broadcasting Trio, "Last Movement from Trio, Op. 66" (Mendelssohn).
 8.43: Chorus—Aeolian Quartet, "Tennis."
 Bass solo and chorus—Mr. W. J. Richards and Aeolian Quartet, "Chewska."
 8.48: Cello solo—Mr. Harold Beck, "Maori Love Song" (James, arr. Beck).
 8.52: Soprano and tenor duet—Mrs. Claris Shaw and Mr. Gregory Russell, "Typewriter."
 8.55: Accordion solo—Mr. George Bennett, "Popular Melodies."
 8.59: Contralto and bass duet—Miss Mildred Russell and Mr. W. J. Richards, "Follow Me Around."
 Bass solo—Mr. W. J. Richards, "Souvenirs."
 9.3: Weather report and forecast.
 9.4: Overture—De Groot and Piccadilly Orchestra, "La Gran Via."
 9.9: Soprano and bass duet—Mrs. Claris Shaw and Mr. W. J. Richards, "Ring of Roses."
 9.15: Recitation—Miss Dorothy Jenkin, "Lasca."
 9.20: Cello solo—Mr. Harold Beck, "Dance of the Elves" (Jenkinson).
 9.28: Vocal quartet—Aeolian Quartet, "The Dollar Princess."
 9.32: Instrumental trios—Christchurch Broadcasting Trio, (a) "Why?" (Schumann); (b) "Air in Olden Style" (Marie).
 9.40: Contralto and bass duet—Miss Mildred Russell and Mr. W. J. Richards, "Tramps."
 9.44: Banjo solos—Mr. Arthur Hodgson, (a) "Charmaine"; (b) "In a Little Spanish Town."
 9.48: Chorus—Aeolian Quartet, "Hip! Hip! Hurrah!"
 9.52: Accordion solo—Mr. George Bennett, "Popular Melodies."
 9.56: Finale—Aeolian Quartet, "Then You Go."
 God Save the King.

4YA DUNEDIN (463 METRES)—FRIDAY, APRIL 20.

- 3 p.m.: Town Hall chimes.
 3.1: His Master's Voice recital.
 3.15: Address on Fashions by a representative of the D.I.C., Ltd.
 3.30: Afternoon tea music from the Savoy.
 3.45: Studio music.
 4.0: Music from the Savoy.
 4.15: His Master's Voice recital.
 4.30: Close down.
 6.0: Town Hall chimes.
 6.1: Children's hour—Auntie Sheila and Big Brother Bill.
 7.15: News session.
 7.30: Address by Mrs. Denton Leech on "The Duties of Police Women."
 8.0: Town Hall chimes.
 8.1: Orchestral selection.
 8.5: Baritone solos—Mr. Bert Rawlinson, (a) "Arise, O Sun" (Day); (b) "Up From Somerset" (Sanderson).
 8.12: Flute solo—Mr. Chas. E. Gibbons, selection from "Lohengrin" (Wagner).
 8.18: Soprano solo—Mrs. D. Carty, "Come Back to Erin" (Claribel).
 8.22: Bass solos—Mr. Neil Black, (a) "The Bandelero" (Stuart); (b) "I Know of Two Bright Eyes" (Clutsum).
 8.29: Pianoforte solo—Mr. Gordon Findlay, "Charmeuse" (Clarke).
 8.34: Contralto solo—Miss Flora Williamson, "Slow, Horses, Slow" (Mallinson).
 8.38: Orchestral selection.
 8.43: Baritone solo—Mr. Bert Rawlinson, "Off to Philadelphia in the Morning" (Haynes).
 8.47: Flute solo—Mr. Chas. E. Gibbons, selection from "Iolanthe" (Sullivan).
 8.53: Soprano solos—Mrs. D. Carty, (a) "Mother Machree" (Ball); (b) "Home-land" (Drummond).
 9.0: Weather report and forecast.
 9.2: Bass solo—Mr. Neil Black, "Vale" (Russell).
 9.4: Pianoforte solos—Mr. Gordon Findlay, "Invitation a la Valse" (Weber); (b) "To the Rising Sun" (Forjussen).
 9.17: Contralto solos—Miss Flora Williamson, (a) "Out of the Deep I Call" (Martin); (b) "Like to the Damask Rose" (Elgar).
 9.26: Vocal duet—Mrs. D. Carty and Mr. Bert Rawlinson, "A Crookit Bawbee."
 9.30: Dance music.
 10.0: God Save the King.

Saturday, April 21

1YA AUCKLAND (333 METRES)—SATURDAY, APRIL 21.

- 3 p.m.: Afternoon session—Selected gramophone items.
 4.0: Literary selection by the announcer.
 4.10: Further selected gramophone items.
 4.30: Close down.
 6.0: Children's hour—Cinderella. Song, Owen Fletcher, "Johnny, Come Down to Hilo" (Terry); recitation, Billy Brown, "Rebel Boy"; story for tiny tots; flute, Bob Davidson, selected; letters and birthdays; song, Owen Fletcher, "A Little Peach in an Orchard Grew"; recitation, Billy Brown, "George's First Sweetheart"; flute, Rob Davidson, "Graceful Dance" (Lemmone); story-time.
 7.15: News and sports results.
 8.1: Chimes.
 8.1: Relay of selected programme by Auckland Municipal Choir.
 9.30: Relay of dance music by the Internationals under Mr. Clyde Howley from Dixieland Cabaret.
 11.0: God Save the King.

2YA WELLINGTON (420 METRES)—SATURDAY, APRIL 21.

- Noon: Running description of Marlborough Racing Club's meeting at Trentham.
 3 p.m.: Chimes of the General Post Office Clock, Wellington.

An amusing incident was recently experienced by the medical superintendent of a Melbourne mental hospital. Wireless is installed in the institution, and recently one of the patients, an elderly lady, innocently told the doctor that she had been listening in to 3LO, and heard her name called during the children's hour. She said that "Billy Bunny" told her to look on the table in the best bedroom for a lovely present. The doctor was rather perplexed, but, desiring to humour his patient, he asked her if she had received her present, to which she replied, "Oh, yes, sir. I got it in your room, and 'Billy Bunny' told me to keep it a secret." It seems that the patient was right to some extent—she certainly heard her name called by "Billy Bunny," but it was meant for a wee little girl with a similar name. The doctor is now very worried as to what the patient has annexed from the dressing table of his wife, who is away on holiday.

For the convenience of listeners in the far way-back of Queensland, the Brisbane station, 4QG, is now providing half an hour's special news each Wednesday night from 10 o'clock until half-past ten, and half an hour's special news from six o'clock until half-past six on Saturdays. Items of interest from the news services already given during preceding days are collected and grouped into a special session, which is being eagerly listened to by those to whom radio is a godsend.

A Melbourne advocate for the close co-operation of the Australian broadcast stations says: "Imagine every A class broadcasting station in Australia being brought together in some form of amalgamation or co-operation so that bands and artists could be transferred and kept continually on the move in a circuit. Think of the saving of effort and cost of a centralised control of the broadcasting services. Even opponents to unification as a principle admit that there are paramount reasons for centralisation of wireless broadcasting control, because the decentralisation of operations and the accruing advantages would by far outweigh the tendency to bureaucratic methods. Overlapping of programme items would be obviated, and the system would result in a one hundred per cent. improved service generally, whilst the benefits to States like Tasmania and West Australia would be incalculable."

One of the commonest notions is that having a 100-volt block of batteries means that there is 100 volts on the plate of the valve. In the radio frequency side of the set this is true, of course, but on the audio frequency side there may be 20, 30, or even 40 volts drop between batteries and valve plate.

Do not change your valves around after your autodyne has been correctly neutralised. Your set will not howl and interfere with neighbouring listeners if it is correctly neutralised, but if you change the radio frequency valves it may be necessary to readjust the neutralising condensers.

Burning your valves too brightly shortens their lives. Besides, a valve will not give better results after it reaches a certain temperature, and it is only wasting its substance to burn it brighter than its efficiency point.

Headphones or loudspeakers should not be jarred by a bump or fall. This weakens the magnets, even if it does not break anything. Do not let the diaphragm of your loudspeaker rattle when reception is over loud. There is an adjusting screw on most loudspeakers to prevent this happening.

We can't have light without heat, but now we are told that we can get heat from light rays and generate electricity while we thought we were using electricity to get heat to generate light.

Keep your "A" battery always above one-third of its total capacity. This will add to the life of the battery. Batteries should last for five years or six years, at least, if properly treated.

For amateur receiving set builders a very useful tool is a hacksaw, for with it old panels can be cut down and used as sub-panels, and terminal strips may be manufactured from the odd scraps of bakelite which can be bought very cheaply at most dealers.

Never connect your "earth" wire to a gas-pipe. Owing to various reasons a gas-pipe is a very poor earth, and, therefore, reception will be weak. A water pipe makes a satisfactory "earth." An experimenter who has delved into the scientific requirements of the cone loudspeaker says: "It would seem that the cone should have a very acute angle—say, 90 degrees—to promote stiffness, and so avoid resonance; that it should be of comparatively small diameter, for the same reason, and also to reduce its weight. It should be freely suspended at its edge in order to allow it to move as a whole, like a piston, rather than vibrate under restraint like a drum-head. It should be situated in the centre of a baffle board at least three or four feet square, to check unwanted air circulation; and the driving mechanism should not embody any reed, spring supported armature, or other resonant member; nor should it impose any limitation on the motion of the cone, which should be able to move backwards and forwards with perfect freedom a distance of an eighth of an inch or more."

- 3.1: Selected gramophone items.
 4.25: Sporting results to hand.
 4.30: Selected gramophone items.
 4.55: Sporting results to hand.
 5.0: Close down.
 6.0: Children's session—Aunt Dot and Aunt Gwen, assisted by cousins from the Sacred Heart Convent, Lower Hutt. Choruses, duets, and stories.
 7.0: News session, market reports, and sports results.
 7.40: Lecturette—Miss Phyllis Bates, "Yale Blues."
 8.0: Chimes of the General Post Office Clock, Wellington.
 8.1: Overture—"British Cavalry March" (Howgill).
 8.5: Quartet—Vocal Quartet, Melodie Four, "Tom, Tom, the Piper's Son" (Kendall).
 8.9: Banjo solo—Mr. Charles Brazier, "Beat as You Go" (Grimshaw).
 8.13: Tenor—Mr. Frank Bryant, "Roadways" (Lohr).
 8.17: Instrumental trio—Symons-Ellwood-Short Trio, "First Movement of Trio in F" (Hummel).
 8.27: Baritone solo—Mr. R. S. Allwright, "The Watchman" (Squire).
 8.31: Banjo solo—Mr. Chas. Brazier, "Listen to This" (Grimshaw).
 8.35: Tenor solo—Mr. Sam. Duncan, "Aice, Where Art Thou?" (Asher).
 8.39: Flute solo—Mr. L. W. Rothwell, "Graceful Dance Caprice" (Lemmone).
 8.44: Vocal duet—Messrs. F. Bryant and R. S. Allwright, "The Battle Eve" (Bonheur).
 8.48: Instrumental trios—Studio Trio, (a) "Canzonetta" (Godard); (b) "Hungarian Dance" (Brahms).
 8.58: Bass solo—Mr. W. W. Marshall, "The Gypsy Love Song" (Herbert).
 9.2: Weather report.
 9.3: Flute solo—Mr. L. W. Rothwell, "By the Brook" (Wertzerger).
 9.8: Vocal quartet—Melodie Four, "Mosquitoes" (MSS.).
 9.12: Relay of Charles Dalton's Columbian Solo Six Dance Orchestra from the Columbian Cabaret, Kilbirnie.

