

# Findings of Australian Commission--Professional Trio for 2YA--The Church and Broadcasting--Listeners' Conference

## THE RADIO RECORD

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## Australia's Royal Commission on Wireless

### A Valuable Guide for New Zealand Development

Herewith we give the full summarised recommendations of the Australian Royal Commission on Broadcasting. These are of outstanding importance and of great value to New Zealand as providing a foundation of experience and viewpoint that will greatly assist in the development of our broadcasting service. The Commission approves the retention of private enterprise, subject to definite official oversight, and makes important suggestions for spreading the broadcast revenue so as to give the fullest possible service to scattered territories.

#### BROADCASTING AND RELAY STATIONS.

1. That the control of broadcasting stations should remain in the hands of the Postmaster-General as at present, subject to the administration by an Australian Wireless Committee as hereinafter recommended and to the following further recommendations.

2. That the Postmaster-General should issue no further "A" Class licenses until he is satisfied that the available revenue and the need of a satisfactory service justify such issue.

3. That the revenue derived from listeners' license fees throughout the Commonwealth should be pooled and distributed as follows:—  
(a) Deduct therefrom the Postmaster-General's proportion to cover the cost of administration and departmental research.

(b) Pay to each "A" Class station thereout, the amount of £5000 towards working expenses.

(c) Distribute the balance of the available revenue amongst the "A" Class stations under and in accordance with the present regulations.

4. That the co-operation of the stations to effect interchange and improvement of programmes and more equitable distribution of revenue subject to strict control by the Australian Wireless Committee to secure efficient service to the public should be encouraged.

5. That the Australian Wireless Committee should deal with applications for licenses for relay stations on their merits and the Commission does not recommend any obstruction being placed in the way of such proposals and land lines should be made available at the lowest possible rental.

6. That until further research has been made into the relative merits of higher-power stations and relay stations, licenses for the former should not be granted. That research to determine this question should be put in hand as rapidly as possible.

7. That a reallocation of wave-lengths be made immediately within the present wave bands.

8. That the location of all existing broadcasting stations should be reviewed before the expiration of the existing licenses and that it be referred to the Australian Wireless Committee to determine in each State the most suitable location for present and future broadcasting stations. In determining the position, the evidence of Electrical Commander Cresswell, and of Messrs. Fisk and Beard, as to the grouping of stations, should be given serious consideration and the Defence Department should, in every case, be consulted.

9. That the provisions of Regulation 74 (under the Wireless Telegraphy Act 1905-1914) should be rigidly adhered to and enforced.

10. That regulations should be framed restricting the advertising rights of "A" Class stations especially where "B" Class stations are operating.

11. That regulations should be framed requiring all "A" Class broadcasting stations to submit balance-sheets and accounts to the Postmaster-General for submission by him to the Auditor-General.

12. That "B" Class stations should be limited to a transmitting power that will not seriously interfere with transmission from "A" Class stations and that the Australian Wireless Committee should immediately proceed to fix a maximum power for "B" Class stations.

13. That the number of "B" Class stations should be strictly limited in proportion to the population in the area in the vicinity of the proposed sites.

14. That all broadcasting stations should be given clearly to understand that they have no vested right to the renewal of licenses at the expiration of existing licenses.

#### LICENSES—FEES, ETC.

1. That the Postmaster-General should reduce the listener's license fee by such amount as will give the listener in the full advantage of any reduced royalties payable by the Broadcasting Companies to Amalgamated Wireless (Australasia) Limited and/or to the Australasian Performing Right Association Limited and also of any surplus in the amount collected by his department and not utilised for the purposes of administration and research.

2. That where a person satisfies the Postmaster-General that he is a blind person, a license to establish and maintain a wireless receiving set should be granted subject to such terms and conditions and restrictions as the Postmaster-General may think fit, but without payment of any fee.

3. That it be referred to the Australian Wireless Committee to allot definite wave bands to experimenters and due consideration be given to the request of the Wireless Institute of Australia herein.

4. That the regulations should be liberalised to permit greater freedom of exchange of non-commercial messages between experimenters.

5. That in cases where an employer holds a dealer's listening license, he should be entitled to the issue to his employees of further licenses at reduced fees.

6. That regulations should be framed compelling radio dealers to keep a register in which shall be entered the names and addresses of all persons purchasing complete radio sets, and the types and prices thereof and that such register shall at all reasonable times be available for inspection by the officers of the Postmaster-General's Department.

#### COPYRIGHT AND PERFORMING RIGHTS.

1. That persons broadcasting copyright musical works should be made liable to pay royalties to the owners of the copyright.

2. That the principles of Section 19 of the British Copyright Act 1911, Act 1 and 2, Geo. V., Chapter 46 as expressed in the Schedule to the Commonwealth Copyright Act 1912 (Appendix No. 1) should be extended to the broadcasting of copyright musical works by radio.

3. That, inasmuch as by Section 19 of the British Copyright Act 1911, the royalty allowed to be charged or demanded is based upon the ordinary retail selling price of the contrivance used in the publication and this of course cannot be directly applied to broadcasting, some other basis must be adopted.

4. That the Commonwealth representative at the International Conference should advocate that, so far as the Commonwealth is concerned, a limitation be placed on the royalty chargeable for broadcasting copyright musical works as follows:—

(a) In the case of broadcasting stations receiving revenue from license fees, five per centum of the gross revenue of the broadcasting station, or alternatively, at the option of the owner of the copyright, fourpence per performance of each musical work.

(b) In the case of broadcasting stations not receiving revenue from license fees, fourpence per performance of each musical work.

(c) In both cases (a) and (b) no limitation should be placed on the number of copyright items which the broadcasting company may broadcast. (For the purposes of sub-clause (a) gross revenue will, in the case of broadcasting stations within the Commonwealth be deemed to include any proportion of license fees otherwise due to the broadcasting stations but which are for any reason withheld by the Postmaster-General).

#### PATENT ROYALTIES.

The Commission is of opinion:—

1. That the charges made by Amalgamated Wireless (Australasia) Limited on broadcasting companies are excessive, and that they should be reduced to a royalty of 2s. on each listener's license.

2. That the charges made by Amalgamated Wireless (Australasia) Limited on radio dealers are also excessive and detrimental to the development of wireless services within the Commonwealth, and that they should be reduced to a royalty of 5s. on each valve-holder, such royalty to include one valve for each valve-holder.

3. That the attitude of the Company with regard to claims for royalty on separate valves should be immediately defined, and the claims against traders should be abandoned so far as transac-

tions on or previous to the date of publication of this Report are concerned.

4. That the charges made by Amalgamated Wireless (Australasia) Limited on revenue earning "B" Class broadcasting stations should be limited to 10 per cent. of the gross revenue of each station.

The Commission recommends:—

1. That the Commonwealth Government should request Amalgamated Wireless (Australasia) Limited to comply with the requirements contained in the foregoing four (4) paragraphs.

2. That failing compliance with the foregoing requirements, the Commonwealth should take steps to acquire the shares privately held in the Company on just terms to the private shareholders.

3. That prior to the acquisition of shares, the Company should be directed to take all steps to obtain an early decision on the validity of its patents.

4. That the recommendations of the Commission as to royalties on patents should be given effect to both as to future and also as to current licenses as from the date of the publication of this report.

#### PROGRAMMES.

1. That in States where there are two "A" Class broadcasting stations, regulations should be framed to ensure that both stations will not during the evening sessions broadcast news matter, including sporting information, at the same time, and that the stations should alternate the service periodically.

2. That the "A" Class stations should be required to provide announcers who are proficient in the correct use and pronunciation of the English language.

#### SCIENTIFIC RESEARCH.

1. That a special appropriation sufficiently large to enable the present problems in radio to be thoroughly investigated should be made available to the Council for Scientific and Industrial Research.

#### EDUCATION.

1. That broadcasting stations should be encouraged to include advanced educational matter in their programmes.

#### LAND AND COASTAL STATIONS.

1. That all land and coastal stations should be reacquired by the Federal Government and placed under the control of the Postmaster-General.

2. That the consideration, if any, to be paid to Amalgamated Wireless (Australasia) Limited for such stations shall be determined in the event of disagreement in the same manner as on the occasion when the said stations were acquired by Amalgamated Wireless (Australasia) Limited, special regard being had to the fact that the stations are being operated at a loss.

(Continued next page.)

3. That Hobart Wireless Station (V.I.H.) should provide a continuous service, and should be utilised as a means of improving communication between Tasmania and the mainland.

4. That the attention of the Northern Territory Commission and the Postmaster-General should be drawn to the representations made to the Commission as to the need of further wireless stations in the Northern Territory.

5. That, provided sufficient guarantees of revenue are forthcoming, the Postmaster-General should erect and control transmitting telegraph wireless stations for the service of the country Press and others requiring such services.

#### WEATHER FORECASTS.

The Commission is of opinion:—

1. That if the Commission's recommendation as to land and coastal stations is adopted, namely, that they shall be acquired by the Commonwealth and transferred to the Postmaster-General's Department, the matter of securing the dissemination of weather forecasts and meteorological information will become the duty of that Department, and no further recommendation in this connection is therefore unnecessary.

#### DEFENCE-NAVAL, MILITARY, AIR.

1. That an Inter-Departmental Committee, consisting of representatives of the Naval, Military, and Air Forces, the Prime Minister's Department, the chairman of the proposed Australian Wireless Committee, and the Wireless Services Officer, should be constituted to co-ordinate the various wireless services within the Commonwealth from the Defence point of view.

#### FIRE PREVENTION AND POLICE.

The Commission is of opinion:—

1. That no change is necessary in the Acts and Regulations governing wireless, so far as fire prevention and police are concerned.

#### LIGHTHOUSES AND RADIO BEACONS.

The Commission is of opinion:—

1. That in view of the rapid development that is taking place in automatic appliances suitable for conveying wireless warnings, and in view of the conditions generally prevailing on the Australian coast, there is at the present time no justification for making any recommendation for further action that is being taken by the authorities now in control. Attention might, however, be given to the development above mentioned in automatic appliances.

#### SHIPS' INSTALLATIONS.

1. That, in cases where State legislation on the subject does not exist, representations should be made to the State Governments concerned to bring vessels not trading beyond the limits of their respective States within provisions similar to those of Section 231 of the Commonwealth Navigation Act 1912-1920.

2. That the Commonwealth Government should make representations to the owners of overseas vessels trading with Australia with a view to securing the publication on their ships of a larger proportion of Australian news.

#### PRESENT CONTROL AND FUTURE DEVELOPMENT.

1. That Amalgamated Wireless (Australia) Limited should be made liable for the payment of terminal charges, and that failing compliance with the Postmaster-General's demands in that respect, the Commonwealth should take steps to acquire the private shares held in the Company on just terms to the private shareholders.

2. The position of the Company with regard to the establishment of further beam services should be defined.

3. That the relationship between the Postmaster-General and the Company should be made clearly defined.

4. That the provisions of the Wireless Telegraphy Act 1905-1919 should be so amended as to enable the Postmaster-General's Department to more effectively enforce the Regulations as to unlicensed listeners.

5. (A) That an Australian Wireless Committee should be constituted under the control of the Minister administering the Wireless Telegraphy Act, such Committee to consist of the chairman, who shall be the Director of Postal Services for the time being, a Wireless Services Officer, and a Broadcasting Officer, and—

(i) That the duties of the chairman shall be to supervise and co-ordinate all wireless and broadcasting activities within the Commonwealth with the exception of those under the control of the Department of Defence.

(ii) To convene meetings of the Australian Wireless Committee and of the proposed Inter-Departmental Committee for Defence purposes.

(iii) To convene at least once in each year on dates to be prescribed a Conference between the Australian Wireless Committee and one representative from each of the following bodies:—

(a) "A" Class Broadcasting Stations.  
(b) "B" Class Broadcasting Stations.  
(c) Wireless Institute of Australia.  
(d) Radio Dealers and Manufacturers.  
(e) Licensed Listeners-in.

(B) That the necessary regulations to give effect to the foregoing recommendations should be proclaimed.

(C) That the duties of the Wireless Services Officers shall, subject to the control of the chairman and the Postmaster-General, be the supervision of the working of all land and coastal stations.

(D) That the duties of the Broadcasting Officer shall, subject to the control of the chairman and the Postmaster-General, be the supervision of all matters relating to broadcasting.

# Australian Royal Commission on Wireless

(CONTINUED FROM COVER.)

From the general body of the report we extract several sections of special interest:—

Whilst the terms of the Commission were wide enough to entitle it to investigate and report upon technical matters, the Commission, having regard to its personnel, decided that such duty was not expected of it. The Commission has accordingly refrained from making any recommendations of a strictly technical character, but has suggested further inquiries into certain matters hereinafter mentioned.