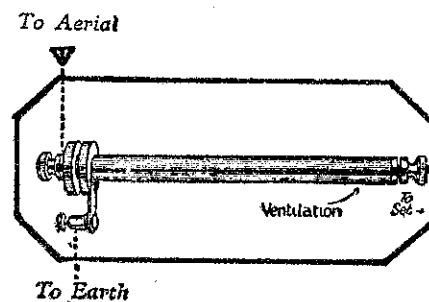
3YA CHRISTCHURCH (306 METRES)—SATURDAY, APRIL 21.

- 6 p.m.: Children's hour—Uncle Sam and Aunt May. Birthday greetings, songs, and stories.
 7.15: News and reports.
 7.30: Sports results.
 8.0: Chimes.
 Overture—London Symphony Orchestra, "Waltz Movements" from "Der Rosenkavalier" (Strauss).
 8.10: Opening chorus—The Avonian Minstrels (Messrs. E. Rogers, J. Filer, F. Olds, and D. Clapperton), "De Old Banjo" (Metcalfe).
 8.14: Ukulele, with vocal accompaniment—Mr. Roy August, (a) "Hi, Diddle, Diddle" (Keidel); (b) "Mama's Gone Young, Papa's Gone Old" (Donaldson).
 8.20: Nautical song—Mr. F. Olds, "The Admiral's Yarn" (Rubens).
 8.24: Contralto solos—Miss Dulcie Mitchell, (a) "Angus McDonald" (Roccel); (b) "A Light Lesson" (Maudel).
 8.30: Coster recitation—Mr. J. P. Darragh, "Fair Dinkum" (Nelson).
 8.37: Instrumental trios—Christchurch Broadcasting Trio, (a) "Serenade" (Drdla); (b) "Vienna Life" (Strauss).
 8.45: Bass solo—Mr. J. Filer, "Drinking" (Hatton).
 8.49: Concertina solos—Mr. E. W. Heald, (a) extract from "Napoleon's Last Charge" (march and gallop) (MS.); (b) "Bells of St. Mary" (MS.).
 8.54: Quartet—Avonian Minstrels, "A Mistake" (Hunt).
 9.0: Weather report and forecast.
 9.2: Overture.
 9.10: Ukulele, with vocal accompaniment—Mr. Roy August, (a) "Bird's-eye View" (Donaldson); (b) "There Ain't No Maybe in My Baby's Eyes" (Donaldson).
 9.16: Contralto solo—Miss Dulcie Mitchell, "O Don Fatale, Don Carlos" (Verdi).
 9.20: Chorus—Avonian Minstrels, "Ding, Dong, Ding" (Scott Gatty).
 9.24: Instrumental trios—Christchurch Broadcasting Trio, (a) "Songs of the River Volga" (Koenemann); (b) "Hungarian Dance, No. 2" (Brahms, arr. G. Beck).
 9.34: A Coster's experience—Mr. J. Darragh, "The Huntsman."
 9.40: Baritone solo—Mr. D. Clapperton, "Tea Time, To-morrow" (Long).
 9.44: Concertina solos—Mr. E. W. Heald, "When Irish Eyes Are Smiling"; "Believe Me If All Those Endearing Young Charms."
 9.52: Tenor and baritone duet and chorus—Messrs. Rogers and Filer and the Avonian Minstrels, "Melodrama" (Adlam); "My Old Kentucky Home."
 God Save the King.

4YA DUNEDIN (463 METRES)—SATURDAY, APRIL 21.

- 7.15 p.m.: News session.
 7.30: Address under the auspices of the Workers' Educational Association—Dr. Fisher, "The Study of Economics."
 8.0: Town Hall chimes.
 8.1: Relay of orchestral music from the Empire Theatre.
 8.11: Soprano solos—Miss Agnes Guy, (a) "A Request" (Woodford-Finden); (b) "You in a Gondola" (Clarke).
 8.16: Kaikorai Band Brass Quartet, "Autumn" (Round).
 8.20: Violin solos—Miss Eva Judd, (a) "Hindoo Lament" (Barnes); (b) "Waltzer" (Cramer).
 8.27: Baritone solo—Mr. Arthur Lungley, "Four and Twenty Sailormen" (Coleridge-Taylor).
 8.31: Instrumental trio (violin, cello and piano)—"Marche Militaire" (Schubert).
 8.37: Pianoforte solos—Miss Muriel Caddie, (a) "Consolation No. 3" (Liszt); (b) "Nocturne" (Bisley).
 (Continued on page 14.)

THE PRESSLAND SAFETY LEAD-IN



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THE ACID SOLUTION.

PHILIPS LABORATORIES

HERE is the promised B accumulator, so arranged that it can be charged up quickly and reliably with the A battery charger described on March 2. The chief departure from the orthodox arrangement is that the test-tubes are arranged in rows, seven in each row, or a total of fourteen volts in each row. The end plate of each row is connected to a length of wire sufficient to reach across the top of the battery and join up with a similar wire from the opposite end of the next row. The joining is accomplished quickly and effectively by means of a battery-clip attached to the end of each flexible wire. When the battery is used for reception the clips attached to the positive ends of the rows are all connected to the negative end of the adjacent row, then putting the whole battery in series. When charging is required the clips are all taken apart and all positive ones clipped on the upper edge of a brass or lead plate on the front of the battery, in which a terminal is inserted for connection to the positive terminal of the charger. All negatives are similarly connected to a plate at the back of the battery, with a terminal for connection to the negative of charger. Thus the rows are all connected in parallel, or form a 14-volt battery of much increased capacity, and can be charged with a charger giving 16 to 20 volts. A strip of wood above the centre of the battery forms a support for the clips out of the way of the acid, and whilst charging is in operation the clips and connections are more out of the way, as they are outside the battery case.

It is left for the constructor to decide just what voltage he requires, but rows of six or seven tubes in each should be adopted, and the number of rows constructed to give the nearest voltage, which will be 84, 98, 112, or 126 volts. Eight rows, giving 112 volts, is a useful size, 56 tubes being required. The plates to be described will go into 12-inch test-tubes, but if 1-inch test-tubes are used there will be more room for liquid, which will not evaporate so quickly, and will not require distilled water adding so often.

THE LEAD PLATES.

THE lead plates, which will be afterwards pasted, are cut from strips of ridging lead used by plumbers. This lead is in strips 1½ inches wide and 8 feet long, and as it is machine-planed from thicker strips, it is bright and clean, ready for use. These strips are to be cut into 12-inch lengths, one for every tube to be used. The diagram shows how each plate is to be cut, and



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the best way to mark these for uniformity is to cut a cardboard template and lay it on each in turn, scratching round the position of the cut-out portion in the centre. A point to be noted is that the portion shown shaded is to be cut out as waste, and the outer strip left joined at X, afterwards to stand up clear of the acid spray, and to which the wander-clips may be attached for voltage tappings. The plates for the end positions in the rows are to be separated by cutting the central connector at the end near X. This will leave the two halves separate with a tag on each. It is not feasible to cut the narrow tag much wider, because it would then interfere with the bending of the plates.

Tags for taps will not be necessary on very many of the cells, as the ends provide convenient taps. The first two ends give 14 and 28 volts, a tap in the centre of the second row will give 22, and in the centre of other rows, 36, 50, 64, 78, 92, and so on, so that only about six need be cut with tags besides those for the ends.

The total length of the plates when pasted and folded up will be 11½ inches, as ½ inch at each end is folded over. A number of holes not exceeding paste, with dilute sulphuric acid of punched in the plates with an inch nail or other convenient point. These holes should consist of a row of about 8 or 10 down the centre and the same number just outside each dotted line. The more holes the better, within reason. If it is desired to take the burr off the holes, it may be done with a sharp chisel, but the burr may be on what is to be the inside of the plates.

BENDING THE PLATES.

BENDING is the next operation. The plates have first to be bent at the dotted lines running the full length, forming a kind of gutter shape half an inch wide inside. For the purpose, a strip of wood a half-inch thick is prepared, and the two corners slightly rounded off. This wood is then placed over the lead and the sides are bent up as shown in section.

MAKING THE PASTE.

THE plates are now ready to be filled with paste, one end of each plate being filled with positive and the other end with negative paste. The negative paste is made from litharge, a buff-coloured powder, and the positive is made from ordinary red lead. These are not expensive, and the amount required will vary with the number of plates and the amount of paste put into them. About 1½ to 2lb. of each should be ample.

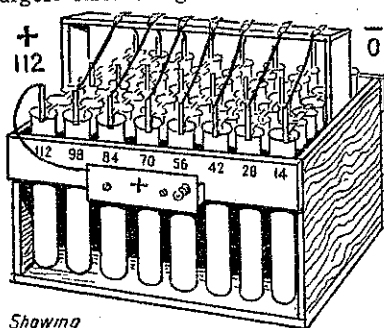
A quantity of powder is taken and mixed on a sheet of glass to a stiff paste, with dilute sulphuric acid of usual battery strength, using a wooden spatula, which may be made from a strip of wood thinned down. When a quantity of one of the pastes has been mixed, it can be laid in one end of each plate to a depth of one-eighth of an inch. The lead on each side is then folded down to overlap, and the quarter-inch at the bottom ends is turned up and all corners and joints attended to and pressed together to be as close as possible. The top ends also must be closed up, and to facilitate closing, the paste should not be laid too near the ends. The other ends may next be treated with the opposite kind of paste and closed up. All the plates are now to be laid aside to dry for several days, or a week, if possible, as thorough drying helps the paste to stay in the plates, though the form of construction gives it little chance to get out. Care should be taken to make the end with the tags either all positive or all negative, to preserve uniformity for tapping.

THE BATTERY CASE.

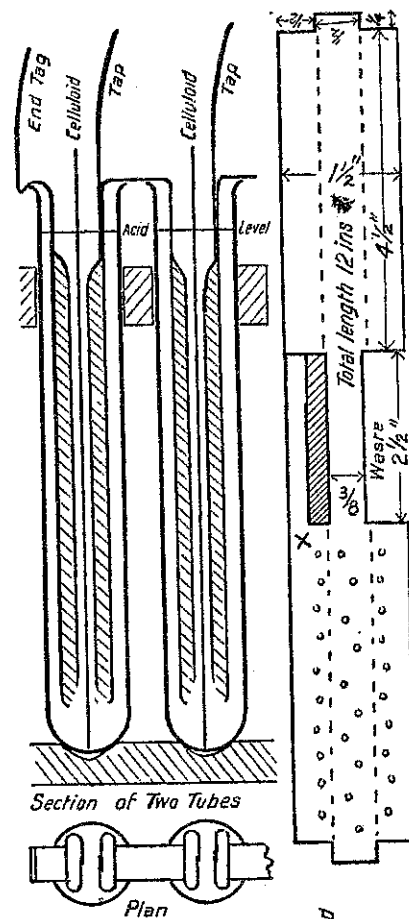
EXACT dimensions will be left to the constructor, as they will vary with the number and diameter of tubes decided upon. One item that should be adhered to is the division between the tubes, which should be ½-inch wood. There are several ways of supporting the tubes. One method is to bore holes in a sheet of three-ply or ½-inch wood, and in the base drill countersunk marks

to take the lower end of the tube. Another way of supporting the top end is by dropping ½ laths in between each row, a set of laths running each way, one set resting on those below, and the lower ones resting on strips inside the two ends of the case. The laths need not be fastened, as the tubes keep them in place. As much as possible of the front and back of the case should be left open to give a good view of the plates.

The strip of wood over the top to support the clips should not be less than 4in. above the tops of the tubes, and could be 1½ to 2 inches wide. The tubes should project nearly an inch above the strips that support them. Test tubes are very irregular in size, and "inch" tubes will vary in inside measurement from ¾ to 1-inch. Measurements must be made to allow for the largest sizes being accommodated.



Showing Battery connected in Series for Reception



VASELINE IS IMPORTANT.

BEFORE the tubes are put into place the tops should be smeared with vaseline with the finger for a depth of half-an-inch both inside and outside. All portions of the plates above the acid level to within about half-an-inch of the top of tags and over all cell-to-cell connectors. If there are any soldered joints on tags it pays to coat them with celluloid cement or shellac and then liberally apply vaseline. In time the acid eats through unprotected copper wire. On no account neglect the vaseline.

GENERAL.

THE connecting wires should be flexible wire with rubber covering only—any kind of fabric soon rots with acid spray. An alternative way is to double in half two lengths of 26's enamelled, clean the enamel off the loop end and fasten to the screw of the battery clips, and solder loose ends to tag of plate. Another method is to waste a small amount of lead by cutting separate end plates with a tag of sufficient length and attach the clip to the end. Considering that the battery will only need charging about once every two weeks, when well formed, there will not be much wear on the connectors.

Have the negative end of every row at the front and the positions at the back, or vice versa. The two ends, negative and positive, can be permanently joined by a soldered wire to the front and back plates respectively. The terminals will then be the negative and power-valve connections to the set when charging is finished.

If preferred, a 1-10 drill could be used to make holes in the plates, as several could be drilled together. When not charging, a coarse cloth can be thrown over the top of the battery to exclude dust, or otherwise a deep wooden lid could be made to drop over the top.

The plates are kept from touching in the tubes by a strip of motor-hood celluloid or glass, about 6in. long and a very easy fit for the width of the tube used.

IT pays to use good acid in a small accumulator such as this, so pure sulphuric acid should be purchased. Five parts of acid to twenty-one of distilled water is the correct strength to use. Place the water in a basin and add the acid gradually, stirring with a glass rod or other acid-proof article. Considerable heat is generated during the process of mixing. If distilled water is difficult to procure, water that has been boiled and allowed to cool is a good substitute. Where there is choice, rain water is better than artesian, as the latter often contains traces of mineral salts.

When calculating the amount of liquid required for the tubes it must be remembered that it is only necessary to provide sufficient to properly fill half the number of tubes without plates in, because the other half is occupied by the plates.

The plates must all be in position and all construction work finished when the acid is put in, and then the first charge may be proceeded with.

THE FORMING CHARGES.

WITH the end of every row connected to the nearest plate, the two terminals are connected to the charges, positive of battery to positive of charger, and negative to negative. A length of, say, five or six inches of 26's nichrome resistance wire or other kind of resistance should be inserted in the positive lead to ensure only a gentle current from the charger, but notice should be taken that minute bubbles soon begin to come away from the plates, showing that charging is proceeding. The resistance should never be sufficient to lower the voltage below the necessary amount. After 10 or 12 hours the battery may be disconnected from the charger, connected up in series, and discharged through an electric bulb, 230 or 110 volts, fixed in a socket with wires to attach to the battery terminals. This lamp should be left connected until it dies out, which will not be for several minutes, which should be carefully timed, as comparison will indicate the increased capacity with later charges. After this first charge, charge up again for, say, six hours, when, if anxious to test the battery, use it on the set for a session, but immediately afterwards discharge with the lamp and put on charge again for a further six hours. Altogether it is as well to give a total of 36 to 48 hours' initial charging, but care must be taken to keep the charging rate down with the resistance, which may be reduced a little after the third charge. The amount of resistance to be permanently used will depend upon the number of rows of cells. The total cost of the battery should be well under £2 for the 112-volt size. One-inch test-tubes cost about 18s. for the half-gross, and three-quarters a little less.

When the first charge has been in progress for half an hour, the outside of the plates should begin to show the respective colours, deep chocolate the positive and grey for the negative. At a later stage the positive plates will be inclined to show a lighter brown in colour, but will later assume the deep tone and retain it. The object of the initial charges is chiefly to turn the red lead into the correct positive compound. During the early life of the battery it will be as well to charge at least once a week, and after a few weeks the time of recharging may be extended. During this time keep an eye on the positives, and if they turn light in colour it may be an indication that the battery has been standing too long and requires a charge.

Do not attempt to increase the thickness of the paste over ¼in., which will give plenty of capacity.

Plates must be at least half an inch above the bottom tubes to allow room for possible sediment.

The liquid is to be kept a quarter of an inch above the tops of the plates, which are ¾in. below top of tubes.

Those who have not had much to do with accumulators may be inclined to leave short tags for taps, but it is important to have them as long as possible clear of the spray and acid, as the latter creeps up gradually and causes dirty contact for the clips.

This battery can be charged with any charger giving 16 volts or more. If you have a charger giving only about 14 volts, put only six cells in a row. Every cell gives two volts.

The plates at back and front are made to stand out by mounting on a strip of wood. Clips may then be attached to either the upper or the lower edge.

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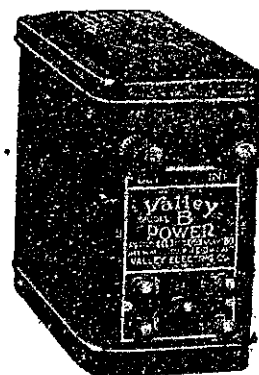
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Construction Continued

DEVELOPMENT OF THE DETECTOR

WHERE it not for the valve, wireless telephony, as we know it, would never have been born. Though attempts were made in the early days to employ an "Arc System," the valve is necessary in all the present-day practical systems of transmission. And owing to its amplifying effect, the valve becomes an almost indispensable adjunct for the comparatively distant listener who desires to hear the transmissions on what are really the very low powers used in ordinary broadcasting.

The advent of high-powered broadcasting stations has, of course, opened the eyes of the "man in the street" to the fact that the "range" of a crystal set depends on the power of the transmission, and not on any inherent "range of reception" of the receiver. Before that the writer met several crystal users who were under the impression that "a crystal couldn't receive farther than 15 miles." The fact that signalling was for years carried on commercially over very long distances by the use of receivers much less sensitive than the crystal, and without the aid of any amplifiers whatever, was news to them.

It is, of course, the amplifying property of the valve and not any great superiority purely as a detector that enables us to receive weaker signals, even with a single-valve set, than we can with a crystal. And the original valve was in existence a long time before it could compete successfully with the other methods of detection.

What really brought the valve to the fore was the discovery of reaction, which is essentially nothing more than a means of providing H.F. amplification by means of the detecting valve itself, in addition to the L.F. amplification inherent in the 3-electrode, though not in the original Fleming 2-electrode detecting valve.

Visible Detection.

BEFORE the discovery of reaction the valve, even the 3-electrode valve, was comparatively "small potatoes." In the 1911 edition of the "Admiralty Manual of Wireless Telegraphy," a book of some 370 pages, the whole subject of valves, which had been in existence some time, even, in the case of the Fleming valve, a long time, is dismissed in a single page! The "Audion," as the 3-electrode valve is there called, is condemned because of the necessity (reaction being unknown) of burning the filament so brightly, to obtain the maximum sensitivity, that the life of the valve is very short, and the valve detector, therefore, too expensive for general adoption!

What, then, were the detectors that had been used up to that time, and with which, unaided by amplification, signals were received over hundreds of miles, even across the Atlantic?

Historically, the first method employed was the observation of the minute sparks jumping the gap in a nearly closed circuit. Since the pressure produced in an aerial by even the most powerful signals is exceedingly small, it will be understood that this gap, across which the pressure had to force the sparks, was necessarily very narrow. So nearly had the ends to be joined that the use of a microscope was tried to watch for the sparks! This, the original detector, was naturally very insensitive and not very practical.

The Coherer.

A GREAT stride was made with the introduction of the "coherer," the first standard detector used in the Navy. There were a number of such devices, the best known being that invented by Marconi.

This consisted of a glass tube exhausted of air, and containing a small pinch of nickel and silver filings between two silver plugs. The loose fil-

ings offered a fairly high resistance to the passage of a direct current, but had the property of "cohering," or sticking together, when an oscillating current was applied. The resistance then fell, and the current from a small local battery was enabled to pass. This current was used to operate a machine, known as the "inker," which recorded the signals on a tape, in the same way as the familiar "tape machine."

There were two grave disadvantages to this method. Firstly, the coherer required to be "tapped," by a special mechanical device, to shake the filings apart after each "long" or "short" had been recorded, and, secondly, the inker recorded atmospherics and other interferences as well as signals. Sir Oliver Lodge produced a coherer which did not require to be tapped, but the whole system was rendered obsolete by the invention, by Marconi, of the "magnetic detector."

Marconi's Magnetic Detector.

THIS was a very ingenious device, depending on the fact that iron, when magnetised or de-magnetised by passage through a permanent magnetic field, does not either take up or part with its magnetism immediately.

QUERIES BY CORRESPONDENCE.

1. Every communication enclosing queries is to be addressed to "Meg-ohm," Box 1032, Wellington, and must be accompanied by a stamped addressed envelope for reply by post.

2. Questions must be written so that a space is left in which the reply may be added.

3. No charge is made for replies.

Several other types were introduced, but the magnetic detector held its own against them for a considerable time.

The Electrolytic Detector.

THE electrolytic method is one which even now retains considerable interest. The principle is that a very fine wire, preferably tipped with platinum, is adjusted so as just to touch the surface of a small quantity of acid in a lead cup. This adjustment can be made in a very similar way to the ordinary cat's-whisker adjustment of a crystal detector. A small battery and a pair of 'phones are connected with this arrangement, the whole circuit being exactly similar to that of a carbonium crystal detector, except that the detector and 'phones are in parallel. The potentiometer is used to adjust the detector, the process being rather delicate, and there being no space to describe it in detail here.

When adjusted, the effect of the current from the battery is to cause a tiny bubble of oxygen to form on the platinum point of the cat's-whisker. This bubble (being an insulator) stops the further flow of current. The arrival of signals upsets the equilibrium of the arrangement, knocking the bubble off the cat's-whisker, so that the battery sends a momentary current through the 'phones, and the signal is heard.

Directly the oscillations cease, the bubble of course reforms, and the detector resets itself. This detector is very sensitive, but for obvious reasons it did not lend itself very readily to employment at sea. But it is still well worth the "crystal" experimenter's notice.