In view of the fact that litigation had commenced between Amalgamated Wireless (Australia) Limited and certain of the parties which were represented before the Commission, it was precluded from taking evidence on any of the matters involved in the litigation. These matters, however, did not seem to have any material bearing on our investigation.

The Commission realised at an early stage in its inquiries that radio as a means of communication was in process of rapid development, and that great care must be taken not to hamper this development or to create powerful vested interests.

The Commission realises also the great advantages which the Commonwealth enjoys in the control of radio as compared with the systems that have grown up in other parts of the world.

The prompt action of the Commonwealth Parliament in 1905, and again in 1919, in securing for the Postmaster-General control of wireless in all its phases, has done much to prevent the creation of those problems which are causing much difficulty elsewhere.

From the first sitting of the Commission, it became obvious that the dissatisfaction existing with regard to radio in the Commonwealth very largely arose out of the acts and omissions, real or imaginary, of Amalgamated Wireless (Australia) Limited.

Moreover, it has throughout the inquiry been equally obvious that the administration by the Postmaster-General's Department of the Wireless Telegraphy Act 1905-1919 and regulations made thereunder has been singularly free from any cause for serious criticism.

#### PART II.—BROADCASTING AND RELAY STATIONS

Having given the matter exhaustive consideration, the Commission has come to the conclusion that very little change in the existing system is advisable at the present time. The existing broadcasting stations have had to pioneer the development of radio as applied to entertainment and the transmission of popular programmes of music and other items.

In nearly every case the stations have carried on their operations at a loss, which in some instances has been large. At the same time generally, they have endeavoured to improve the service being rendered to the public. The losses sustained by those stations are in nearly every instance due to causes outside their control. In the case of Queensland Radio Service (4QG), Broadcasters (Sydney) Limited (2BL), Associated Radio Company of Australia Limited (3AR) and Central Broadcasters Limited (5CL), it would seem that in the near future their operations will result in a profit, but not sufficient, except in the case of Queensland Radio Service (4QG), to reimburse them the accumulated losses during the term of their current licenses.

In the case of Westralian Farmers Limited (6WF), this station, although giving as good a service as could reasonably be expected in view of the surrounding difficulties, has sustained heavy losses.

The conditions arising from the extent of the State of Western Australia and its scattered population must result in either the cessation of the operations of the company or continued losses on a large scale with inferior service to the public unless some change in the system or the allocation of the "available revenue" from license fees is made.

With regard to Tasmania Broadcasters Pty. Ltd. (7ZL), the position from the point of view of the listener-in has until recently been most unsatisfactory. The station has been working on a permit from the Postmaster-General, who, in our opinion, has displayed wisdom in not enforcing strict compliance with the regulations. The sparse population of the Island, the difficulty of arranging suitable programmes and obtaining sufficient financial support, have all helped to create a difficult problem. The station itself, until recently, was badly equipped and situated. The fact that it was in receipt of no revenue and has already expended practically the whole of the share capital and is able to carry on operations only with the assistance of guarantors, all go to show that, in this case also, some change in the present system is desirable if Tasmania is to have a broadcasting station.

Stations 2BL and 3AR are more or less in a similar position to 6WF and 7ZL. Both 2BL and 3AR are now giving a satisfactory service, and both have sustained substantial losses in the past. In these cases, also, some change in the present system is necessary to preserve their continuity.

Station 2FC is also being operated at a loss, but with the gradual increase in the number of listening licenses in New South Wales, and a removal of the studio to more suitable premises, and an improvement in programme management, this station should rapidly become a profit-making undertaking.

The position of 3LO is unique amongst the broadcasting stations in Australia. It is almost universally admitted to give the most satisfactory service in the Commonwealth. The composition of the Broadcasting Company of

Australia Proprietary Limited controlling 3LO is as follows:—

	Shares.
(1) Farmer and Company Limited, Sydney .....	40,000
(2) J. C. Williamson Limited and J. and N. Tait .....	40,000
(3) Herald and Weekly Times Ltd. ....	15,000
(4) Buckley and Nunn Limited .....	5,000
	100,000

The cash capital brought into the company was £2250, but on March 11, 1927, it possessed tangible assets to the value of over £18,000 upon the 100,000 shares comprising the company, and which were issued as paid up to 17s., a dividend of 1s. was declared, amounting to 263 per cent. per annum on the amount of cash capital actually paid up after making liberal payments for services rendered by directors and shareholders.

This has all been made possible by the grant in the first instance of a license by the Postmaster-General to Farmer and Company Limited, of Sydney. For that license, Farmer and Company Limited received 40,000 shares paid up to 17s. (£34,000). For the right to broadcast artists under contract to J. C. Williamson Limited and J. and N. Tait, that organisation also received 40,000 shares paid up to 17s. (£34,000).

While the success of that station has been largely due to its excellent management and to its close association with the theatrical and vaudeville enterprises, this is not the whole cause of its success, some part of which at least is due to the compact and thickly populated State in which this station is situated.

However, the management of the station has largely contributed to a rapid increase in the number of licenses in Victoria and an expanding revenue. To the Commission, the present position of Station 3LO gives it advantages which should be shared with the weaker stations in more sparsely populated States.

As an integral part of the whole Commonwealth, the more populous States should come to the assistance of the more sparsely populated States.

The Commission has inspected all the "A" class broadcasting stations, and has perused the balance-sheets and details of expenditure in each case. In the table set out hereunder will be found a summary of the working costs of the various stations:—

#### Summary of Working Costs of Certain "A" Class Stations.

	No. of staff.	Cost per week.
Farmer and Company Ltd. (2FC)—Technical duties mainly performed by Amalgamated Wireless (Australia) Limited employees under contract; in addition to the fourteen a sum of £850 per annum is charged against broadcasting by the Company for services of other members included in the staff. This item is £107/18/- .....	14	107 18 0
Broadcasters (Sydney) Ltd. (2BL) .....	21	106 15 0
Broadcasting Company of Australia Proprietary Ltd. (3LO)—Technical duties performed by Amalgamated Wireless (Australia) Ltd. employees under contract ....	19	104 5 0
Associated Radio Company of Australia Ltd. (3AR) — Nine full time; nine two-thirds time .....	18	77 10 0
Queensland Radio Service (4QG) .....	14	77 10 0
Central Broadcasters Ltd. (5CL) .....	13	69 15 0
Westralian Farmers Limited (6WF) — Four full time; five part time. Reduced in October, 1926, to three full time, five part time—£31 4s. 9d. per week .....	9	36 4 2

Various schemes for the future control of broadcasting have been suggested to the Commission which we have discarded in favour of that herein recommended.

These include the formation of a private company which would operate the whole of the "A" class stations. Such company, it was said, should be placed under restrictions which would include the amount of dividend payable to its shareholders.

The experience of the broadcasting companies to date in Australia has been that in nearly every case for some years the shareholders received no dividends at all. It would therefore render it difficult to persuade investors to put their money into a venture that was not likely to yield a fair return on the capital invested.

Another suggestion was that a corporation should be created on the lines of the British Broadcasting Corporation. This would really result in the creation of a Government Department whose business it would be to provide entertainment and broadcasting programmes for the people. It may be that ultimately Australia will adopt such a mode of control, but at the present time it does not seem wise to embark upon a system which, although only operating since the commencement of this year in Great Britain, is already receiving adverse criticism.

Another suggested scheme was that the Government should acquire the ownership of all the "A" class broadcasting stations, and let them on lease to the highest tenderers. This scheme, apart from the objection of the Gov-

ernment being concerned so intimately with entertainment business, is so open to practical objections.

Station Queensland Radio Service (4QG) is situated on the roof of the Queensland State Insurance Building in Brisbane. This station, apart from transmitting apparatus, cost over £15,000, exclusive of further sums for subsidiary apparatus and furniture amounting to over £2900. It does not seem desirable or practicable that the Commonwealth should acquire property so situated. Station Westralian Farmers Limited (6WF) is situated on the roof of a large privately-owned building in Perth, and more or less similar objections apply in that case also.

Another suggestion was direct control of broadcasting stations by the Government.

In our opinion such a system is inadvisable, as experience already shows that when Governments are placed in charge of the means of disseminating news, they are apt to use such means for the purpose of political propaganda.

Moreover, such a system would deprive the public of the benefit of the incentive which the present regulations give to the broadcasting stations to maintain an effective and satisfactory service.

Further, whatever wisdom may be displayed in the selection of Government officials for such a purpose, it is difficult to maintain that high standard of business acumen which is essential to securing the best results.

There would be a grave danger lest that co-operation of the public with the broadcasting stations which has been conspicuously present in the case of Australia's most successful broadcasting station, 3LO, would cease to exist, more especially if artists, theatrical and otherwise, withdrew their services from the broadcasting stations and the stations lost the assistance of experts whose business it is to know the requirements of the public.

There is still a further objection to such a proposal in that decentralisation and local control of broadcasting stations is highly important in a country of such wide distances as Australia.

All the proposed schemes fail, in the opinion of the commission, to do justice to the excellent work that the existing broadcasting companies have already performed and would deprive them of any chance of recouping themselves for their serious losses.

Recognising the advantage that 3LO has enjoyed from its relation to entertainment companies, the Commission is of opinion that the whole of the existing stations should be encouraged to co-operate and come to mutual arrangements for future working, subject to strict control by the Postmaster-General, who has ample power under the existing regulations to secure an efficient service for the public.

In view of the fact that the Commonwealth as a whole is interested in providing a broadcasting service in every part thereof and has a direct interest in introducing the amenities of city life to those whose occupations would otherwise deprive them of the same, the Commission is of opinion that the revenue from listeners' license fees should be pooled and after deducting a sufficient sum to cover the cost of administration and research by the Postmaster-General's Department, a sum should be provided for each "A" class station which would enable it to provide a broadcasting service. The sum suggested for this purpose is £5000 for each "A" class station.

The subjoined table illustrates how the proposed scheme compares with the existing system.

YEAR ENDED JUNE 30, 1927.				
State	Total No. of all licenses.	Total Collection Approximately £	Postmaster-General's Proportion.	Available revenue.
New South Wales ..	59,880	82,143	9,415	72,728
Victoria .....	118,965	158,944	18,504	140,440
Queensland .....	23,249	31,161	3,740	27,421
South Australia .....	16,791	27,666	2,858	24,808
Western Australia ..	3,903	5,357	610	4,747
Tasmania .....	2,461	1,842	230	1,612
Commonwealth	225,249	307,114	35,357	271,757

REVENUE UNDER PROPOSED SCHEME.				
Station.	Present Revenue £	Operating Allowance £	Balance £	Total Proposed Revenue £
Farmer and Company Limited (2FC)	50,010	5,000	43,416	48,416
Broadcasters (Sydney) Limited (2BL)	21,818	5,000	18,606	23,606
Broadcasting Company of Australia Proprietary Limited (3LO) .....	98,308	5,000	83,338	88,338
Associated Radio Company of Australia Limited (3AR) .....	42,132	5,000	35,930	40,930
Queensland Radio Service (4QG) ..	27,421	5,000	23,284	28,284
Central Broadcasters Limited (5CL)	24,808	5,000	21,156	20,156
Westralian Farmers Limited (6WF)	4,747	5,000	4,048	9,048
Tasmanian Broadcasters Proprietary Limited (7ZL) .....	1,613	5,000	1,479	6,479
	271,757	40,000	231,757	271,757

NOTE.—The figures for columns (c) and (d) are estimated and are approximately correct, as the exact figures would vary with the number of licenses of each Class in each State.

#### PART IV.—COPYRIGHT AND PERFORMING RIGHTS.

After much dissatisfaction had been expressed by the broadcasting companies with the demands made by the Australian Performing Right Association Limited for copyright royalties, and after a series of adjustments of charges, the Commonwealth Government called a conference of representatives of interests concerned, which met on July 23, 1926. As a result of this conference an agreement was arrived at, the effect of which was, shortly, that the Copyright Association should receive 10 per cent. of the revenue of the broadcasting stations in

respect of the first 100,000 licenses issued in Australia and 5 per cent. in respect of any licenses in excess of 100,000 issued in Australia. The latest proposal submitted by this company is that the copyright royalty should be at the rate of 7½ per cent. of the total revenue, irrespective of the number of licenses issued.

From the latest returns available to the Commission the average yearly revenue of all the "A" class broadcasting stations during the two years ended June 30, 1927, was £206,354 (approx.). Five per centum of this amount represents £10,317 (approx.). In the opinion of the Commission the revenue is likely to continue to increase.

With regard to "B" class stations the position does not seem to be so definite. Apparently the Australasian Performing Right Association Limited has discriminated in its demands between those "B" class stations which are deriving revenue by means of advertising from those "B" class stations which receive no such revenue. The nature of the demands of this association may be illustrated by reference to the fact that in the case of one "B" class station, the Australasian Performing Right Association Limited first demanded 3s. 6d. per copyright item broadcast. Gradually the claim was reduced to less than one-tenth of the original claim.