The discovery of the "unilateral conductivity" of certain substances brought in the crystal detector, which is too well known to need description.

Shielded-Grid Stages.

THE amplification obtainable from a shielded-grid receiver is dependent upon the excellence of the coil and condenser comprising the tuning circuit of the R.F. amplifier stage, and selectivity upon the degree of coupling of one tube to the next through the tuned circuit. Selectivity may be controlled by taps on the R.F. transformer.

the "Radio Record." All acquired much experience and knowledge of sets and conditions that could not be found in books, and it would be helpful to all listeners for these to be made available through the "Radio Record." Because of its geographical situation, New Zealand insistently demanded the very highest class of radio goods in the world. Under our conditions sets were required to give perfect reception up to 1200 to 1300 miles, whereas from London the most distant other station available was Rome, 750 miles, and the next Berlin at 540 miles. In New York a 500-mile radius placed one in reach of the next most powerful station centre; but in New Zealand conditions were much different, and demanded larger distance-getting capacity. Those little refinements and practices which dealers discovered as giving better reception should be passed on through the "Radio Record."

The Editor of the "Radio Record," in reply, thanked Mr. Owen and Mr. McCarthy for their remarks, and stated that the whole object of the paper was simply to render service to broadcasting in all its aspects. To do this the paper had to be perfectly fair and open-minded, and would continue to be so. Unlike Mr. Owen, he could cite various improvements that were desirable as opportunity permitted. One was a possible adjustment of the size of the paper. This was at present dictated by the machinery available and the time necessary to catch early mails. With the provision of new machinery in the near future, however, sufficient time might be gained to permit of extra time being put into the production of a smaller sized sheet, with, of course, more pages. This would be a matter for consideration.

The Dealers.

That the radio dealer was more than a dealer, viz., was a radio doctor as well, was a point made by Mr. Morgan in proposing the toast of the dealers. Dealers had to give good service, and continue to give satisfaction. He particularly appreciated the children's programmes, and considered that rousing their interest in radio was the best means for building the future popularity of broadcasting. Boys and girls, starting with their crystal always later wanted something better, and he thought that dealers might profitably demonstrate in the children's hour to great advantage.

Response was made by Mr. C. E. Grounseil and Mr. Megann. Both admitted the popularity of the children's session, although Mr. Megann feared that more children over twenty-one listened than under. One devoted young lady listener that he knew was aged ninety-two! Mr. Grounseil, in brief reference to programmes, said that twenty to twenty-five minutes of classical music was too much for many crystal set holders, who grew tired and shut down for the night, as they could get nothing outside Wellington. Many five-valve sets as well could not get outside Wellington. Both speakers stressed the desirability of quarterly or half-yearly payments being accepted from those unable to pay the full yearly fee in advance. Some could not find thirty shillings in a lump sum, whereas they would be quite prepared to pay quarterly.

The Company Honoured.

The toast of the Radio Broadcasting Company was proposed by Mr. J. H. Owen. It had, he said, accomplished wonders in the short time it had been at work. Stations had been provided in the four centres, and to do this those formerly existing had to be taken over and dismantled and new provision made. This was a very large undertaking, and the company deserved very great credit indeed, more particularly in regard to 2YA. He had feared that the provision made here was more than the country would warrant, but nevertheless in the short time since that installation the numbers of listeners had grown to over 40,000. He recalled that two years ago, when conversing with Mr. Markman, then Secretary of the Post Office, he had suggested, in response to a query from Mr. Markman, that we would ultimately get 40,000 listeners, and Mr. Markman had laughed at the idea. He therefore felt proud that his prophecy of two years had been so speedily realised. He was very keen to see broadcasting fully established, and wished the Broadcasting Company every possible success. Speaking for himself, he would be lost without broadcasting.

Mr. McCarthy said he would like to put on record, on behalf of the dealers, what the Radio Broadcasting Company was doing on their behalf. Further, he would like the Radio Amateur Society to instill into the minds of listeners the need for proper equipment.

In nine cases out of ten, when he was called in to investigate complaints of poor reception, he found that the trouble was due to slipshod methods in putting up the aerial. If people would only spend an extra shilling or two at the start in putting up a good aerial,

BRITISH RADIO GOODS

A bit better quality;
A bit cheaper;
In short "a job!"

You get them from:

HARTLE & GRAY,
CUSTOMS ST., AUCKLAND.

Radio Atmosphere in Wellington

(Continued from Page 3.)

by far the greater proportion of complaints about poor reception would disappear.

The programmes were transmitted well, and if proper provision was made by listeners they should be received well.

Some Policy Announcements.

Mr. J. Ball, announcer 2YA, in acknowledging the toast on behalf of the Broadcasting Company, said he esteemed it a privilege to be present, not only for the pleasure of joining in an hour or two of social harmony, but because it had been his good fortune to become acquainted with the honoured guest of the evening, and to have found in him a courteous and kindly gentleman with whom it had been a pleasure to confer on matters of interest and importance to all. (Applause.) He apologised for the unavoidable absence of Mr. Davies, station superintendent, who had requested him to convey to Mr. Owen his cordial greeting and best wishes for a pleasant journey, an enjoyable sojourn in the countries he was about to visit, and a safe return to this best of all lands. These good wishes, he assured Mr. Owen, were heartily endorsed by Mr. Harris, the general manager of the Broadcasting Company, and by his fellow officers of 2YA, who had been privileged to come into contact with him. He esteemed it an honour to be the representative of the company at this function, and in that capacity would take the opportunity of touching briefly upon some matters of mutual interest, and of interest to the great army of listeners represented by this gathering. He judged by the sentiments expressed by the gentlemen who had spoken, and by the company's reception of those sentiments, that there was no gentleman in this room who was not sincerely desirous that this new and wonderful power of radio should be made to serve the community to the utmost of its capabilities. Personally, the longer and more closely he was in touch with this modern marvel the more was he impressed by its seemingly limitless potentialities. In a sense they were dealing with an unknown quantity. So much they know, but more, far more, was as yet unrevealed. Perforce, therefore, they were constrained to act within the limits of their knowledge, to profit by the lessons of practical experience, and to push steadily forward along the lines which prudent judgment, based on knowledge and experience, seemed to warrant. This was what the company was zealously and honestly striving to do. (Applause.)

The company was moving consistently and steadily ahead, carefully watching every step and studiously avoiding doubtful expedients resort to which, though apparently of momentary benefit, might bequeath to the company and to listeners, legacies of disappointment and regret. By the pursuance of this policy the company had been able to escape some of the pitfalls that had befallen broadcasting in other parts of the world. As an evidence of what has been achieved, and of the bona fides of the company's efforts from the beginning, he reminded them that while the original agreement under which the company held its license called for the erection of a half-kilowatt station at Wellington, the company installed a 3-kilowatt station, the plant being the best that money could buy. Their transmitting station was no mere corrugated iron makeshift, but a substantial and imposing landmark, conspicuous to all visitors to Wellington, and in creditable keeping with the progressiveness of the city.

The Programmes.

He was aware that from their point of view, "the play's the thing," the play in this case being the programme. Well, what about it? Criticism there had been and still was, and, inevitably, criticism there always would be so long as human nature remained what it was, and so long as radio was called upon to cater at one and the same time for all classes and all tastes. (Hear, hear.)

Surely, then, it was not presumptuous to ask that criticism should be tempered by reason, and that fair allowance should be made for a form of public entertainment so singularly handicapped.

If they looked at the programmes of, say, 2YA from this equitable point of view, must they not concede that there had been a noticeable, almost remarkable measure of continuous improvement both in quality and variety? Although the station had not been in operation for twelve months, several unique broadcasts had been made, amongst these being the Tasman flight and the Maori Radio Pageant. Leading talent, formerly not heard more than once or twice a year in Wellington, was now heard regularly from 2YA. Vocal and instrumental music of the highest standard was broadcast daily.

To the big listening public had been introduced probably the finest instrumental trio that has ever performed in Australasia, and, as has been mentioned by previous speakers, the company now proposed to increase this trio to an orchestra, which, he was authorised to assure them, would consist of the finest instrumentalists it was possible to obtain in this Dominion. He had no hesitation in saying that listeners could look forward to the coming winter as one to be filled with many hours of good and bright music. (Loud applause.)

In this connection they would be pleased to learn that the company intended during the winter to introduce a dinner music session by changing the children's hour from six to seven to five to six, and making the six to seven hour one for the broadcasting of instrumental music. This music would be of the subdued type, and would be electrically reproduced from special records that the company was arranging to procure. It would, in fact, be purely and simply dinner music, and the session would be conducted without announcement of any kind.

Other Developments.

Other important developments, including the institution of a regular educational session organised in co-operation with the Department of Education were also in contemplation. It was in assisting to shape the course of progressive development so as to afford the maximum satisfaction attainable to the great majority, that the company's public relations scheme was destined to play an important part. An outline of that scheme had been published, and he need not detain them with details of the proposals. Suffice it to say that it was hoped that the scheme when in operation would result in substantial benefit to all concerned, and, in particular, to the listeners, whose best interests it was the company's earnest desire to serve. The official listening posts cannot do other than make for improved reception in all parts of the Dominion, while the consultative committees, now actually in process of constitution, should do much towards satisfying the public that the programmes broadcast are in truth the best that can be devised and produced, and that they represent not only the best artistry procurable within the limitations to which the company is subjected, but that in their form, character and presentation they are in the considered judgment of widely-representative authorities, the most suitable it is practicable to design for the purpose of broadcasting entertainment.

A very enjoyable evening was terminated by tributes being paid the chairman, Mr. Levy, and the secretary, Mr. Leslie Jones.

During the evening items were given by Mr. Byron Brown and Mr. R. Leslie Jones.

Sonor
CLEAR AS A BELL
RADIOS-PHONOGRAPHS

Arrange for a demonstration TO-DAY

F. J. PINNY Ltd. 58 Willis Street, WELLINGTON.

Call and hear the latest model SONORA. Unequalled for quality of tone. Buy a SONORA and you will really enjoy Radio!

If you haven't a Good Radio—Half the World

is Passing you by!

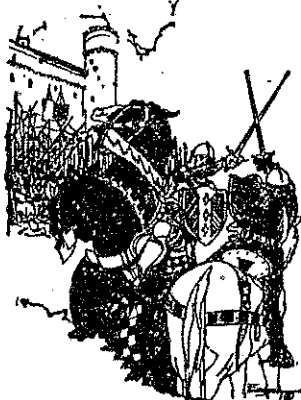
KING 5-VALVE NEUTRODYNE SETS, complete with Speaker, Batteries, Aerial Wire, etc. From £36/10/-.
BROWNING-DRAKE SETS, made to order. Amplifiers, Crystal Sets, Speakers, in large variety.

SEND FOR CATALOGUE.

F. J. W. FEAR AND CO.,

63 WILLIS STREET, WELLINGTON, N.Z.

An Old-fashioned CHALLENGE to Combat



Time and again, Zenith has published this unwavering challenge to the world of radio:

"Under identical circumstances and conditions, and taking our various models in their proper grade, we challenge any make of radio receiver to equal or surpass Zenith performance in quality or quantity of tones; selectivity; sensitivity; distance; ease of operation; precision of manufacture and general all around performance."

The challenge stands today as it has stood from the beginning—so long as Zenith makes radio it will be the best radio. Zenith is the only radio set that McMillan would take to the Arctic. Zenith is the holder of the world's long distance record—Japan to New Jersey.

Mack's RADIO CO. LTD.
76-77 KENT TERRACE
—"THE HOUSE OF SERVICE"—WELLINGTON.

Programmes Continued

(Continued from page 11.)

- 8.46: Mezzo-soprano solo—Miss Molly Vickers, "The Noblest of the Noble" (Schumann).
 9.50: Cello solo—Mr. Philip J. Palmer, "Serenade Espagnole" (Glazunov).
 9.58: Weather report and forecast.
 10: Orchestral selections from the Empire Theatre.
 9.11: Soprano solo—Miss Agnes Guy, "A Song of Sleep" (Somerset).
 9.14: Kalkorai Band Brass Quartet, (a) "Mountain Breezes" (Round); (b) "Restless Waters" (Round).
 9.22: Violin solo—Miss Eva Judd, "Walther's Prelied" (Willeby).
 9.27: Baritone solos—Mr. Arthur Lungley, (a) "The Diver" (Macmillan); (b) "Summertime in Bredon" (Peel).
 9.33: Instrumental trios (violin, cello and piano)—(a) "Nocturne" (Rubner); (b) "Country Dance" (Gade).
 9.43: Pianoforte solo—Miss Muriel Caddie, "Minuet Op. 14, No. 1" (Paderewski).
 9.47: Mezzo-soprano solos—Miss Molly Vickers, (a) "Through All the Days to Be" (Hope); (b) "Heart of Gold" (Lang).
 9.53: Orchestral selections from the Empire Theatre.

Sunday, April 22

1YA AUCKLAND (333 METRES)—SUNDAY, APRIL 22.

- 3 p.m.: Afternoon session—Selected gramophone items.
 4.0: Literary selection by the announcer.
 4.8: Further selected gramophone items.
 4.30: Close down.
 6.0: Children's service conducted by Uncle Leo and assisted by cousins from Beresford Street Sunday School.
 6.55: Relay of evening service from Pitt Street Methodist Church.
 8.30: Relay of Municipal Organ Recital from Town Hall by Mr. J. Maughan Barnett.
 2YA WELLINGTON (420 METRES)—SUNDAY, APRIL 22.
 11 a.m.: Relay of special Anzac Day service from St. John's Presbyterian Church. Preacher, Rev. J. R. Blanchard. Organist and choir-master, Mr. C. W. Kerry.
 12.10 (approx.): Close down.
 6.0: Children's service, conducted by Uncle Ernest and assisted by the Thorndon Methodist Choir.
 6.55: Relay of evening service from St. Thomas's Anglican Church, Newtown. Preacher, Rev. C. V. Rooke, B.A.; organist and choir-master, Mr. Wenzel H. Collier.
 8.15 (approx.): Relay of Wellington Municipal Tramways Band concert from His Majesty's Theatre.

3YA CHRISTCHURCH (306 METRES)—SUNDAY, APRIL 22.

- 5.30 p.m.: Children's song service, by Uncle Sam, assisted by scholars from the Congregational Sunday School.
 6.30: Relay of evening service from Trinity Congregational Church. Preacher, Rev. Gardner Millar. Organist, Mr. A. M. Mill, L.A.B.
 8.0: An after-church concert will be given from 3YA studio by Derry's Military Band, under the conductorship of Mr. E. C. Derry, assisted by 3YA artists, the Melodious Four.
 Soprano solo—Miss Frances Hamerton, "In Verdure Clad" from "The Creation" (Haydn).
 8.4: Selection—The Band, "His Majesty" (Allan).
 8.10: Bass solo—Mr. T. D. Williams, "The Trumpet Shall Sound" from "The Messiah" (Handel), with trumpet obbligato by Mr. R. Ohlson.
 8.14: Selection—The Band, "The Dawn of To-morrow" (Gravelle).
 8.19: Contralto solo—Miss Belle Renault, "The Birds of Bethlehem" (Davies).
 8.23: Tone poem—The Band, "Finlandia" (Sibelius).
 8.34: Tenor solo—Mr. Russell Sumner, "In Native Worth" from "The Creation" (Haydn).
 8.38: Allegro Marziale—The Band, "La Ritarata Italiana" (Drusscher).
 8.44: Soprano solo—Miss Frances Hamerton, "O, for the Wings of a Dove" (Mendelssohn).
 8.48: Selection—The Band, "Humoresque" (Dvorak).
 8.53: Bass solo—Mr. T. D. Williams, "My Prayer" (Squire).
 8.57: Contralto solo—Miss Belle Renault, "By the Waters of Babylon" (Dvorak).
 9.1: Selection—The Band, "Young England" (Clutsam).
 9.7: Tenor and bass duet—Messrs. Russell Sumner and T. D. Williams, "Watchman, What of the Night?" (Sargeant).
 9.11: Humoresque—The Band, "A Lightning Switch" (Alford).
 9.21: Tenor solo—Mr. Russell Sumner, "Crossing the Bar" (Willeby).
 9.25: Vocal quartet—The Melodious Four, "Abide With Me" from "Woman of Samaria" (Bennett).
 4YA DUNEDIN (463 METRES)—SUNDAY, APRIL 22.
 5.30 p.m.: Children's song service, conducted by Big Brother Bill.
 6.15: Relay of evening service from St. Paul's Anglican Cathedral. Preacher, Rev. Canon Nevill; organist, Mr. E. Heywood, F.R.C.O.
 8.0: Studio concert.

Australian Programmes

3LO, MELBOURNE

(371 Metres.)

THURSDAY, APRIL 12.

- 8 p.m.: Rod McGregor will speak on "Cricket." 8.15: Birthday greetings and programme announcements; acceptances for Epsom Turf Club. 8.16: The Vagabonds, "Take Your Finger Out of Your Mouth." 8.17: "Fifty Million Frenchmen." 8.25: Frank and Francis Lutz, duet, "Miliana" (steel guitar, "Hill Country." 8.26: The Vagabonds, "Just a Memory." 8.27: "Persian Rug." 8.28: "I'd Leave Ten Men." 8.37: A few minutes' talk about the war memorial. 8.42: Jack Lumsdaine, whispering baritone (The Radio Rascal), by permission J. C. Williamson, Ltd., "Maori Maiden." 8.45: The Vagabonds, "Painting Pretty Pictures." 8.46: Eileen Castles, soprano, "The Minkin Ball." 8.54: Eileen Castles, soprano, "Waltz Song"—Tom Jones. 8.57: The Vagabonds, "Mademoiselle Mimi." 9: Ernest Sage, baritone, "Out of the Past." 9.5: The Vagabonds, "Me and My Shadow." 9.12: "Russian Lullaby." 9.12: Frank and Francis Lutz, song, "Me and My Shadow." 9.13: "Aloha, Baby Boy." 9.15: The Vagabonds, "My Idea of Heaven." 9.16: "Golden Gate." 9.24: Jack Lumsdaine, whispering baritone (The Radio Rascal), "My Blue Heaven." 9.27: The Vagabonds, "I Can't Get Over a Girl Like You." 9.28: "When I'm With You." 9.31: "I Ain't Got Nobody." 9.35: Eileen Castles, soprano, "Serenade." 9.36: The Vagabonds, "Dance of the Tinker Toys." 9.37: "The Wind Blew Through His Whiskers." 9.38: The Vagabonds, "On a Dew, Dew, Dew Day." 9.39: Miss Annabelle Lee, "Hustling Hunkler." 9.40: Frank and Francis Lutz, duet, "Aloha, Baby Boy." 9.41: "A Song to Hawaii." 9.42: The Vagabonds, "Look in the Mirror." 9.43: "Who-oo-Yon-oo, That's Who." 9.44: "The Wedding Waltz." 9.45: Jack Lumsdaine, whispering baritone (The Radio Rascal), "Hullo, Helen." 9.46: The Vagabonds, "The Sunrise." 9.47: "Half a Moon." 9.48: "Blowin' off Steam." 9.49: Eileen Castles, soprano, "Cradle Song." 9.50: The Vagabonds, "She Belongs to Me." 9.51: "Just a Little Cutor." 9.52: "Yule Blues." 9.53: The Vagabonds, "My Hawaiian Evening Star." 9.54: "Lady Do." 9.55: "Stay Out of the South." 9.56: "Pimpinella." 9.57: "The Spell of the Moon." 9.58: "Down Kentucky Way." 9.59: "Yesterday." 9.60: "There will Come a Time." 9.61: "Red Lips." 9.62: "Kiss Me Blues Away." 9.63: "My Idea of Heaven." 9.64: "The Magic of Moonlight and Love." 9.65: "Punny Tune." 9.66: "Sing Me a Baby Song." 9.67: "I've Got a Yes Girl." 9.68: "God Save the King."

FRIDAY, APRIL 13.

- 8 p.m.: H. K. Love, "Technicalities." 8.10: Collingwood Citizens' Band, waltz, "Reflections." 8.17: Eileen Castles, soprano, aria, "Tosca." 8.18: "Bells of Shandon." 8.24: T. A. Stewart, president of the National Rose Society, "The Rose Show." 8.34: Collingwood Citizens' Band, march, "Silver Wood." 8.35: Intermission. 8.36: Eileen Castles, soprano, "The Minkin Ball." 8.37: "The Minkin Ball." 8.38: "The Minkin Ball." 8.39: "The Minkin Ball." 8.40: "The Minkin Ball." 8.41: "The Minkin Ball." 8.42: "The Minkin Ball." 8.43: "The Minkin Ball." 8.44: "The Minkin Ball." 8.45: "The Minkin Ball." 8.46: "The Minkin Ball." 8.47: "The Minkin Ball." 8.48: "The Minkin Ball." 8.49: "The Minkin Ball." 8.50: "The Minkin Ball." 8.51: "The Minkin Ball." 8.52: "The Minkin Ball." 8.53: "The Minkin Ball." 8.54: "The Minkin Ball." 8.55: "The Minkin Ball." 8.56: "The Minkin Ball." 8.57: "The Minkin Ball." 8.58: "The Minkin Ball." 8.59: "The Minkin Ball." 9.00: "The Minkin Ball." 9.01: "The Minkin Ball." 9.02: "The Minkin Ball." 9.03: "The Minkin Ball." 9.04: "The Minkin Ball." 9.05: "The Minkin Ball." 9.06: "The Minkin Ball." 9.07: "The Minkin Ball." 9.08: "The Minkin Ball." 9.09: 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NEWS FOR THE CHILDREN

GIANT LOUDSPEAKER

New York has a new device which enables one million people within a radius of one mile to hear one man speaking in an ordinary voice into a telephone. This wonderful loud-speaker is situated at the top of the laboratories of the Bell Telephone Company. An expert, Mr. R. W. King, crossed the Hudson from New York and, about a mile away, spoke into a telephone on the top of a cliff. He said: "Hallo, can you hear me?" and in about five seconds his words came booming back across the harbour. The sound came so suddenly that Mr. King burst into laughter, which in a very few seconds also came roaring back again!