In view of all the circumstances the amount of the license fees which ultimately reaches the hands of the Australasian Performing Right Association Limited, is, in our opinion, a proportion to the service rendered by the association, but the author whom they represent, and is an advantage that in the majority of instances was never contemplated as likely to belong to either the author or composer or the assignee of the copyright.

According to the latest figures in our possession relating to the practice in England, the proportion of total revenue paid by broadcasting stations in Australia is more than double that paid in the former country.

We are of the opinion that authors and composers derive considerable benefit from the broadcasting of their works, and the publicity so given broadly counterbalances any loss on sales of sheet music.

Evidence has been placed before the Commission showing that in the case of some firms which admittedly did not "water" particularly for what is called "popular music," there had been a slight falling off over a series of years. We are not satisfied, however, that such falling off will be permanent, nor that it is occasioned by broadcasting. Further the Commission endeavoured to secure evidence from firms who were vendors on a large scale of "popular music," but they intimated through counsel that there had not been any serious falling off in their sales.

#### PART VI.—PROGRAMMES.

A considerable body of evidence has been tendered to the Commission in all States of the Commonwealth dealing with the subject matter of the programmes broadcast by the various stations.

In many instances, the demands made by listeners have proved quite unreasonable, and full consideration has not been given by them to the difficulties and expense which confront broadcasting stations in providing a different programme for every day in the year. No other form of entertainment provides, or is expected to provide, the variety of entertainment demanded by many listeners from broadcasting stations.

In view of the quality and variety of the programmes rendered and the artists employed, and the comparatively small sum paid by the listener for a year's entertainment, the Commission is satisfied that the public of most of the

States have little to complain of in regard thereto.

This is more especially the case in those States with the smaller populations where first class artists are difficult to find and constant variety impossible to obtain.

Nevertheless, our investigations show that listeners, in some cases, have cause for complaint. Perhaps the most pronounced cause is that, during certain hours of the day, detailed descriptions of racing and other sporting events are being broadcast from nearly all the stations at the same time.

The evidence discloses that part of the cause of this uniformity is the de-

(Continued on next page.)



# The Chit-Chat Club—

## Points from Papers Put "Over the Air."

(Set Down by "Telanother")

"If I had my way," said the oldest member emphatically, "I'd make any fool who bought a wireless set pay a tanner a year. Thirty shillings is a ridiculously small tax for idiosyncrasy."

"We'd lead a hard life if you ever got your way," said 'Blinks,' so-called because of his huge horn rimmed glasses and his habit of blinking suddenly at you, as though to reinforce his argument. "The 30s. license is a fair thing, but the difficulty is to get it enforced so that every listener pays."

The "wireless bugs" of the X club were safely ensconced in the big arm-chairs in their own little corner, and the conversation had drifted on to the question of the many unlicensed sets.

"It's only a matter of having inspectors to go round and see where all the aeriels are," said Wishart. "Surely that is simple enough."

"It isn't as easy as that at all," said Winton Thribs, "for there are hundreds of little crystal sets here in Wellington, where they haven't got an outside aerial. How can an inspector find an inside aerial? He can't roam into your house and start looking under your beds to see whether you have sets concealed there."

"No, but they are getting ways of doing it all the same," said Drexler, "and there's going to be a great old round up during the next few months. They'll be starting to confiscate the sets soon—and it will serve the unlicensed blighters right. They're jolly bad sports, for if every set were licensed there'd be thousands more a year to spend on the programmes, and we would get better items."

"In my young days they horse-whipped anyone who didn't play the game," said the oldest member fiercely, "and that's what some of them need."

"I wonder how those fading tests are getting on," said Thribs. "It will be a great thing if they can find out what's the cause of the fading that's experienced in some districts."

"There's been great interest taken in the tests," said Blinks, "and hundreds of papers are now coming to hand. The experts who are working on the problem are hopeful of a lot of assistance from the tests."

"I've never noticed any fading at all, as far as Wellington is concerned," said Drexler, "in fact the hardest thing is to make it fade out when I want to get an Australian station."

"We're lucky here, of course," said Thribs, "being so close to the station. It seems worse in certain districts, and I'm inclined to think that it will be found that some atmospheric troubles are responsible for it."

"The more I see of wireless," said Wishart, who had but recently become a devotee, "the more wonderful it seems to me. I was up in the King Country last week, at Ohakune to be exact, and was just deploring the fact that I wouldn't be able to hear one of Lieut. Burt's lectures on Arctic exploration. Lo! and behold, the place where I stopped had a set, and I heard every word, as if he were talking in the room. And a jolly good address it was too."

"Wasn't it just?" said Brenton, who, being a great outdoor man, took the keenest interest in all exploration work. "It must have given them a great old thrill when that glacier broke off, only a few feet from the boat, and nearly sunk them."

"One thing about the lecture that

(from page 2.)

sire of the station to escape utilising items upon which copyright royalties are payable. These items tend to exhaust the limit beyond which the station must pay an additional rate to the Australasian Performing Right Association Limited.

In view of our recommendations as to the future rights of owners of copyright, the Commission is of opinion that in States where there are two "A" class broadcasting stations they should be required to so arrange their programmes that during evening sessions in say one week, one station should provide a musical or similar programme during the time the other station is broadcasting news items, including sporting information, and in the following week the stations should reverse the order.

Even though stations are compelled to use copyright items to fill in the period which would otherwise have been occupied by broadcasting sporting information, the Commission is still of opinion that the listener-in is entitled to the relief above suggested.

Recognising that every phase of the popular taste must be catered for, and giving due weight to the evidence which was tendered complaining of the monotony of the programmes—too much sporting information, too much jazz music, too many talks—the Commission is of opinion that the broadcasting companies have maintained fair balances, and that if the officers of the Postmaster-General's Department keep up a constant supervision of the programmes submitted to the public, and the co-ordination of time-tables above suggested is brought into force, no serious change is required in the existing regulations.

impressed me particularly," continued Wishart, "was his graphic description of life in the engine-room. When you're travelling in comfort in the saloon you forget the fellows who are toiling away down in the bowels of the ship. Just imagine what it must have been like when they were making their way through the ice floes, the ice scrunching and grinding outside, and a succession of 'full aheads,' and 'full astern' coming down from the bridge. As Lieut. Burt said, the men on deck could see where they were going, but the engine-room staff were working on the blind."

"The poor devils must have had a hard time when that propeller smashed. Lieut. Burt was working for hours in the icy water, fixing it. Arctic exploration must be full of thrills at any time, but I reckon the chaps who get the worst of them are the engine-room staff. Those lectures of his are well worth hearing, and I'm going to be on the air for the rest of them."

"Talking of thrills," said Larton, who had just arrived, "I reckon about the two best a chap could get would be a view of the Yosemite Valley, and the Grand Canyon of Arizona. Did you hear that address of Stanley Bull's from 1YA on a trip to those places?"

"No," said Blinks, "but I should think they would be quite good."

"They were," affirmed Thribs. "I hope I can get away for a decent holiday next year and..."

"Blow in some of my beastly twenty per cent profits," interposed Blinks, with an expressive gesture.

"They're legitimate trading profits, anyway," said Thribs in a hurt tone.

"Too right," agreed Blinks, "all's fair in love and business. 'Get 'em in and take 'em down' is the motto of the house of Thribs, isn't it?"

"Mr. Bull said," continued Larton, ignoring the interruption, "that the two were the wonder sights of America. To get to the Yosemite Valley from San Francisco, you take the railway to a place called Raymond, and then go by char-a-banc a distance of seventy miles to the valley. For two and a half hours you are driven through forest land, on a road which reaches a height of six thousand feet. There's so much forest that it becomes monotonous, until at last you come to Inspiration Point, where you meet a sight that can never be forgotten. From your height of 6000 feet you look down into the valley, which is seven miles long, half a mile wide, and bounded by cliffs over a mile in height."

"Just imagine it. At the foot of those cliffs there is summer—flowers, beautiful trees—at the top is winter and eternal snow. So high are the cliffs that huge oak trees half way up look, to the traveller, like green mountain moss. Wonderful rapids, beautiful waterfalls, and gorgeous scenery make the place a veritable fairyland."

"The grand canyon is more wonderful, affirmed the oldest member. "I was across in 1898. No concrete roads then, nor motor cars. We did the trip by rough old coaches and afoot. What with their concrete roads and motor cars, these trips are made too easy."

"But think how much more you can see now," said Blinks.

"Give me the good old days," said the oldest member. "I remember..."

"What did Stanley Bull say about the Grand Canyon?" said Blinks, determined to stop the reminiscences of the oldest member, as they, in common with the brook, were apt to "go on for ever."

"He said that it was 12 miles wide, and 217 miles long, and at the bottom of it flowed the Colorado River—one of the greatest of the American rivers. Apparently you come to the canyon without any warning, and there's a straight drop of a mile to where the river winds its way below the fearsome cliffs. It would seem that this huge rent has been made at some time in the earth's surface, and at the bottom there are hills and mountains, and flame-coloured sands. It must surely be one of the greatest sights of the world, and I hope I can get a chance to see it next year."

"And if you're wanting a valet to assist in blowing in the ill-gotten gains, you know where to find him," added Blinks.

"See New Zealand first," is my motto," said Wishart. "I've been over most of the South Island, but I haven't seen the Waitomo Caves and Rotorua as yet. I wonder whether the Yosemite Valley is much more wonderful or more beautiful than the bush scenery on the Motu-Opotiki road. The outlook to White Island, which throws up its sulphurous fumes in the dim distance is superb. Looking over a sea of exquisite bush stretching almost to the horizon, you see the hazy outlines of this sulphurous island silhouetted in the furthest distance. For twenty miles the road winds over hills, and through narrow gorges, and I can't imagine that there is anything much finer in the world."

"I believe we do underestimate our own country's beauty right enough," agreed Blinks. "Sir Henry

### Pertinent Points On—

"THOSE UNLICENSED SETS."

"THE FADING TESTS."

"THE YOSEMITE VALLEY."

"NEW ZEALAND'S PROGRESS"

"OUR DAIRY PRODUCE MARKET."

Cowan gave an address recently on New Zealand's progress, and he was amazed both with our natural beauty spots, further developed by the hand of man, and with the progress we have made."

"Every farm home should have its wireless set," said Thribs.

"And probably will, when you middlemen reduce your blessed profits sufficiently to allow them to make a decent living," said Blinks. "It's all very well for us fellows in town. We have the choice of a theatre, the pictures, some musical entertainment—or a night with the wireless. Go away out back, where the nearest railway station is five or six miles away and what have you got?"

"To get back to Sir Henry Cowan though, he seems to have been impressed with the progress of our cities. He's a great believer in inter-Empire trading, and was delighted with the proof we have given by our altered tariff, that we are anxious to help the Motherland in solving her trading troubles. 'After many years,' he concluded, 'I have come back to see an infant State fully grown to a vigorous manhood, and I shall leave the shores of this wonderful Britain of the Pacific, convinced that it will continue to grow and to prosper, and that its union with the land from which its sons have sprung is a union which can never be broken.'"

"And what is it that has put us where we are to-day?" queried Thribs, and then, answering his own question, "the farmer. You can't get away from it, the farmer is the cause of our prosperity."

"Dammed growlers," said the oldest member fiercely. "They're always howling about something. If prices are high, it's their taxes, and if they're low, they squeal that they're on their last legs."

"Their bark isn't as bad as their bite," said Thribs, "and anyway, they have something to complain about."

"You bet," said Blinks. "They aren't like some people. They can't

roam along to a comfortable club for half the day, and call for whiskies and soda every ten minutes. They work about three times as hard and twice as long as most of us, and they haven't our amenities."

"And of all farmers, the dairy-farmer works the hardest," affirmed Thribs.

"I heard an address about the dairy industry last week, given by Mr. Brash, secretary of the Dairy Produce Board," said Wishart. "It was excellent, and dealt with the development of our export trade."

"Yes," agreed Thribs. "It was good. Being interested in the industry..."

"And in the divvies I get from the hard working farmer," said Blinks, who could never resist the temptation to have a dig at Winton....

"I made a point of listening-in to it," continued Thribs completely ignoring the interruption. "Mr. Brash is particularly well qualified to deal with it, incidentally, as he has been connected with it from the earliest days. He traced the development of dairying from the time the first cow was milked, showing the gradual expansion."

"You couldn't cool store it then, could you?" queried Brenton, displaying a lamentable ignorance of our greatest industry.

"No you could not," said Thribs, "and once the farmers were making more butter than they could use, they had the Devil's own job getting rid of it. For a while the storekeepers used to buy it, and then later they mixed butter from different farms together, and sent it to Australia. One very interesting fact disclosed during the lecture was that only last season the Dairy Produce Board shipped a small quantity of milked butter for a grocer. This had probably come from farms far removed from a dairy factory, and the farmers got only a few pence a pound for it."