Although this giant speaker produces such a big volume of sound, the diaphragm is only about the size of a watch. It is made of light aluminium alloy, thinner than gold leaf, around which is wound a coil of aluminium wire finer than thread. The voice causes the wire to vibrate and the air chamber between the diaphragm and the mouth of the horn is specially shaped to give a maximum of sound and clarity.

TOO BIG!

We often hear of fat people trying to get thin, and of thin people trying to get fat, and of short people trying to grow tall, but have you ever heard of someone trying desperately to keep short?

There is a sad tale to be told of a page boy at the Savoy Hotel, London, where the maximum height of page boys is four feet six inches.

This particular 15-year-old boy has suddenly shot up in the last two months, and is now within one-third of an inch of the dreaded maximum.

He has tried everything; if he starves himself he gets thinner, but also taller; smoking only seems to give him added inches. He is now reduced to wearing heelless boots.

It is a sad story.

WIRELESS PICTURES IN COLOUR

Yet another triumph of wireless transmission is promised. Not only pictures in black and white but pictures in colours, it is said, can now be sent by wireless.

As in colour printing, each colour used is sent separately, and the whole is reassembled, as it were, at the receiving end. The announcement is made by the American Telephone and Telegraph Company, which conducted the recent demonstration in picture wireless between Washington and New York.

A LIMERICK.

There once was an obstinate hoodoo
With manners exceedingly roodoo,
When told that he might
Be a bit more polite;
He replied: "I won't do it, but yoo-doo!"

Children's Sessions for Next Week

AT 1YA.

Tuesday, April 17.—Uncle George with us again, Mrs. Humphrey-Steward and her pupils assisting. Rollicking choruses, songs and recitations. A merry evening in store.

Wednesday.—Here's Uncle Tom, with all sorts of original ditties and jokes. Uncle Tom's hour is never long enough, and he has some little ones assisting.

Thursday.—Peter Pan will entertain you. There's some good news, the Bayfield School Choir are with us again, so look out for some good choir numbers, as well as songs and recitations.

Friday.—Nod, with some splendid stories and jokes, and a band of young people, who are giving a Dickens playette.

Saturday.—Cinderella and a number of Radio cousins will entertain you with songs, recitations and flute solos. There will also be stories, letters and birthday greetings.

AT 2YA.

Monday, April 16.—Uncle Jeff and Aunt Gwen have surprises in store for little minds. Riddles, puzzles, word pictures and songs.

Tuesday.—Uncle Jasper and the immit-

able Spot. It is whispered that Felix has appeared on the scene. Spot and Uncle Jasper will prove a match for him. The pupils of St. Mark's will join in Uncle Jasper's jolly hour.

Thursday.—Uncle Sandy will again delight his magic band of listeners. Rhymes and stories fall trippingly from his tongue. Miss Petersen's pupils have a bright array of songs to spread before you.

Friday.—Uncle Ernest interests our merry ring of young and old. Stories of animals and travelling that make you hold your breath. Mde. Mueller's pupils will sing in their usual dainty and pleasing manner.

Saturday.—Auntie Dot and Uncle Toby on April 21. Auntie Dot has imaginative stories and Uncle Toby is a veritable storehouse of novelty acts. The members of the Junior Red Cross from Sacred Heart Convent, Lower Hutt, will enter into the fun.

AT 3YA.

Monday, April 16.—Oh, Ho! for Uncle Jack and Aunt Edna, with their lovely stories and songs, and a band of merry singers from the Shirley School.

Wednesday.—To-night Uncle Peter and Mother Hubbard provide a jolly hour at bedtime. Cousin Gwen will sing some songs for the little folk, and Cousin Laurie is bringing his violin along to join in the fun.

Thursday.—"Hooray" for the Jolly Miller, who has some fine stories for you all; and with the Sydenham School singers will pass the all-too-short bedtime hour away.

Friday.—Here's Big Brother back again for to-night, so listen-in to welcome him, for he has something special to tell you! The Girls' Citizen League from the Y.W.C.A. are coming along, and you may be sure of a splendid hour's entertainment.

Saturday.—Uncle Sam, Aunt May and Aunt Vi will endeavour to chase dull care away with songs and stories, old and new, for boys and girls and all of you.

Sunday.—Everyone listeners-in to-night to the Children's Song Service. Uncle Sam will tell you another story about "With God Among the Flowers," and the children from the Linwood Congregational Sunday School will sing the hymns during the service.

A WONDERFUL DRINKING-TROUGH.

A farm at Lenton, Nottinghamshire, England, which is owned by the Prince of Wales has a wonderful drinking trough for cattle. When an animal is drinking, the pressure of its muzzle on a flange causes a fresh flow of water into the trough, by means of an electric device. When the animal has finished and the pressure is removed, the water is automatically shut off.

A MISCHIEVOUS CHIMPANZEE.

Sally, one of the London Zoo's young chimpanzees, has found a new interest in life, for her cage is being wired for electricity and she is determined to make the work as difficult as possible.

The electrician can never find his tools because Sally steals the tool bag and hides its contents under her straw. Measuring lengths of iron casing is almost impossible because Sally is particularly interested in the proceeding, and as soon as the electrician thinks that he has measured correctly the ape upsets his calculations by jerking the casing.

Fortunately, the chimpanzee is gentle and good-tempered, and when the electrician prepares to depart after a strenuous day Sally is so disappointed that she tries to delay his departure by holding on to his possessions and pulling hard.

A POCKET WIRELESS

It is probable that the United States police will shortly be supplied with pocket wireless sets.

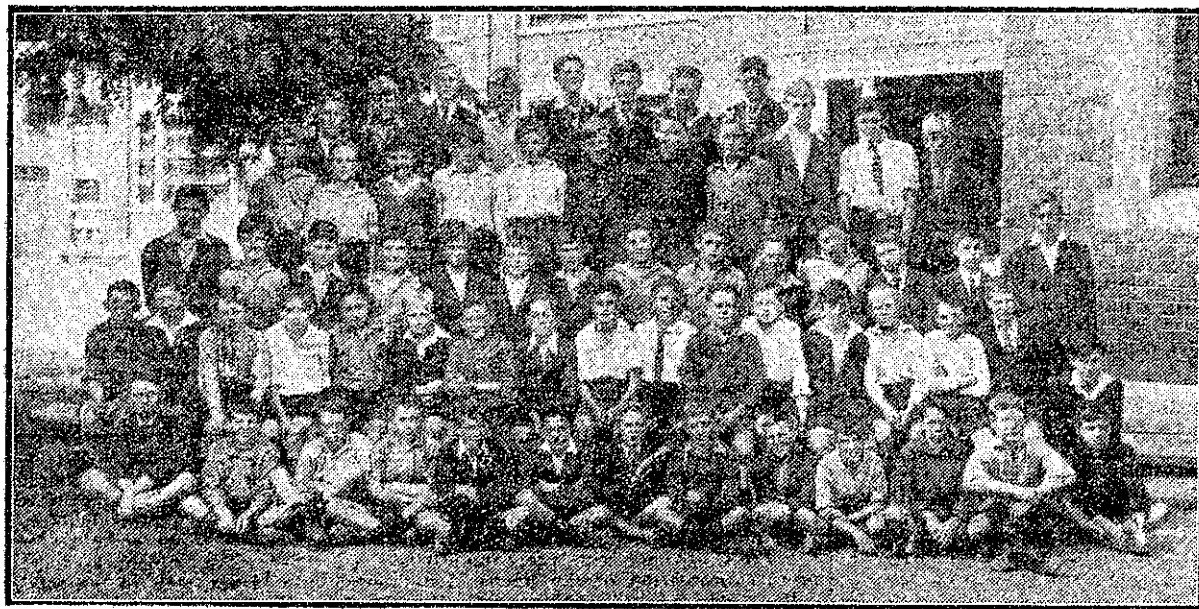
The whole device is contained in a small box which fits the pocket and holds, among other things, a miniature valve and tiny batteries. The policeman will also be provided with a pair of collapsible ear-phones, and the aerial will consist of a short wire stretching from the lapel of his coat.

When an alarm is broadcast from headquarters a tiny lamp in the policeman's jacket will light up; this is the signal to listen-in. He will take out his ear-phones and, provided he is not more than three and a half miles away, will be able to listen to any announcements from his station.

It is to be hoped that programmes from the local broadcasting stations will not prove too distracting for him.

FRIENDS

"Stick to me," said Billy,
"And I will stick to you.
Although you're only got one leg,
I'll always walk with you.
I'll take you in my hand,
We'll manage, slow or quick,
In step to keep, on flat or steep,
My stout friend Walking Stick."
—B.A. S.



These boys are frequent performers at the Children's Sessions at 3YA. They will be on the air again on Thursday, April 12.

GOING—GOING—GONE!

THERE was once a little mouse,
And a little black cat,
Who lived in a house . . .
And that was that!
But since they met the worst is feared,
For the little mouse has disappeared!
E. L. R.

IMPORTANCE!

MY address is "The Hall,"
And come rich or come poor, at
My "place" they must halt—
Though I'm only the doorman!

A TRAIN WITH WIRELESS

British trains are the fastest in the world, yet they are not so fast as they were. In 1901 a train actually developed speed of over 102 miles an hour, but now designers care less for speed records and more for the comfort and safety of passengers.

The most luxurious train on earth runs between Berlin and Hamburg, and carries a wireless installation which makes it possible for passengers to carry on telephone conversations with distant friends or business firms. If trains do not get faster they certainly get more wonderful as time goes by.

TOM TUCKER'S SONG.

SING a song of Back-to-School
(What a cheery song!)—

"Rags" in all the corridors,
Footer going strong!
Everybody full of beans
Talking of their luck
At Christmas-time . . . and lots of
boxes
Crammed full of tuck!

E. L. R.

owned and operated by the Radio Broadcasting Company of New Zealand, Ltd., and considers that the whole matter of broadcasting in New Zealand calls for official investigation by the Government at an early date. (9) That copies of this resolution (Number 8) be forwarded to the Radio Broadcasting Company, the Postmaster-General, the Post and Telegraph Department, the Prime Minister, the three local members of Parliament, Messrs. Bellringer, Walter and J. C. Rolleston, as well as the radio societies with which this society is in touch.

HOW TO RUN RADIO

AUCKLAND LEAGUE'S PROPOSAL.

G. McB. Salt, secretary to the Auckland Listeners' League, writes:—In your issue of March 30 you stated your willingness to publish a scheme of co-operation between the Radio Broadcasting Company and listeners as drawn up by the executive of the Auckland

Listeners' League. My executive has instructed me to forward to you the enclosed scheme, which embodies their ideas of real and effective co-operation. The suggested method of co-operation deals mainly with the arranging of the matter to be broadcast. Regarding the Broadcasting Company's suggestions for "listening posts," etc., my executive does not consider it necessary to express an opinion as it is entirely a matter for the company.

PROPOSED SCHEME FOR CO-OPERATION IN BROADCASTING.