"Did you handle it for them?" said Blinks innocently.

"No, I didn't," said Thribs, "and when I do, I handle it only on a commission basis."

"When the storekeeper was buying the farmer's butter he was paying only a small price, and was making the farmer take out the value in goods, in just the same way as done with eggs to-day. As butter production increased, the farmers realised that this was not satisfactory, and the first factories were established, buyers of dairy produce taking their output at a definite price per pound."

"How much of our butter goes to England, and how much to other

markets?" asked Blinks.

"Last season we produced 2,800,000 boxes of butter and 1,000,000 crates of cheese, and of this 2,570,109 boxes of butter and 992,250 crates of cheese went to England, so she is by far our most important customer. New Zealand supplies 20 per cent. of the butter and 50 per cent. of the cheese consumed in England."

"Possibilities of other markets have not been overlooked, and during recent years the trade to the East has been steadily growing. Our local market absorbs 480,000 boxes, and Mr. Brash says that to-day the quality of the butter put on the local market is as good as that exported."

"I can't agree with that," said Blinks. "Most of the second grade butter is used locally, and people in the towns have to buy it willy, nilly. It should be compulsory for all butter sold in shops to be marked as 'finest,' 'first grade,' or 'second grade,' so that the purchaser would know what he's getting."

"I believe that would be a good scheme," said Brenton. "People would eat more butter, if they could get the very best. It's no use saying we get it, because we don't, and I could name half a dozen brands sold in Wellington which are distinctly second grade."

"Mr. Brash doesn't share the fear of some producers that there is going to be an over production of butter and cheese in the world," continued Thribs, "and says that now that the health-giving properties of dairy produce are becoming better known, the sales will increase in all countries. Although the United States has huge expanses of farming country, she is finding it difficult to provide dairy produce for her 100,000,000 people."

"Will the dairyfarmers get better prices this year?" queried Blinks.

"That's the thing that worries them most these days."

"Mr. Brash inclines to the opinion that they will. He showed that both Canadian and Argentine experts are up to the present much reduced this year, and that Australia is likely to be late in exporting this season. Prices have risen steadily lately, the stores on London are emptier than they have been for years, and the prospects are very hopeful."

"I'm glad to hear it," said Blinks. "And now, as Winton here will be making bigger profits than ever, he's going to turn it on before we go home."

And just to show that he wasn't quite the mercenary profiteer that Blinks alleged him to be, Thribs called for drinks for the "bugs" ere they departed to their homes for another evening "on the air."

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# THE NEW ZEALAND Radio Record

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A. J. HEIGHWAY,  
Managing Editor,  
"The N.Z. Radio Record,"

P.O. Box 1032,  
WELLINGTON.

FRIDAY, OCTOBER 7, 1927.

## AUSTRALIA'S ROYAL COMMISSION.

We publish in this issue the recommendations in full of the Australian Royal Commission appointed to report upon wireless broadcasting. In addition to those detailed recommendations, we give their summarised observations upon several of the aspects of broadcasting that are of particular appeal to us.

It is plain that the Commission entered upon its task most thoroughly. Full personal investigation was made of all main stations, their balance sheets, and their programmes, and hundreds of witnesses and documents were interviewed and perused. The result is a document that will be of the utmost value not only to Australia, but also to New Zealand, where our problems are somewhat parallel.

We are satisfied that the report will be perused with very great interest by listeners, and will serve as a very definite medium of enlightenment upon many of the problems with which radio management has been confronted. One of the most interesting features of the report is that all stations in Australia are being operated at a loss, save 3LO Melbourne, where special circumstances in a highly compact community, and good management, have enabled a profit-making service to be maintained. The cost of service will be interesting to listeners. Where the Australian centres are required to maintain but one station on their revenue, New Zealand has been faced with the problem of maintaining four. This is fundamentally the special difficulty of this country.

Perusal of the report and its revelation of the general Australian position, prompts the reflection that, with all our delays and difficulties in New Zealand, we have managed to profit by others' experiences, and have in reality established broadcasting in this country upon a foundation which is solid, and is permitting satisfactory development. Our slow start is proving somewhat of an advantage, and with the opportunity of profiting by the experience of others, we should continue to progress satisfactorily.

One feature of the report deserves our special attention, and if possible, the immediate attention of our legislature. This is the matter of copyright. The report sets out the position herein, and bluntly states that the demands of the holders of copyright are too high. It recommends a reduction to 5 per cent. on the gross revenue of the broadcasting station without limitation upon the number of items to be broadcast. The payment imposed upon the New Zealand listener is a 10 per cent. royalty up to a certain amount. The lead given by the Australian Commission should immediately be followed, and the backing of Parliament sought for equal relief upon the funds of listeners available for broadcasting service.

We commend the report and its accompanying observations to the thoughtful consideration of listeners. It is a very valuable document, and sets a platform very suitable for our future guidance. In view of the local listeners' conference, which has just concluded its session in Wellington it is interesting to note that the report suggests an annual conference between the Wireless Committee—which is a departmental organisation comparable say to our Postmaster-General, the secretary of the P. and T. Department and the chief telegraph engineer—the station administrators, the Wireless Institute radio dealers and manufacturers, and licensed listeners. Such a conference would serve a very useful purpose for ventilating the problems confronting the attainment of the best service, and would prove a medium of educating public opinion of definite value.

SPECIAL FEATURES OF

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## CRYSTAL RECEPTION

GOOD REPORTS IN

CLOSING DATE OCTOBER 10.

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

The following simple conditions were applied:—

1. The reception must be certified to by some reputable person, whose name and address, together with that of the successful entrant, will be published.

2. The reception must take place in September, and entries will close with us on October 10, thus giving full time for mails from distant corners to reach us.

3. Only New Zealand entries accepted.

4. Cost of crystal set to be given with brief description and whether home-made or not.

5. In the event of difficulty in adjudicating the winner on distance alone, the other factors of merit in the equipment and cost will be taken into consideration, the principle being to secure the maximum results at the lowest cost.

6. Decision as to airline distance from 2YA will be based on the "Radio Record" map as published in our issue of August 12.

Entries are now coming in, and we anticipate a goodly number by the 10th.

## STILL RISING

### NUMBER OF LICENSES

GRAND TOTAL 31,608.

The official figures for licensed listeners to September 30 are as follow:—

Listeners.	
Auckland .....	12,002
Canterbury .....	6,781
Otago .....	1,861
Wellington .....	9,261
Total .....	29,905

Dealers.	
Auckland .....	462
Canterbury .....	274
Otago .....	166
Wellington .....	681
Total .....	1,583

Transmitting Licenses ..	120
--------------------------	-----

Grand total of all Licenses ...	31,608
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## MORE AUSTRALIAN STATIONS

### FOUR 5000-WATT TRANSMITTERS

INCREASED RELAY SERVICE.

It is proposed by 3LO, Melbourne, to proceed immediately with its plans for providing a relaying service for listeners in country districts. Elaborate plans for providing a relaying service were arranged by 3LO late last year, but upon the announcement that the Commonwealth Wireless Commission would be appointed they were held in abeyance.

Mr. Conder, general manager of 3LO, stated recently that, following the commission's recommendation that no obstruction should be placed in the way of persons desiring to provide relaying stations in the country, 3LO would apply immediately for four licenses to erect relaying stations. One of these stations would be built in the Gippsland district, probably at Maffra, to provide a service in areas where 3LO's signals are now subject to fading. Another would be situated at Wangaratta or Benalla to serve the North-East. The third would probably be erected at or near Bendigo, and the fourth would be built on a site to be selected in the Western district, probably near Hamilton.

First Station for Bendigo.

The plans for these stations had already been prepared, Mr. Conder remarked, and he believed that it would be possible to have work on the first of the stations well advanced in two or three months. The first station to be opened would be that at Bendigo, where the population to be served is greater than in any other part of the State. The stations will each be as large as 3LO, having an effective power of 5000 watts. This is nearly ten times as great as the power used by the relaying stations of the British Broadcasting Corporation. Mr. Conder said that 3LO's technical advisers agreed with the commission that it was undesirable to attempt to serve country districts by increasing the power of the main central stations, and for this reason they had always recommended the establishment of relaying services.

## RELIGIOUS SERVICES AND BROADCASTING

### CONFERENCE PROPOSED BETWEEN CHURCHES AND COMPANY

The General Manager of the Broadcasting Coy., Mr. A. R. Harris, has made the following statement in regard to the broadcasting of religious services:

"Bishop Welldon wrote recently that 'If the clergy were to refuse or neglect such new means of communication as science affords, they would commit the same mistake as might have occurred many years ago had they failed to make use of the printing press or the steam engine.' Radio broadcasting offers to the Christian churches a wonderful opportunity of delivering their message to individuals who are reached by no other medium, and most churches are alive to the value of this opportunity and are eager to avail themselves of it.

"The Radio Broadcasting Company also is desirous of fulfilling to the greatest possible extent these obligations as a public utility, and in these it includes the broadcasting of religious services.

"In discussing any subject in relation to broadcasting there are three aspects to be considered:

- (1) Its desirability from the point of view of public utility;
- (2) Its acceptability to the great mass of listeners;
- (3) Its practicability with regard to the operation of the station.

"The desirability of broadcasting religious services may almost be taken as axiomatic, for the great majority of churches is agreed as to its value, though even in these churches there are individuals who disagree. Of its acceptability to listeners the Broadcasting Company and members of the clergy have received ample evidence. Many letters have been written expressing gratitude for broadcasts, both of the special children's services from the studio, and relays of church services, and telling of the joy that has been brought to listeners. These letters have come from people who through deafness have not heard a church service for many years, but who are able to hear perfectly through the use of head phones; from others who through infirmity are unable to attend church; from construction camps and dwellers in the back country living many miles from the nearest church.

"Assuming then the desirability and acceptability, it is necessary to decide as to the most effective way of accomplishing the desired end. Good work has been done in the past both by the churches, who have in many instances put forth special efforts to present a bright and helpful service to listeners, and by the Broadcasting Company; but it is felt that the time has arrived when an improvement can be effected by closer co-operation between the various churches and the company, and by a full and frank discussion of the problems that present themselves.

"It must be remembered that the company broadcasts under license, and that it works under certain limitations which are defined in regulations published in New Zealand Gazette No. 17, March 12, 1925, from which the following is quoted:

"29. (1) A broadcasting station shall not be used for the dissemination of propaganda of a controversial nature, but shall be restricted to matter of an educative, informational, or entertaining character, such as news, lectures, useful information, religious services, musical or elocutionary entertainment, and other items of general public interest as may be approved by the Minister from time to time.

(2) The licensee shall supervise with all reasonable care, to the satisfaction of the Minister, the matter broadcast, and shall carefully select the matter to be broadcast, in order to give effect to the requirements of this regulation."

"Subsection (2) throws upon the Company the onus of supervising the matter broadcast, and the Company therefore must exercise control to this extent, and those who are privileged to use the broadcasting service should accept their responsibility in conforming to the requirements of the regulations.

"There are many denominations in New Zealand, most of whom desire to have their service broadcast. The question then arises as to the proportion of broadcasts to be allotted to each. As a basis some suggest the numerical strength of each denomination as disclosed in the census; others the number of churches; others again consider strict rotation, to be followed without regard to census statistics.

"Objections can be raised to all these suggestions, and when a decision has been reached there still remains the question of practicability. Many difficulties arise when a service is to be relayed from a church. For instance, the acoustic properties of the building itself may be such that a satisfactory broadcast is almost impossible, the internal arrangements in the church, such as the seating of the choir, the relative positions of the choir and organ, and the positions taken up by the officiating clergyman, may present problems, for all these matters bear important relationship to the success of a relay. These difficulties may be overcome to some extent, though not entirely, by the use of several microphones—in some cases as many as five have been used for one service.

"It is held by some that many of the difficulties may be overcome by broadcasting a special service from the studio, a plan which has already been adopted with great success at one of the stations in regard to children's services. The following advantages are claimed:

- The service can be made undenominational and suitable for all listeners;
- The possibility of outside interference is obviated;
- The broadcast is under the direct control of the station staff, and therefore placings will be correct and transmission balanced;
- The order of service can be made more suitable than the ordinary church service for broadcasting;
- The time may be arranged so as not to interfere with the services of local churches.

"This last claim is based on the contention that when a service is relayed some people who otherwise would go to church stay home and listen, but that if it were from the studio and after the conclusion of the local church services, these people would attend church, and would then go home and listen to the studio service, which would be supplementary and not substitutional.

"The objections offered to the studio service are:—That it is not a church service, that it lacks the church atmosphere, which cannot be reproduced in the studio, and that listeners who are church members and are unable to attend their church do not hear the service they desire.

"These are some of the questions which arise when broadcasting of church services is considered, and it is hoped they will be fully discussed at the proposed conference to be held between representatives of the churches and the Broadcasting Company with a view to closer co-operation."



## FADING INVESTIGATION ROUSES GREAT INTEREST

### HUNDREDS OF REPORTS ROLLING IN

The volume of replies and detailed reports that are rolling in from all quarters is very clear evidence of the interest taken in our combined investigation into fading, as staged on Monday and Tuesday last, September 26 and 27.

Sorting of the replies into provinces and areas is now proceeding for submission of the tabulated results to "Megohm," our technical contributor. It is too early yet to say what conclusions can be drawn, but the cursory investigation so far possible, leads us to hope that some interesting deductions will be possible. Mail from distant points is still coming in heavily, and will continue, we expect, for several days from this writing. When the sorting is completed, the whole of the material, including the meter readings from the station transmission, will be handed to "Megohm," whose report will be awaited with interest by both ourselves and readers. It will be published, together with diagrams, as soon as possible.

## NO FADING FROM 2YA—IN AUSTRALIA, ANYWAY!

(By F. E. Baume, City Editor, "The Daily Guardian," Sydney.)

Listening in a couple of nights ago I heard 2YA's announcer mention that Monday, September 26, would be a special test night for New Zealand, 2YA in particular, that 1YA would be silent, and that New Zealand listeners who noticed fading should report to 2YA.

I am 1200 odd miles from your delightful station. On my four-valve auto-coupled expert set, I receive you on 'phones as strongly as I get 2FC, 2BL, 2UW, 2UE, 2KY, or 2GB, and on speaker better than Melbourne or Brisbane, always sufficient (electrical storms excluded!) to fill my very big living-room, which is really two fair-sized rooms.

Each night at 6 (7.30 your time), I get 2YA, 1YA, or 4YA, making 2YA my specialty. So I was disgusted to read in the "N.Z. Free Lance" what I term a ridiculous attack on your 5000 watts station.

Let me say now, that I have never experienced fading of any consequence from 2YA. On the other hand, I am content to plug in—it takes a fraction of a minute—adjust my rheostats and regeneration, and listen on a Sunday from 6 to 8.30, my time, without any appreciable fading whatever. I refer especially to some of the relayed programmes from His Majesty's Theatre, when the silver band plays.

I challenge the "Free Lance" to justify their statements. Our own ex-

pert, Flight-Captain Warneford, D.S.O., says 2YA is the best station outside 2FC and 4QG. Oswald Anderson, general manager of 2FC, my close friend, and Burbury, his chief engineer, swear by 2YA; from Queensland to Port Augusta your station is known.

I find you more reliable than 5CI, (Adelaide) for power. I like your volume better than 4QG; I like your programmes. What more can the "critic" of the "Free Lance," always so refreshingly general in his comments, require?

Here am I, hearing men like Anderson, Maclardy of 2BL, Warneford, Harry Turner the inventor, all except myself wireless celebrities, praise 2YA, and then I read the strange "Free Lance" complaint.

The only faults I find with 1, 2, 3 and 4YA are—

The words New Zealand should be included by announcers as "2YA, Wellington, New Zealand."

1YA and 4YA should have their wave-length altered, especially 1YA, which clashes with 2BL, so that only super-selective sets like my own can hear it at all—and last (a selfish thought):

Silent nights should be abolished for the sake of about 25,000 of us in New South Wales alone who like your programmes and your station.

My testimony for your inquiry: "No fading noticed in N.S.W.!" Sydney, September 16.

## NEXT WEEK'S FEATURES FROM 4YA.

The afternoon session on Tuesday will include an address on "Interior Decoration" by Miss M. Puechegud, when she will describe how to make a living room up to date. Mr. H. Greenwood, of the Athenaeum, will talk on books and will describe the latest fiction of the week.

"Big Brother Bill," whose fame is growing every week, is at present conducting a limerick competition, and is receiving each day a large number of juvenile efforts in this direction. Some of them show real poetic promise, and others are highly amusing. The winner of this competition is to receive 5s. from "Big Brother Bill."

At 8 o'clock, following a relay of orchestral items under the conductorship of Mr. L. D. Austin, from the Octagon Theatre, a high-class studio concert has been arranged, when some of Dunedin's leading talent will be heard, comprising Mr. E. G. Bond (bass), Miss Mattie Edgar (mezzo-soprano), Mr. R. B. MacDonald (baritone), Miss Rita Holmes (mezzo-soprano), and recitations by Mr. and Mrs. Gordon Hendry.

Outstanding items at Tuesday's concert will be flute solos by Mr. J. Stewart. A particularly interesting number will be Guill-Popp's "Bogel Sang." This represents, in a remarkable way, pipe music being played under water.

Pastor W. D. More will on Tuesday again entertain listeners with a very amusing address entitled "In Praise of Cranks." It is understood that Mr. More has met a few of these and will proceed to tell you something about them.

Among the performers at Thursday's concert will be several well-known entertainers of the southern city. Mrs. J. Marshall (mezzo-soprano), Mr. Philip Marchant (baritone), Miss Winnie McPeak (contralto), Mr. J. Ferguson (bass), will contribute the vocal portion of the programme. Mrs. Atwell (vocalist), Miss Alice Muir (pianist), and Mr. Malcolm Robilliard (cellist) will provide the instrumental numbers from the studio.

At 8.45 on Thursday evening, Mrs. M. F. Primmer, who has lately relinquished the position of "Aunt Diana" at 4YA, will give a lecture on "Travels in China."

Mrs. Primmer has had many years' residence in that troubled country and will have some very interesting things to say about it.

Most of the items on Friday night will be of the lighter type. Mr. Billy Gay will sing two of the latest popular hits. Mr. Norman Scurr will render Hawaiian solos; Mr. Jesse Benfield, the well-known local comedian, will entertain. Mr. Jack Clarke will sing baritone solos, and Mr. A. Roberts will be heard in violin solos. From 9 p.m. till 10 dance music will be relayed from the Savoy, being supplied by Mr. Ben Beecham and his orchestra.

Commencing on Saturday next, 4YA will again be heard on the air on Saturday nights, after many months of silence. The transmission will commence at 7.15 p.m., when the latest sporting information will be broadcast. A good programme is being arranged for the studio concert which will follow.

## ENTERPRISE AT 3YA

The programme organiser at 3YA is arranging an "Irish Night." He has also in view a "Welsh Night" and an "Old-time Song Night." A "Maori Night" has already been fixed for October 29.

A vocal quartet will soon be heard at 3YA, and will be a regular feature in Thursday programmes. The quartet will comprise Misses Frances Hamerton (soprano), Belle Renault (contralto), Mr. Russell Sumner (tenor), and Mr. Fred Penfold (baritone). The combination should be excellent, and when associated with such talented artists as the Christchurch Broadcasting Trio the standard of music will be lifted to a high level. Thursday concerts will be of a fairly classical but varied nature, with quartets, trio, duets, and solos.

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## MARVELLOUS ELECTRON

### MINUTE BUT POWERFUL

Most people are familiar with some of the common facts of electricity. For example, perhaps you have noticed the peculiar behaviour of the hair when combed with a hard rubber comb, and have heard, if not seen, the tiny sparks of electricity that pass between the two. This is fundamentally identical with the electricity which heats the filaments in your valves. Each is made up of the same kind of electric particles, or electrons as they are called, and the difference in the two cases is much the same as the difference between a raindrop and a river. Both are made up of the same kind of molecules, but they manifest the energy tied up in them differently. In the same way all electrical phenomena are caused by the movements of electrons though the different phenomena may appear quite unrelated.

### Smallest Electric Unit.

The electron is the smallest unit of electricity. With one exception it is the only thing in nature that cannot be broken up into smaller parts. We do not know absolutely its size and shape, but it is generally assumed to be a sphere of such size that if enough of them were laid in a row to make a line as long as the diameter of one of the hairs of your head, it would require more than seventy thousand million of them.

### Can Be Measured.

In spite of the minuteness of the electrons, which is really far beyond the limit of human comprehension, the quantity of electricity associated with it has been measured so accurately that the error cannot be greater than about one part in four thousand—less than four hundredths of 1 per cent. This charge of the electron is, like its size, so small that a figure representing its magnitude is quite meaningless. Some

### MASONIC SERVICE.

After our announcement appeared last week regarding the broadcasting of the Masonic Church service from the Wellington Pro-Cathedral, it was found impossible for the arrangement to be carried out.

idea, however, may be grasped by computing the number of electrons which are equivalent, in quantity of electricity, to that which flows through an ordinary 40-watt lamp in one second. This is found to be about two and a half quintillions—25 with 17 ciphers after it. This number is so enormous that if all the people on the earth—and there are about two billions of them—were put to the task of counting this number, and each man, woman and child counted at the rate of one electron per second for ten hours every day, it would take over seventy-five years to finish the job. This is the number of electrons flowing through the filament of a 40-watt lamp in a single second.

### Movement of Electrons.

So much for the electron itself. We shall now consider its connections with the filament in a radio valve. It is now known that every atom of every element is made up partly of electrons and that, at least in metals, there are, in addition to the electrons tied up with each atom, other electrons which are free to move about. These "free" electrons, whether in a metal or outside in space always move toward a positively charged body and are repelled by a negatively charged one. A current of electricity in a wire is nothing more than the movement of these "free" electrons in the direction of a positive charge.

### Electronic Emission.

About thirty-four years ago Sir J. J. Thomson discovered that, although electrons could not be drawn out into space from a cold body by the attraction of a positive charge, electrons could be drawn out from a filament when it was heated. This opened the door to the interesting field of thermionics, the emission of electrons from hot bodies, and a great deal of work has since been done by other physicists in determining the laws governing this phenomenon. It has been found that the emission of electrons from heated metals is quite analogous to the emission of vapours from heated liquids. The rate of evaporation from liquids is known to increase very rapidly as the temperature is raised and the same general law has been found to apply in the case of the "evaporation," if we may call it such, of electrons from hot bodies.

### PLACE FOR BATTERIES

It is not good practice to place batteries far away from receiving sets. They should be either beside a set or directly beneath it in a cabinet or nearby on a shelf. A storage battery especially is most convenient in the cellar along with the charging apparatus, but unless you know the circuit you are using you may encounter losses through such an arrangement.

Heavy wire should be used for battery connections in all cases. They should be allowed to work at their maximum when needed, and they cannot do this with fine wire for connections.

No. 18 annunciator wire is practical for such connections and easy to procure. A stranded flexible wire, such as that used in house wiring, is even better.

## AN EPIC MATCH TOLD IN EPIC WAY

### 2YA'S BRILLIANT DESCRIPTION OF NORTH v. SOUTH MATCH

A battle of giants was staged for decision at Athletic Park on Saturday, October 1, when the Rugby gem of the season was set down for decision by the match between the North and South Island representatives.

That game, we venture to think, will go down in history as one of the greatest ever played in the Dominion—and that means, probably one of the best in the world. It was fitting, therefore, that it should not only be seen by not fewer than 25,000, but "heard" by probably twice that number at least.

For this special occasion the Radio Broadcasting Coy's chief sports announcer, Mr. A. R. Allardyce, came north, and worthily did he maintain the reputation he established for himself, notably in the Hawke's Bay—Wairarapa Ranfurly Shield match. His quick eye and forceful descriptive touches portrayed the stirring battle to thousands in distant homes, and enabled them to enjoy the thrill. It was a great game and a great description.

## ANSWERS TO CORRESPONDENTS

(By "Megohm.")

An inquiry from Nelson district asks for information regarding "adding one stage of neutralised R.F. to a three-coil regenerative set." This is not a very practicable proposition, and in these days the three-coil is scarcely worth hanging on to when the more sectional Browning-Drake can so easily be constructed, using the same audio stages if desired. Apart from giving better results, the properly neutralised Browning-Drake will always win the appreciation of neighbours when it replaces a three-coil tuner. The same correspondent is troubled with harsh tone, and has been endeavouring to improve it by utilising a three-to-one ratio transformer between set and speaker, taking output from the primary as a step-down, which has made an improvement in tone. Of course the obvious remedy is to replace the audio transformers in the set with more efficient ones, try a fixed condenser of .001 m.f.d. capacity or larger across the output, and also across the primary of first audio transformer. The smallness of these condensers or absence of them will often cause harsh tone.