1. It is recognised as essential to the welfare of broadcasting that some definite system should exist whereby those in control of the service, and those enjoying the benefits for which they pay annual fees, should act together in every possible way, so that our radio service may be consistently advanced. To reach this goal a concrete plan, definite in detail, workable, and acceptable to all parties is necessary. The following proposals are submitted to this end:—

2. There shall be created a national radio board, the duties of which are hereafter outlined, and a district radio committee associated with each station, in an advisory capacity. The constitution and powers of these bodies should be:—

3. National radio board (constitution).—Two representatives of the Radio Broadcasting Co., two representatives of licensed listeners, one from each island, and the Postmaster-General or his deputy, who shall preside at all meetings. 4. The listeners' representatives on the national board shall be appointed, one by the senior magistrate of each island, for a period of two years. Such

representatives must be radio licensees, nominated by at least 25 licensed listeners, such nominations to be published in the daily Press. In making the appointment the magistrate shall take into consideration the ability of the nominees to conserve the interests of the listeners. The listeners' representatives shall not be:—(a) employees of the State, (b) employees of any person or firm directly interested financially in the Radio Broadcasting Co., or serving that company in any capacity. (c) A member of the executive of any radio league or society.

5. The scope of the national board shall embrace:—(a) Confidential access to the financial operations of the company. (b) Consideration of full details of the general policy and the programme policy of the company. (c) The advising of the district committees regarding the programme policy. (d) Adjudication on matters brought before it by district committees, and recommendation of action on suggestions placed before it by the Broadcasting Company, the P. and T. Department, radio leagues, the radio trade, and individual listeners. (e) Advising generally in all matters appertaining to the advancement of broadcasting, and particularly with regard to the issue of further transmitting licenses. (f) The submission, after each meeting, of its recommendations to the company, who shall be required to act thereon, provided always that the company shall have the right of appeal to the Minister should it consider any recommendation inoperable. (g) The issuing to the Press of such report of its deliberations as the board may consider to be in the interests of the public. (h) The fixing of the board's meetings at intervals not exceeding three months, and (at its first meeting,

the arrangement for paying the expenses of its members.

6. District Advisory Committees.—At each station controlled by the company there shall be set up a district advisory committee, consisting of the local station director or another representative of the company, a duly appointed representative of licensed listeners, and the district radio inspector or his deputy, who shall preside. This committee shall have power to co-opt for any special purpose the services of any individual whose advice may be of benefit to their deliberations.

7. The listeners' representative shall be nominated by at least twenty licensees of the postal district served by the station, the district telegraph engineer to make, from the list of nominations, an appointment for a period of twelve months. The appointee must be resident within convenient distance to attend weekly meetings, and his appointment must conform with the conditions enumerated for the appointment of listeners' representatives on the National Board.

8. Duties of District Radio Committees.—(a) To receive from the company confidential particulars of the money available for programmes at the stations. (b) To recommend to the company the expenditure of this money on the most suitable programmes, and to submit such programmes for the company's approval or otherwise. (c) To endeavour to arrange, and to allot times for, specialised broadcasting, such as religious, sporting, concert programmes, orchestral or other relays and to make recommendations to the company for the efficient conduct of these. (d) To exploit fully the field of talent available for each station, to investigate the possibilities of broadcasting suit-

able novelties, to approach visitors capable of providing interesting items, and to make recommendations to the company in connection therewith. (e) To recommend any features that will popularise radio, particularly in country districts. (f) To act as a connecting link between listeners, dealers, and all bodies interested in broadcasting, on the one hand, and the company on the other. (g) Generally to render all such assistance and advice as will tend to improve the programmes of the station concerned.

Wireless Schools

A School is judged by the examination results.

See the numerous letters of appreciation from the Students we have coached, and are now in good positions.

Highest percentage of results and appointments in New Zealand. Principal: Mr. J. O. Taylor, A.M.I.R.E. (two first-class P.M.G. Certificates); 20 years' Wireless and Electrical Experience; 10 years' N.Z. Coaching.

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The Growth and Work of the "B.B.C."

We are indebted to "The Dominion" for the following interesting article by Miss Nellie

M. Scanlan, on the British Broadcasting Corporation and its growth and work.



WHEN the B.B.C. (British Broadcasting Corporation) asked Bernard Shaw to speak on the wireless, and not say anything controversial, Bernard Shaw tossed his wintry beard and laughed. Whoever heard of a man saying anything worth while that was not controversial! There is a very rigid regulation about the English radio programme, that nothing controversial shall be said over the air. One may justly qualify that and state that this exclusion really applies to major controversial subjects, such as religion and politics. One would not fling heedlessly at England's ten million radio audience a discussion on birth control, prohibition, or the revised Prayer Book.

Almost any man who makes a statement on the air, about anything from the weather forecast to raising chickens, starts an argument in some household. Households are like that. They need only the theme; the will to controversy is always there.

2LO'S HEADQUARTERS.

ENGLAND'S radio headquarters are on Savoy Hill, behind the Savoy Hotel. Savoy activity, is now too small for the 500 or more people it employs. There are many departments in this army, with a general at the head of each group. I was passed from hand to hand, through a long line of generals, until, speaking of facts and figures, I had reached saturation point.

The mechanical side of wireless merely bewilders me. A tall, learned engineer led me through ranks of studios, where, amidst hangings and draperies, he explained the strange antics of "frequencies" if you don't watch them. He talked in scholarly fashion of real and artificial echoes, and I could see from the pride in his eye that the one he had manufactured in the next room, where the sound was taken by force, had its "frequencies" stripped and regulated, and an echo of perfect uniformity attached before being allowed to escape to the outside world, was his pet.

IN THE STUDIOS.

WE looked through glass peepholes into occupied studios. A red light over the door enjoins silence, as it indicates that a performance is in progress. A blue light also denotes that the performance is a rehearsal. All programmes are carefully rehearsed.

In one studio a military band was blasting out a stirring tune. In the next the peephole revealed a Jewish soprano, in the throes of a top note, with a handful of orchestra holding tone in suspense, until she should condescend to vacate it. At last she did, then wriggled her torso as though to invite a return to normal of much displayed

muscle, while the conductor tossed a mane of tangled hair from his eyes. It looked as though it might have been a slab of grand opera.

In corridors we tripped over men with saxophones, and euphoniums, side drums, and double basses, and women—old and young, curled and soured, pert and frowsy, but all hopeful—waiting with a music case or a mandolin. And fragments of chatter reached the air, ariel talk all of it, about microphones and music, and how Masie sang last night.

TEST FOR ASPIRING ARTISTS.

ONCE upon a time, anyone who had the stirrings of ambition, could have an audition at the B.B.C.

"Some of them were very short," said the Radio General with a smile. "We had to protect ourselves against such waste of time. Now all aspiring artists must fill in an application form, giving full particulars of their achievements, and experience, and, in the case of singers or musicians, the application must be countersigned by the teacher, or two well-known musicians.

An audition is then granted, one judge sitting in the room, and the other listening-in to hear how it comes over the air. If they pass this test, they may secure an engagement for morning programmes, and if they make good here, then promotion to the more popular evening concerts may follow.

The fees paid range so widely that it is impossible to strike an average, and as the B.B.C. include some of the best-known artists, very high prices are sometimes paid, but much of it is necessarily on a lower scale.

PROGRAMMES IN THE MAKING.

AFTER much climbing of many stairs we come to an upper chamber, a clearing-house where all the programmes pass through. Here again, among mechanism that looked rather like a modern telephone exchange, I was attacked with much scientific data. I emerged from it with a definite admiration for the system that, on long distance transmissions can, four or five times, take the sounds which apparently lose in high frequencies, and gain in the lower, and equalise them at every station en route. They arrive out of proportion, as it were, and are instantly remodelled and sent forth on the next lap of their journey, perfect in tonal contour. It was all very wonderful.

England, as elsewhere, is not satisfied with its radio programmes.

"How in the world can you expect to satisfy ten million people," said one of the radio generals.

"There are 2,300,000 licensed wireless sets in England to-day, and I cannot say how many home-made affairs in the attic, with no license. But that is the job of the Post Office to run them to earth. Taken statistically, that gives

as a potential audience of ten millions. And the man who can design a programme to satisfy all these has not yet been born on this, the earth. We get about 80,000 letters annually, and what one applauds, another condemns. But we have our own professional critics, who regularly listen-in and report."

EARLY DEVELOPMENT.

FIVE years ago the B.B.C. was a private company, the radio firms being the large shareholders. It ventured timidly out into an unknown world—a world of wireless wanderers. There was no precedent to guide it; it had to feel its way cautiously. Experimental stations and equipment, tentative methods, and programme, provisional restrictions, and regulations were necessarily part of its policy.

Just a year ago the B.B.C. became a corporation with the Royal charter. The Post Office still issues the licenses, tracks down the unlicensed, and does other odd jobs, for which it receives equivalent to about 25 per cent. or more of the license fees. As there are no shareholders, there are no dividends, the original shareholders in the company having been paid back, and the corporation runs on its earnings.

From license fees they receive something less than a million annually. But this is not their only source of income. The B.B.C. has developed a publishing branch. In the "Radio Times" is published the full alternative programmes for the week, with much detailed information about the artists and the productions. There is also a lot of reading matter relative to wireless from the mechanical side.

"We hope to make this a national weekly, from an editorial point of view," said the Radio General, "and not confine it entirely to wireless news."

CHOICE OF FOREIGN PROGRAMMES.

"WORLD RADIO" is another publication, dealing with wireless at home and abroad, and giving the day and hour of every foreign programme. If you follow the "Radio World," and have a set strong enough, you may listen to the bedtime stories of an Uncle in Lithuania, "The Passing of Moya" in Dublin, a talk on "The Volga-German" from Austria, a symphony concert from Czechoslovakia, the prelude to Parsifal from Paris, weather from Switzerland, Divine service from Pittsburgh, while Schenectady will give you "The Stetson Parade," whatever that may be. A wide range of choice.

These two publications are proving very profitable, and their profits enable the B.B.C. to put into programmes a greater proportion of the license fees. But they are not content with this

alone. When copyright permits (and copyright is one of their big items), pamphlets containing the words of plays or operas are published and sold, for these greatly enhance the enjoyment of a radio performance. To sit by the fire, book in hand, and follow every word is a great assistance.

AIDS TO INSTRUCTION.

REGULARLY French is taught over the wireless, and many people take this course. To supplement the instruction on the air, booklets containing each lesson are sold, so that eye and ear are trained simultaneously, and that great difficulty, pronunciation, is overcome.

Large numbers of the English schools now have radio installations. Series of lectures are given for school children, covering history, travel, geography, music, literature, and many other subjects. Booklets containing a synopsis of the lecture, prepared by the lecturer, and published by the B.B.C., are supplied to the schools free. This enables the scholars to check and correct statements not clearly understood or heard, and stimulates a further interest in the subject.

The B.B.C. nourishes the hope that one day the Government will recognise this educational service, and assist in the publication of the school pamphlets.

I think it was America who coined the phrase, "Make a little talk," for they have a perfect passion for lectures in the United States. England does not relish being lectured to such an extent, and the hours devoted to talking on the wireless have been the subject of a heated controversy.

WHAT DO THE PUBLIC WANT?

RECENTLY the "Daily Mail" took a straw vote as to the public's opinion on the present wireless programmes. The result was in favour of more music and less talk.