H.T.H. (North Auckland) has a Browning-Drake set, number of valves not stated, but does not affect the first question much. He is unable to tune in 2YA when 1YA is on the air and wishes to know the reason. Your set is rather unselective for a Browning-Drake, and probably has closely-wound coils instead of the more selective "low-loss" or space-wound coils. Decreasing the value of the small condenser in the aerial circuit makes the set more selective, but too great a reduction is inclined to make the set unstable. The Browning-Drake of which you have read the description gets Auckland at two miles from 2YA without a wave-trap, only a negligible background of 2YA being heard. Situated where you are, you should easily get 2YA without more than a trace of 1YA at least. Careful tuning counts too in such a case. In answer to your second query as to whether you should be able to get Dunedin or Adelaide with the set much depends upon the number of valves. Dunedin, at your distance, would not be more than 'phone strength on four valves, except, perhaps, on odd occasions. Four valves will bring in Adelaide at very good speaker strength on occasions, but other times only on 'phones. You will find that skill in tuning-in soon comes with practice.

A.R.E. (Recfton) writes asking if the short-wave adapter can be used on a reflex set employing crystal detector. This is a case where the adapter will not suit, as there is no valve detector socket to which the adapter can be connected. A request is also made for a short-wave adapter to be designed for use with a valve reflex set. The short-wave adapter is really only a detector unit to be coupled to an audio amplifier, and by doing away with the old valve-base plug the three flex wires can be connected to the proper battery, and other leads of any type of amplifier, assisted by reference to the original diagram. Although "Megohm" will always give all assistance possible, it takes too much time to design special additions of valves to suit any circuit diagram that may be sent along.

J.W.C. (Puponga).—The 20's wire for the crystal set coil is intended to be S.W.G., but, although B. and S. gauge is slightly thinner than S.W.G., it would answer in this case. The equivalent would be 10's B and S.

B.F. (Wellington).—You would not be wise to increase the capacity of variable condensers in the set mentioned, as the capacity should not be too large. Why not take out two or three of the moving plates? The fixed ones can be left, and the moving ones replaced when the set is dismantled. This is the best way out of the difficulty. It is much better than altering coil values in this case.

H.A.R. (Havelock).—As you find a difficulty in getting reception of lower wave-lengths, it is necessary for you to bring your set down a little to cover the usual range. The wave-lengths as now arranged appear to be giving general satisfaction since the recent alterations were made. You give no particulars whatever, beyond the information that you have a set, so the only thing I can suggest is to take a few turns off the tuning coils, so that the range of the set will be lowered. If our correspondent cares to supply details as to tuning arrangements in the set, further particulars can be given as to what should be done.

## ESPERANTO

It has been definitely decided that the Esperanto course, which is being conducted through these columns from station 2YA, will be comprised of twenty lessons. Therefore, this week's lesson, Lesson XI, which is published below, brings students to the commencement of the second half of the course. Provided that the present time-table is adhered to, the concluding lesson will be broadcast from the studio on the evening of December 15. This means that students will have completed the course before the holiday period has made itself felt.

Students and listeners should continue to forward inquiries to "The Esperanto Instructor," New Zealand Broadcasting Company, Wellington, or care of "Radio Record." With each inquiry a stamped addressed envelope must be enclosed, otherwise the instructor cannot guarantee a reply.

### LESSON XI.

(To be broadcast from 2YA on October 13, from 7.30 to 7.54 p.m.),

### Bonan vesperon!

THE CONJUNCTION.—In Esperanto, as in other languages, certain words are used merely to join words or sentences. Students have already used Esperanto conjunctions in this course, for such words as kaj, sed, ĉar, and ke are classified as such. It is not proposed to give herein an exhaustive list, space not permitting this, but the following will prove useful:—Kaj....kaj, both...and; au....au, either....or; ĉu....ĉu, whether....or; nek....nek, neither....nor; ĉe se, even if; same kiel, the same as; kaj tiel plu (k.t.p.), and so on; kaj ceteraj, and the rest (etc.).

INTERJECTIONS AND EXCLAMATIONS.—The following words are used to express joy, grief, surprise, etc.:—Adiaŭ! Farewell, good-bye! antaŭen, forward! Atentu! Look out! Take care! Aŭskultu! Hark, Hiss, Bone! Good! Ĉerte! Certainly! Ĉu ne? Isn't it? Efektive! Really! Fi! Fi! For shame! For! Be off! Haltu! Stop! Helpu! Helpu! Help! Ho ve! Alas! Jaf! Indeed! Jen! Lo! Behold! Kompreneble! Of course! Rapide! Be quick!

CLOCK-TIME: The method of giving time of day:—To the question, Kionda horo estas? (What time-hour is it?) the following answers may be given: La dua (2.0); La kvara kaj tri-dek (4.30). For "a.m." and "p.m." add matene, posttagmeze, vespere, nokte, in the morning, afternoon, evening, or night, as the case may be. Bonan nokton al ĉiuj.



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# From the Woman's Point of View.

By VERITY.

## TO-DAY AND TO-MORROW

### Children and Films.

To-morrow and to-morrow, and to-morrow,  
Creeps in this petty space from day to day,  
To the last syllable of recorded time;  
And all our yesterdays have lighted fools  
The way to dusty death.  
—Shakespeare.

### Things Said.

I am one of those who look to broadcasting for the correction of certain false values—the misplaced emphasis of newspapers, for instance, which proceed on the principle that it is always news when a man bites a dog, and never news when a dog bites a man. They turn the world upside down every day for our pleasure, and end by giving our minds a permanent crick in the neck.—George Sampson.

### Broadcasting a Tattoo.

An "echo" band playing on the hills surrounding a natural arena and accompanying the singing of the hymn "Abide with Me," was one of the features heard by listeners at Tidworth, England, in connection with the broadcasting of the Southern Command Searchlight Tattoo. It was broadcast by permission of General Sir Alexander Godley, G.O.C.-in-Command, Southern Command, who was formerly in New Zealand.

### Nonsense Songs.

At the "Children's Hour" at 2LO quite recently, a delightful cycle of Nonsense Songs were sung by the Wireless Chorus. They are called "The songs that came out wrong," from "Alice in Wonderland." The writing of sensible nonsense is one of the most difficult things in the world, and probably there has never been a greater master of the art than Lewis Carroll. These songs are set to music by Liza Lehmann, and are a perfect joy to those who like good music and also to those who appreciate good nonsense.

### Candlesticks.

A new and somewhat original candlestick is made from discarded cotton reels of varying shapes, some large, some small. They are glued together, given a coating of size, and painted with oil-colours. The top reel is small and has the central hole enlarged and lined with tin to receive the candle. There is great scope for the development of individuality of both colour scheme and design in this interesting work. A final coating of varnish sets the paint, gives a finished appearance and facilitates the removal of grease.

### Chinese Charm.

Altogether new and entirely captivating are the quaint little jewelled trees from China. The tree itself is real—it once grew somewhere in the Far East. It is one of those queer little dwarfed affairs so dear to the heart of the Chinese. Now, petrified, it stands in a square Satsuma flower-pot. The flowers themselves are made from the semi-precious stones—jade, both green and white; corneal, coral, amethyst, lapis-lazuli, and jasper. Leaves are cut and veined from large pieces of dark green jade. The flowers are exquisite, having caught that rare charm of a mystic fairyland. Subdued, iridescent—reflecting imprisoned rays of sunlight, they are things of beauty and a joy for ever. Delicate stamens of bright green are coral-tipped. A myriad slender petals of white jade go to form a flower of miraculous faintness. The Chinese love of nature in her beautiful simplicity is faithfully portrayed. As a table decoration the magic jewelled tree is indeed unique.

### Wireless Weather.

One of the most important uses to which the new science of wireless telegraphy has been put, is the forecasting of hurricanes. Weather maps have for some time now been broadcast in the United States by means of a simple machine which draws the map on a piece of paper. These maps become disfigured by marks which are due to the static discharges in the atmosphere caused by an approaching hurricane, the direction of which can be shown by the aid of a wireless compass. How useful one of these things would be to hang in the hall in place of the unreliable barometer! We would always be prepared for a "rainy day," and might even be able to tell "which way the wind blows!"

Everyone knows the gloomy, pessimistic soul who never stirs abroad without grasping his umbrella firmly in his right hand. We have heard of an optimist who had some fallen bush to burn. Whilst pondering one evening what he should do, he listened in to the weather forecast. It was "Rain approaching from the west." "Good," said he, "now I'll burn off at once and the rain will come during the night and prevent damage to the surrounding country." He promptly set to work and had a wonderful burn. Fortunately, the rain came according to forecast; but with such absolute faith in wireless we dare not think to what lengths such an optimist would go at the bidding of a wireless telegraphy map!

## UNFORGOTTEN

I know a garden where the lilies gleam,  
And one who lingers in the sunshine there;  
She is than white-stoled lily far more fair,  
And oh, her eyes are heaven-lit with a dream.

I know a garret, cold and dark and drear,  
And one who toils and toils with tireless pen,  
Until his brave sad eyes grow weary—then  
He seeks the stars, pale, silent as a seer.  
And oh, it's strange, for desolate and dim,  
Between these two there rolls an ocean wide;  
Yet he is in the garden by her side,  
And she is in the garret there with him.  
—Robert W. Service.

## WHERE ROSES LIE.

If life be a garden, pluck me its roses  
That I may be weary of white and of red,  
Of buds of fair promise, of flowers  
That are dead,  
Or ever life closes.

For I have strung garlands of pain and of pleasure,  
Their petals blush red where their thorns have drunk deep.  
Since love has discovered the place where I keep  
My roses, my treasure.  
—Richard Middleton.

## COME, LISTEN AND LEARN

### The Young Woman of Yesterday.

"When I look back to my boyhood days and remember the fashionable young women dressed 'light,' she dispensed with her short flannel petticoat, her quilted pads and cashmeres." So said Mr Wood from 3YA in an entertaining talk on fashions. "She wore only a long cotton chemise, her whalebone corset, a pair of long stiffly starched pants, one corset covering, one cotton short petticoat, one long full petticoat about five yards wide with a duster ruffle, high shoes and lisle stockings. Ordinarily she would wear two long petticoats. And she wasn't at all warm in this outfit even when the mercury danced around 90.

"At least, she claimed she wasn't as warm as the modern young woman who wears nothing but one sheer garment beneath a sleeveless, decolette one-piece crepe de chine dress that ends at her knees.

"The girl of to-day goes to her work carrying about 24lbs. of clothing at a maximum. Even a bathing suit weighs more in actual ozs. than the approved hot weather outfit of the girl of 1927.

### Corsetting.

"Whalebones, why she doesn't know what they are all about. And 'lacing'—well, she couldn't if she tried. The average girl of 1897 measured about 18 inches round the waist. The average waist measurement of the girl of 1927 is 28 inches.

"In 1920 quite an interesting effort was made by large corset manufacturers of America to combine with those of England in an endeavour to bribe the foremost dress designers of Paris to line up their frocks which would demand the continuance of corsets, but happily without success. Heavily boned articles gradually went into the melting pot and notwithstanding the immense expenditure of money in order to stem the tide, they have reached a time when they are now almost extinct. Out of the confusion over the past six years some stability has been reached for encasing the figure which takes in all of the figure from bust to well below the hip line in one garment.

### Shoes.

Dealing with shoes, Mr. Wood said, "The search is on in the Seven Seas for new materials. Shoe material makers have exhausted the possibilities of new grains in domesticated land animals. In the jungles of Asia and Africa lizards, snakes and small reptiles have been caught, tanned and turned into leather for fashionable shoes. The reptilian vogue still continues, for the tanner has learned to put all the colours of the rainbow into his tannings. Already we are seeing iridescent orchid lizard made up into evening footwear.

"In the China seas a vicious little shark has been discovered owning a skin as hard as flint. After all sorts of treatments, the finished piece of leather can be buffed down on an emery wheel so that its surface has all the brilliancy of diamond cuttings. This new leather absorbs colouring matter to perfection. As a covering for a

heel in a soft pastel colouring, it has all of the shine and brilliancy of a coloured jewel. Now the attempt is to be made to put this leather—called Galuchat—into the upper. All the inventive ingenuity of the chemist and factory engineer is endeavouring to discover a way of stitching the material so that neither needle nor thread will break in the first stitch. Galuchat is now being cemented on in little patches used as insets or underlays in all of the colours harmonious with fine footwear, but the next move forward is to tame this China shark into a material as docile as kid or calf.

### Stockings.

Paul Porret, who is known in Paris as the "Enfant Terrible," is becoming very dissatisfied with the monotony of hundreds of feminine legs all sauntering in harmonious pairs. "Why," he says, "should two legs look alike?" The answer is, of course, frequently and sadly, "They don't," but M. Paul is thinking less of the filling than of the stockings. He seeks variety, to be gained by splitting pairs and parading a black and a white, or whatever colour combination suits feminine fancy, side by side. A sensible idea is now practised in Paris, that of purchasing three silk stockings at a time.

### Gloves.

The newest glove is the slip-on. It has a straight wrist resembling those of three or four years ago, only without the strap and dome. The tops are scalloped or finished with gold or metal clips. Then there is the long Mousquettier, which we shall see as the season advances. These are allowed to drop concertina fashion at the wrists.

## KITCHENS

I never knew a man who didn't like  
A kitchen fire;  
Nor a woman, if she be away awhile,  
But would tire  
Of inns and servants, and would long  
To be  
Back in her own kitchen, buttering  
toast,  
And making tea.  
The drain boards and the sink are  
scrubbed as white  
As ocean sands;  
The dotted muslin curtains are drawn  
back;  
A basket stands  
Heaped high with yellow apples, and  
the smell  
Of the whole room is clean, like gar-  
ments washed  
And ironed well.  
I know a kitchen where staid four-  
o'clocks  
Bloom at the door,  
And the honey-coloured lights lie  
dappled bright  
Along the floor.  
Above a flame a copper kettle sings  
The comforting sweet song of all serene  
and gracious things.  
And I can take a yellow bowl and  
beat  
White eggs to foam,  
And I can mark the clock's face for  
the time  
A man comes home,  
To find me there, contentment in his  
look,  
For he, like every man, delights to  
watch  
A woman cook.

## RADIO RECIPES

### Stuffed Onions.

6 onions, 2 teaspoons chopped parsley, 4oz. cold cooked meat, 1 yolk egg, 1 teaspoonful Bovril, 2 tablespoons bread-crumbs, pepper and salt, 1 teaspoonful chopped onion, browned crumbs.  
Peel and remove as much of the centre of the onion as possible. Chop the meat finely and put into a basin with the chopped onion, parsley, bread-crumbs, Bovril, pepper and salt. Stuff the onions with this, sprinkle with the browned crumbs, and bake slowly for 1 hour. Serve with brown sauce.

### Hamilton Pudding.

4oz. instant powdered gelatine, 1½ gills cream, little vanilla essence, 1 tablespoon apricot jam, 1 stiffly whipped white of egg, ½ pint milk, 1oz. sugar, 2oz. stale sponge cakes, 2 tablespoons sherry.  
Dissolve gelatine in milk, add sugar and vanilla, and allow to get cold and upon the point of setting. Decorate a mould with cherries and angelica. Spread the sponge cake with jam, pierce with a skewer, and soak in sherry. Whip cream, and when milk is cold add this and egg white to cream, and whisk the whole well. Put a little mixture in mould, then sponge cake in the centre, and rest of mixture, care being taken not to allow the sponge cake to show when the pudding is unmoulded.

### Tomato Soup.

1 tin tomatoes or 1lb. fresh tomatoes, 1½oz. butter, 1 small carrot, 1 small onion, 2oz. lean ham, 1 small turnip, 1oz. rice, 1½ pints stock, Bouquet Garni, 1 blade mace, spring parsley, 1 bay leaf, 7 or 10 peppercorns. Tie together in a muslin bag.  
Method: Melt butter in a white-lined pan, add carrot, turnip and onion cut into small pieces. Place lid on pan and cook over a low light for a few minutes, shaking pan constantly. Cut ham into small pieces and add with tomatoes and cold water or stock. Allow to come to boil, remove scum, add bouquet garni and simmer 1½ hours. Rub through a hair sieve and return to pan. Mix rice flour with little water, add to soup, and stir till boiling.

### MISS PHYLLIS BATES,

New Zealand's  
leading teacher of  
ballroom dancing,  
who will commence  
a series of instructional  
lectures on  
dancing from 2YA  
on Saturday, Oct. 8.

Her instructions  
will be illustrated by  
a series of photographs in next week's  
"Radio Record."



## The Letters of Annabel Lee

My Dear Elisabeth,—

So in your mountain fastness you long for news of the world and its ways, and, from the land of brown health and shaggy wood, your thoughts in this merry spring time lightly turn to thoughts of clothes. Very alluring are the new things artfully displayed on the immaculate waxen ladies of the drapery harem. Something to suit both prince and pauper, the printed voiles in a little shop on Lambton Quay being a joy to the eye, and of a surety will prove a lure for mere man when worn by the dainty maiden of to-day. In gay colours these, roval blue, and red, and cool, calm green. But also for the greying hair, the Junesque figure, there are soberer hues, more dignified textures. While noting fluctuations of the mode in the D.I.C., Elsie and I admired some clever marqueterie work achieved by disabled soldiers in the Christchurch district. Candlesticks, teapot stands, fascinating smallish oval mirrors, bordered with gaily-coloured flowers and fruit, also a lamp that can be moved around when one is feeling restless, with a decorative shade; your soul would love, this latter desirable item for the moderate price of two pounds. How well they work, our men, in peace and in war. Everyone is clever nowadays, don't you think? You absolutely have to be, if you are going to count for anything at all. Life is in italics all the time, and the day of the dud is over. No Christian charity remains for failure, as in the Victorian era; when age, no matter how ponderous, was he-pedestalled, and youth, no matter how dazzling and daring, was snubbed.

Of the making of flats there is no end in these later days; but, oh! the difficulty of choosing one among the many that so dab themselves, from the palatial piles that fancy themselves on The Terrace to a "but and a ben" at Newtown. Gallons of hot water, and an absence of noise of the more violent description, these are the gods of my domestic idolatry. The strident

gramophone, the bacchanalian ditty of the late roysterer as he staggers up the steps, the big boots of boys, the clash and the clang of those who, through lack of imagination or the act of God, cannot unfold a newspaper or pass the salt without raising a clamour. All these, and more also, are to be endured in flats, unless chosen carefully. However, here I am installed in quite a passable one; and, as ever, Richard, the kind and good, helped me over the stile by wielding the hammer with his strong right hand, and giving me the benefit of his excellent taste in arranging the harassing number of household gods one collects, and hanging the pictures, which are a light unto my path. Fain would I have purchased a water-colour or two from the academy show now going strong. One handsome minx tempts me from her gilded frame, attired in the equivalent of Joseph's coat, and reminding me of you. Also would I, and I could, add to my collection a dim landscape by Miss D.K. Richmond, with delicate nuances of lights and shadows, and a flowery study by M. O. Stoddart, whose work I have long loved. But, dear heart, some pictures there cause my hair to rise and my flesh to creep; verily, if cut into squares, each bit framed and hung would convey as much meaning as these bewildering slashes of paint. The newest of the new in art is hard for poor, plain people to grapple with; and many of the latest verselets of the extremists appear to me, a lover of literature all my life, something like a corruscation of hic-coughs!

You remember Evangeline? She has just returned from a little journey in Europe, and for the moment dress, and the appurtenances thereof, are her topic. Her garments are wonderful in cut and line, ingeniously simple, arrestingly short. One coat of allure is of the softest, slinkiest velvet, with enormous hem and collar of what looks like chinchilla and, being so, is worth a ransom; but I suspect it of being our old friend, the ubiquitous bunny, bred beyond recogni-

tion, especially to resemble the delectable chinchilla, at which species of camouflage I hear certain English furrers are very clever.

Yet another entertainment for the Karitane Hospital, which some day soon should rear itself into a Hans Andersen Palace of Gold for beautiful babies, if people go on giving pleasant and profitable entertainments on its behalf. "Oh, Lady! Lady!" produced by David Devitt, and his numerous and clever dancing pupils, went well, though wobbly in parts. The libretto was diverting, as was to be expected from the witty pen of Mr. P. G. Wodehouse; the music melodious, and the dancing of varied character, ranging from classic posturing, with drapery of the scantiest, through grades of aggressively high kicking and toe dancing of incomparable suppleness, to the broadly humorous effort of two amusing young comedians. In the acting of the operetta two performances stood out with crystal clearness: Miss Gretta Stark, with a beguiling little soprano voice, youthful, fresh, and appealing; and Miss Kathryn Murie quite amazingly good as "Painting Fanny," the nice and naughty little crook. Miss Murie, in addition to a graceful and charming appearance, brings to her work a sound and finished interpretation.

When do you purpose coming to town? The gorse flames on the Tinkari hills, the hyacinths and carnations bloom (alack, for most of us, only in the florists' windows), the pigeons preen and prance in the dusty city streets. Do you want new curtains or clothes? And would you like me to choose some from the charming variety that, like a Magic Carpet, spreads itself before the blue eyes of Eve? Now that you have your wireless, bringing you into communion with the wide world, you will feel less inclined than ever to stir from the thatched cottage, the garden, and the man of men. So if you want anything sent along, books or begonias, flowers or frivolities, do let me know.—Your,

ANNABEL LEE.



# Some Features of Next Week's Programmes

## 1YA FEATURES

On Tuesday, October 11, the concert party arranged by Mr. A. Birch of the "Snappy Three," will open with a chorus which will be followed by a bass solo by Mr. Garry Jenkin. Mr. Jenkin is a bass soloist of distinction and included in his numbers is "Deeper" by Hurst, an item which will be broadcast for the first time. The "Snappy Three," formerly "The Masked Trio" will provide popular numbers and latest hits. Mrs. G. Martin is a violinist who will also make her first appearance, and an outstanding number should be Ketelby's "Phantom Melody." Another first-time performer is Mr. Ernest Snell, one of the city's leading baritones, who has sung for the Bohemian Orchestra and Municipal Concerts in addition to taking the leading part in the Auckland Operatic Society's performance "La Mascotte," "The Arcadians" and "Tutankhamen." An exceptionally fine performance should be given on Cowen's "Onaway Awake Beloved," in addition to Alfred Hill's "Tangit" which calls for more interpretive ability than any other of the New Zealand composer's works.

Miss Audrey Perry is to give elocutionary items. She won the elocutionary championship at the Auckland Competition Society's recent festival.

On Wednesday Mr. Ripley is performing an item new to listeners in Liza Lehmann's "Ah Moon of my Delight." Mr. Dan Flood is to give elocutionary items at the piano and his work in this direction is already well-known.

Miss Ina Thompson, contralto, has proved a complete success with her beautiful voice and is singing three numbers of totally different types.

The Griffiths Duo have prepared another humorous sketch which they advise will be even more attractive than their last contribution. Mr. Eustace Tregilgas, the conductor of the Auckland Artillery Band, is playing three cornet solos, including the difficult number of Percy Code's "Whendourie." Soprano solos will be rendered by Master David Campbell, whose pleasing boy soprano voice has proved a complete success over the air. Miss Marion McMurtree will provide selections on the violin by Zacherewitsch, Paderewsky, and "Rondino" on "A Theme by Beethoven's" by Kreisler.

Thursday's programme will be chiefly notable for items by Mr. Geo. Poore, conductor of the Prince Edward Theatre Orchestra. He will render three flute solos including Carté's sparkling and vivacious "Romance and Tarantelle." The opening movement of the "Romance" provides opportunity for tone quality in the solo passages and the tempo is gradually increased to the allegro section of the "Tarantelle." Mr. W. Harris is providing tenor solos of the older type including "Give Me The Open Road," by Ambrose and "I Pitch My Lonely Caravan at Night," by Eric Coates. The contralto solos are in the capable hands of Miss Thelma Duffin, who is to render selections by Del Riego and a light number by Molly Carew entitled "Tiptoe." Mrs. Beatrice Jellard will render mezzo solos.

Friday night's programme will provide heaps of variation, the first half-hour of the entertainment being relayed from Messrs. John Courts Ltd. The studio portion of the programme from 8.30 until 9 p.m. will be contributed to by Mr. Hal McLennan, the solo flautist with the Auckland Municipal Band. His numbers include "Valse Caprice," "A Spanish Dance," by Savatill and a descriptive number by Bilenberg entitled "The Nightingale and the Frogs." As the name implies the piece is representative of a duet between a nightingale and a frog, and the resulting contrast may be better left to the imagination.

Mr. Barry Coney will sing three numbers, all of which are new to listeners. They include "Shake the Rosy Apples Down," by Anafin "Il Fleure dans mon coeur," a modern number by Debussy and a rousing song by Corbav "Shepherd See Thy Horse's Foaming Mane." Mr. Arthur Wilson will conclude the programme with selections on his Tabernacle organ.

The Saturday relay should prove the most entertaining of the week, when the Auckland Municipal Band under Mr. Christopher Smith, assisted by leading city artists, will broadcast an excellent programme from 8 until 9.30 p.m. Dance music will follow by the Click Clack Radio orchestra until 11 p.m.

On Sunday selected studio items at 3.0 p.m. will be followed by church service from St. David's Presbyterian Church. St. David's have recently moved into a fine new building which constitutes one of the most imposing churches in Auckland. This will be the first occasion on which they have been broadcast. Following the church service the city organist will be relayed in an organ recital from the Town Hall.

## 2YA FEATURES

Interesting lectures for ladies will be given at 2YA on each afternoon of this week. They relate, of course, to home decorations, cooking, and fashions.

Mr. Bernard Joyce, display manager for Messrs. James Smith Ltd., speaks at 2YA on Monday afternoon on "Colour Harmony in the Home." Other afternoon lectures will be "Electric Cooking," Mrs. Sinclair; "Fashions," Mrs. Britten; "Gas Cooking," Miss Marion Christian.