"It would be difficult to say what is the most popular form of wireless entertainment," said the Radio General, "but light music—popular songs, small orchestras with the type of selections favoured in restaurants, and military bands—are probably the most in demand. Yet, of course, that can be overdone, as there is also a great demand for other phases. The talks, about which there is so much fuss at the moment, include comments on sporting events. That is a man describing a football match, boxing contest, or the boat race as it is in progress. There is also what we call the 'eye-witness account,' that is, the story of an event related afterwards by an eye-witness. The weather forecast, stock reports, day's news budget, topical events—all these come under the heading of talks, which, at most, occupy only 14 per cent. of the total programme."

Then we come back to the original question of whether these talks might not be widened to include more controversial subjects. On the Board of Control there is one woman, and a very able woman, Mrs. Phillip Snowden. A few weeks ago there was a suggestion that she might not be on the board for very long, despite the fact that it carries, I think, £800 a year salary. Mrs. Snowden has been actively engaged in fighting for more freedom of speech on the air, a wider interpretation of the non-controversial regulation.

"When Bernard Shaw spoke over the radio, of course he broke every rule and regulation in the matter," said the Radio General. "But we do not permit debates now on topical or abstract subjects, such as 'Is sport a menace?' or 'Is chivalry dead?' But always, we extract a pronouncement that is not controversial will be introduced."

THE CONTROVERSIAL ASPECT.

CONTROVERSIAL, in the radio sense, is therefore hard to define. But Mrs. Snowden would favour using the air by the respective political party leaders and authoritative speakers, on questions of vital national importance, in order to ensure the real facts on all sides reaching the remotest people.

At the moment, this subject is under serious consideration. It contains wide possibilities for good or ill, and both must be weighed, but the Radio General would give me no hint of the possible decision.

The London station is 2LO, but there are a number of stations and relay stations throughout England. Daventry 5XX is really the same as 2LO, and what you hear from one you hear from the other. The perpetual argument about what the people want has led to the development of an alternative programme. So now they have built another station at Daventry, 5GB. It is hoped in time to duplicate every station, and so provide the whole of England with the alternative programmes. If you don't want to listen to bedtime stories on 2LO you can have your military band on 5GB, and if you are weary of the opera on 5GB you can switch on to the boxing report on 2LO.

When I asked if they welcomed every new development and improvement in wireless, the Radio General looked aghast. I felt they were praying for a period of stabilisation, in order to ensure a reasonable life to their present equipment.

"You can't scrap thousands of pounds worth of gear for every five per cent. improvement," he said.

Over the felt-covered desk, where the talks, nightly talks, was a notice. "If you sneeze or cough you will shatter the nerves of thousands of people." "A mild exaggeration?" I asked. The Radio General nodded.

PROGRESS IN 1927

AN AMERICAN REVIEW

(By Dr. Alfred N. Goldsmith, Chief Broadcast Engineer, Radio Corporation of America.)

There are some years in the development of radio which mark the end of one era and the beginning of another. Among these years has been 1927, for during this year certain basic tendencies have proved their importance in radio development, have been definitely accepted by the engineers and the public, and may now be expected to lead to continued further development along proved lines.

It is now recognised that the era of unregulated or only partially regulated radio transmission has come to an end. The passage of the Federal Radio Act of 1927, and the appointment of the Federal Radio Commission under the provisions of the law, have for the first time enabled the Governmental regulating powers to be exercised systematically in the direction of minimising interference between broadcasting stations and allocating frequencies to such stations based on a nationally applicable plan, and yet flexible toward local conditions. The excellent preliminary work of the Department of Commerce along these lines prior to the passage of the 1927 Radio Law has been utilised as a foundation by the Federal Radio Commission. One great contribution of the commission has been its consistent unwillingness to permit the erection and operation of unnecessary additional broadcasting stations in regions already adequately served.

The circumstances just mentioned have had a considerable influence on radio receiver design. Since it has become evident that an indefinite multiplication of stations will not be permitted, and that the congestion of stations in a given district will be greatly reduced and the field strengths corresponding to the various programme signals will be systematically increased, the designers of receiving sets have been enabled to produce generally useful but simple and compact receivers with greater assurance than heretofore. It is now reasonably certain that stations of considerable power having frequency allocations less than 50 kc. apart will not be erected within a given district; that the building of powerful stations in regions of high population density will be discouraged; and that stations giving a demonstrably valuable service to the public will be

afforded channels for clear reception up to the reasonable range of the station.

Concurrent with the use of transmitters having a power of several tens of kilowatts has been the inevitable improvement of radio reception in millions of homes. Signal field strengths capable of riding above local man-made and atmospheric electrical disturbances have become so common in the more fortunate districts that the listeners have been definitely educated to regard such powerful and clear signals as normal. At the same time, the average listener naturally is dissatisfied with the feeble and mangled signal from distant stations, and, as a result, only those listeners who are compelled by their location to listen exclusively to distant stations constitute any considerable percentage of "long-distance searchers." This change in listener psychology, corresponding to a demand for loud and clear signals, and a refusal to listen to weak or mutilated signals, together with a considerable loss of interest in distant reception, has brought to the fore the matter of quality or fidelity of tone reproduction. The influence of this demand by the listeners has led to the widespread use of higher quality loudspeakers, capable of giving considerable sound intensities, and fed from so-called "power valves" in the last audio-frequency stage of the receiving set. Where a few hundredths of a watt was at one time regarded as adequate for the final practically undistorted audio-frequency output of a receiver, to-day a power in excess of a watt is becoming common.

As a result of this evolution in the acoustic system of receiving sets, listeners are now enabled to secure a reasonably faithful and natural reproduction of the original performance, and an increasingly critical musical faculty is being developed among listeners. Persons who, several years ago, hardly knew one note from another, are to-day enjoying well-reproduced symphony concerts, and are developing a real understanding of the higher types of musical entertainment.

The listeners are concentrating their attention on local stations, which give high-quality programmes, and produce loud and clear signals in their vicinity, and this audience demands receiving sets having excellent tonal quality of reproduction, with adequate volume of sound. As is but natural, such listeners also insist upon simplicity of operation.

We have, therefore, also come to the end of the era of radio receivers, which are too complicated to operate. To-day, the single selector (tuner) type of receiving set is practically standard. A minimum of receiver adjustments is regarded with favour by the listeners, and, even more marked, is the tendency to

ward socket power operation of receiving sets. The replacement or charging of batteries is on the decline. Simple and reliable receivers, utilising lighting circuit powers exclusively for their operation, have now become widely available, and the public response to them has been so enthusiastic that there can be no question that the socket-power-operated receiver is the type to be most generally used during the next radio era.

A number of receiving sets have been made available during 1927, which clearly belong to the new era in radio reception.

RADIO ON MILE-LONG TRAIN

GUARD TALKS TO ENGINE-DRIVER

An American Associated Press message from Albany, New York State, dated January 26, stated.—A new chapter in railroad history was written to-day, when, for the first time, the front and rear ends of a mile-long moving freight train maintained two-way communication by radiophone with a railway signal tower.

R. W. Rice, Jun., R. P. Edwards, and W. B. Potter, officials of the General Electric Company, where the radio equipment was designed, talked from the signal tower at South Schenectady, to D. B. Fleming, general manager, and E. C. Keenan, general superintendent of telephones and telegraphs of the New York Central system, on board a New York Central freight train.

The General Electric Company men questioned the railroad executives concerning the efficiency of the new radio control of the train, and the railroad men replied that it was successful in every aspect.

One Hundred and Eleven Cars.

The train, consisting of 111 cars, and more than a mile in length, made the run from the New York Central train yards at Selkirk, near here, to Utica, with caboose (guard's van), and locomotive cab in constant communication. The order to start the train was given from the caboose to the engineer, more than a mile ahead, and instructions for the Utica stop were transmitted in the same way.

Railroad executives on board the train expressed the belief that radio installation on long freights eventually would become universal. Heretofore, communication between cab and caboose has

been either through the medium of visible signals such as flags or lanterns, or by the necessarily restricted dot and dash code, by locomotive whistle or compressed air line.

A Remarkable Aid.

The use of the radio in freight operation is expected to lessen the delays resulting from defective equipment, inasmuch as the engine driver can be informed instantly regarding the trouble, instead of waiting until a trainman negotiates the long, and at times perilous, route from caboose to locomotive. It also facilitates the cutting of cars on sidings, as well as abating the danger of accident to trainmen while running over the tops of cars in stormy weather.

Equipment Described.

Transmitting and loudspeaking receiving apparatus were installed in both locomotive and caboose. The 50-watts power for the transmitter was furnished on the front end of the train by the locomotive headlight generator, and in the caboose by a generator harnessing the power developed by the revolving axles. The signals were transmitted on a wave band of 109 to 180 metres. The locomotive transmitter was placed in suspension springs in the rear of the tender, with a brass rail acting as an antenna. The caboose transmitter was stowed in a closet, while a wire strung along the roof supplied the aerial.

NEW ELECTRIC THEORY

VIBRATION, NOT FLOW.

The electron theory is generally considered to be the explanation of an electric current. The free electrons which every atom is considered to have are supposed to be able to move along a conductor, the ends of which are subjected to a difference of electrical pressure, so that a "current" would be simply a flow or movement of electrons along the conductor.

That the theory has many limitations is recognised by all serious-minded investigators, notably that like charges of electricity repel and unlike charges attract one another; whilst the opposite is true throughout almost the whole realm of science.

But because the theory fits in so well with our experiments it is usually accepted as being sufficient. In a paper read before the Wireless Institute of Australia (Vic. Div.), at its last meeting, an entirely different theory was put forward by Electrical Commander Creswell, R.A.N.

INTERESTING SUGGESTION.

Briefly, Commander Creswell's theory is that an electric current is not a flow of electrons, but a vibratory movement of the ether medium in all atoms of matter, and in space in which electrons are suspended in characteristic atomic formation, just as the worlds and heavenly bodies are suspended in space. The movement of the ether medium causes an increase in the normal vibration of the electrons within the electron, as opposed to the movement of free electrons from atom to atom along a conductor or conducting path.

Commander Creswell has developed his theory very fully, and applied it to many branches of physical science, and the theory appears to open up a very fascinating field for investigators.

NEW PRIMARY BATTERY

AN AUSTRALIAN INVENTION.

A new primary battery with a voltage of 2.5 per cell and lasting for 50 hours with a current drain of one ampere has been invented by a Mr. W. A. Bleek, of Queensland. The battery operates on the Leclanche principle, but is totally different in action. The elements are of carbon and zinc, but two liquids are used instead of the customary ammoniac. In addition, the cell cannot become polarised, so, therefore, can give a constant current for many hours. The cell consists of an outer container of glass; a perforated carbon cylinder, a special porous pot placed inside the carbon, and a zinc pole of special design.

Current is produced immediately, and for the demonstration a 16 c.p. lamp was lit, from two cells connected in series, within half a minute of assembling them.

Mr. Bleek hopes to leave shortly for England to have the battery manufactured, as difficulty has been experienced in obtaining the necessary materials in Australia. On test the cells showed 4½ volts when discharging at 1½ amps, so it will be seen it is suitable for most radio work.

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