MISS LOTTIE RASTALL.

A well-known elocutionist and Shakespearean reciter, will be heard from 2YA on Tuesday, October 11, in a selection from her repertoire, including "The Fallen Halo," by Harry Wynne, "The Soldier," by Rupert Brooke, and "The Oxen," by Thomas Hardy.

—Crown Studios.

Miss Nora Gray, a pupil of Mr. Gordon Short, one of Wellington's leading teachers, appears at 2YA on Monday in vocal and pianoforte items. Miss Gray has previously been heard from 2YA, her contributions meeting with marked approval. Besides being a pianiste, she is also the possessor of a pleasing soprano voice, which she uses with good judgment, and finished artistry.

Mrs. P. J. Townley, who is to sing at 2YA on Monday, is a mezzo-contralto with a cultured voice of good quality. Mrs. Townley has twice previously been heard from 2YA. She specialises more or less in classical numbers.

Mr. Claude Tucker is one of Wellington's leading flautists. He has also faced the microphone at 2YA on several occasions, and his items have been invariably well received. Mr. Tucker is a member of several of the city's leading orchestras, and is a player of recognised ability. He will on Monday at 2YA present two most attractive numbers.

The Wellington Ladies' Trio—Miss Nora Gray (soprano), Mrs. P. J. Townley (1st contralto), and Miss Molly Fenton (2nd contralto)—are vocalists who have won distinction on the concert platform, in both solo and concerted work. Together they form a delightful combination, as all listeners in to 2YA on Monday will realise.

Mr. Pargetter, baritone, is an experienced concert singer, and his well-trained light baritone voice will be found very acceptable "on the air" in a series of specially-selected solos at 2YA on Monday.

Mr. Desmond Lavin, violinist, soloist to the Wellington Professional Orchestra, and a well-known performer on the concert platform, will contribute two of the most popular numbers from his extensive repertoire at 2YA on Monday. Mr. Albert Loadman, tenor soloist, who sings at 2YA on Monday, will be well remembered by listeners-in to 2YA. He has figured prominently in the Wellington Competitions.

Mr. Stanley Warwick, elocutionist, is an artist whose standing both as a teacher and as an entertainer is well known throughout New Zealand. Mr. Warwick has adjudicated at competitions at various centres. He will be heard from 2YA on Monday.

Lieut. Gordon Burt, R.N., will continue his series of lectures on Polar Exploration—his topic on Monday evening being "Thrilling Experiences with Polar Bears."

## 3YA'S TRIO

### WHAT A REPERTOIRE!

#### NEXT WEEK'S ATTRACTIONS.

Some indication of the class of entertainment which the Christchurch Trio is providing at 3YA is given in their items on next week's programmes.

In the opinion of lovers of good music this trio—Mr. Harold Beck, Miss Irene Morris and Miss Aileen Warren—"makes" the programmes at 3YA.

Three items of altogether different types are to be given on Wednesday evening. Following "Two movements from a Miniature Trio" by Gurlett, will be the soulful "Serenade" by Vidor and the very pretty and lively "Gavotte from Mignon" by Thomas.

On Thursday "Tempo di Minuetto," the beautiful and graceful minuet of Beethoven will be played, as also will "Dorak's Slavonic Dance No. 7," which is quick, lively, and bright.

Coerne's "Trio in one Movement" and Mendelssohn's evergreen "Spring Song" will be played on Friday.

On Saturday the trio will provide the classical portion of an evening of instrumental music. The items will be: "Hungarian Dance No. 3" by Brahms, "Souvenir de Seherne" and "Prelude in C Minor" (Rachmaninoff).

## LECTURES FOR FARMERS

### A USEFUL SERIES ARRANGED

(To be Given from 3YA.)

Lectures of great value to farmers have been arranged by the Canterbury Progress League for broadcasting from 3YA. The services of Dr. Hilgendorf and Mr. Robert Alexander have been secured. These gentlemen are two of the highest authorities in farming matters in New Zealand. Mr. Alexander is the director of Lincoln Agricultural College, and Dr. Hilgendorf is the noted biologist. The addresses have been arranged for October 20 and November 3. Dr. Hilgendorf will speak on "Recent Investigations on Grasses," and Mr. Alexander on "Agricultural Education." Born in County Donegal, Ireland, in 1874, Mr. Alexander was educated at the Royal Agricultural Institution, Belfast, and the Royal College of Science, Dublin. He graduated as A.R.C.Sc. He was agricultural instructor in the county of Londonderry 1903-5, and lecturer on agriculture at the Albert Agricultural College, Glasvin, Dublin, 1905-9. In 1909 he became director of the Canterbury Agricultural College at Lincoln.

Dr. Hilgendorf is a brilliant New Zealander. He was born near Dunedin in 1874 and received his education at Otago B.H.S., Otago University, and Auckland University College, where he gained his M.A. degree with first-class honours. In 1905 he became Doctor of Science, and was elected a Fellow of the New Zealand Institute. He was science master at Invercargill B.H.S., Prince Albert College, Auckland, and at the Agricultural College. He specialised in plant breeding, and produced several new strains of wheat, of which "Collere Hunters" is the best known. His publications include "Pastures of New Zealand," "Farmers' Foes in New Zealand," and papers on the Transactions of the New Zealand Institute, of which he is a member of the Board of Governors. Dr. Hilgendorf is president of the Canterbury Philosophical Institute.

Miss Molly Fenton, a cultured contralto, has been heard "over the air" from 2YA on various occasions, and may be relied on to give an artistic presentation of her selected numbers on Monday.

Mr. Preston Billing's talks on "Radio" will be continued at 2YA on Monday.

"The Giant Force-Gravity" will be the subject for the next of the series of talks now being given at 2YA by Mr. N. R. Jacobsen on natural science.

Mrs. F. E. Kelly, who is to sing at 2YA on Tuesday, specialises in classical ballads. She has a well-trained mezzo-contralto voice.

Miss Lottie Rastall, a young elocutionist, and Miss L. Rosenthal, soprano, will appear for the first time in radio at 2YA on Tuesday.

Mr. Leo Power, clarinet soloist, who has played with success on the concert platform, will be "on the air" at 2YA on Tuesday.

Mr. W. W. Marshall, acknowledged to be one of the most popular bass singers in Wellington, and associated with practically all the leading musical

organisations of the city, will sing at 2YA on Tuesday. His splendid voice was heard and greatly appreciated at the opening concert of 2YA.

Mr. Keeble Thurkettle, pianist, is a player of much promise, whose work is highly esteemed by competent judges of music. His last appearance at 2YA elicited favourable comment from many listeners, who will look forward to his items on Tuesday.

The Savage Club Orchestra, under the conductorship of Mr. Frank Thomas, will render a programme of twenty minutes' duration, including bright and sparkling selections, at 2YA on Tuesday. This orchestra is fast becoming a favourite with radio listeners.



Captain Findlay, who is in charge of the Wigram Aerodrome at Sackburn, and who is giving at 3YA a series of addresses on aviation, will on Monday give his second talk, entitled "Modern Types of Aeroplanes."

—S. P. Andrew, photo.

The band of the 1st Battalion Wellington Regiment, under Lieutenant J. B. Shardlow, will contribute largely to the programme at 2YA on Thursday, presenting operatic, musical comedy, and other popular numbers. Mr. Shardlow's talented combination may always be relied on to provide listeners with first-class entertainment.

Mr. Harry Matthew, a rising young baritone, will be making his initial bow to the microphone at 2YA on Thursday.

Miss Eva Bennett, a young soprano with considerable experience in choral work, is to sing at 2YA on Thursday. She gave promise on audition of proving a delightful soloist.

Miss Fanny Kutner, one of Wellington's best-known elocutionists, and a popular figure on the concert platform, will appear at 2YA on Thursday. She has been heard acceptably on relay from Sunday band concerts, and her studio appearance is bound to be welcome.

Miss Mary Wilson's pleasing voice will be heard in contralto numbers at 2YA on Thursday. She has chosen two delightful solos.

At 2YA on Thursday Mr. Allan Bell, M.P., will deliver his lecture, "The Winterless North."

Music from the Paramount Picture Orchestra, a talented combination now firmly established in the favour of radio listeners, will be broadcast by 2YA on Thursday.

The first half of the programme at 2YA on Friday will be provided by the Radio Four, a talented combination, whose versatility has already been fully demonstrated "on the air." Their contributions will comprise instrumental numbers, vocal solos, duets, and quartets, and humorous elocutionary items. The Radio Four comprise Messrs. R. Walpole, C. Proctor, S. Hall, and J. F. Skedden.

Mr. C. Rosen, a member of the Royal Choral Union Orchestra, will contribute violin solos at 2YA on Friday.

On Friday evening at 2YA there will be a relay of Manuel Hymen's Exhibition Band from the Adelphi Cabaret. This promises to prove a sparkling gem in a most attractive programme.

## 3YA ITEMS

There will be only one singer on 3YA's programme on Monday to assist the Christchurch Municipal Band. This will be Miss Mabel Turner (soprano), a promising young singer who will make her first appearance.

Miss Phyllis Robinson, who is to give sketches at 3YA on Monday, is a pupil of Mr. Wm. Densen, a well-known Christchurch elocutionist.

After an absence of some time, Mr. Sydney Gibson, with his banjolin, will appear at 3YA on Monday. This class of music seems to be popular.

Mr. D. Sackling, who has a remarkably fine tenor voice, and who is one of the very favourite artists at 3YA, will be singing on Wednesday. "Sally Horner" will be one of his items. His sister, Miss Phemie Sackling, is a talented pianist and accompanies her brother in his songs. This evening she is also playing solos.

Miss Anita Graham will sing for the first time in radio at 3YA on Wednesday. She has a very promising mezzo-soprano voice.

Hahgood's Instrumental Quartet will delight 3YA listeners on Wednesday with bright revue items.

Mr. Leo Hayward's fourth talk descriptive of the round trip in the Southern Lakes district will be given at 3YA on Wednesday.

Music which will be a sheer delight to all who hear it will be played by the Christchurch Broadcasting Trio at 3YA next week. The items are worth perusing.

Miss Belle Renant, one of the best contralto singers at 3YA, will make a welcome reappearance on Thursday.

Mr. Russell Sumner, always welcome on the radio, will be heard to advantage (as usual) in his songs at 3YA on Thursday.

Some of the best instrumentalists in Christchurch will be playing at 3YA next week, the programmes being notable for their quality in this respect and for the fewness of the singers. Lovers of good instrumental music are to be well catered for.

## MAORI MELODIES.

A party of Maori entertainers, eight of the best singers at Port Levy, have been engaged for Saturday evening, October 29, at 3YA. They belong to the Tutuhare and Te Whaeke tribes. The programme will be one of the most melodious ever broadcast by 3YA. Among the items will be one composed by Princess Rangipi (Mrs. Howie), a war song entitled "Hine a Hine."

able for their quality in this respect and for the fewness of the singers. Lovers of good instrumental music are to be well catered for.

Miss Aileen Warren, the pianiste of the Christchurch Broadcasting Trio, will be heard in two solos on Thursday. She has played before, so listeners will tune in.

Opening the programme at 3YA on Friday with a pianoforte solo, and following on immediately with a violin solo, will be the somewhat unusual feat by an artist at 3YA. This will be done by Miss Hannah Packer, who, though appearing in radio for the first time on Friday, is a particularly well known musician of Christchurch.

Mr. W. J. Richards, baritone, one of the Male Voice Choir soloists, will be the only singer at 3YA's concert on Friday.

"Cello solos of a novel nature, and based on two different types of songs, will be played by Mr. Harold Beck at 3YA on Friday. One will be from "I'm a travelling to the Grave" (an American Jubilee Minstrel song), and the other will be the well known song "Harlequin."

"Classical and week-end" music may be said to describe the bulk of Saturday's programmes. The instrumentalists will be the Christchurch Broadcasting Trio, Mr. Robert Clarke (a great artist on the violin), Mr. A. Hodgson (banjolin), Mr. P. Skinner (banjo), and Mr. Stan Birch (mandoline)—and there will not be a solitary vocalist, save Mr. James Laurensen, who will entertain with two of his best efforts in elocution.

If atmospheric conditions are good, 3YA will rebroadcast 2YA on Saturday—and will not close down at 10 p.m.

For twenty-five years a missionary in Darkest Africa, in the territory through which Dr. Livingstone blazed a trail, Dr. H. R. Warham, M.B., Ch.M., now on furlough in New Zealand, has a most interesting story to tell of this region and its peoples. He is described as a particularly good speaker, and he will have a vast audience on Friday evening when he speaks from 3YA. Dr. Warham, as his name suggests, is a medical missionary, and he knows life (and death) in the forests of the Tanganyika region.

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# Full Programmes for Next

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## NEWS AND NOTES

(By "Switch.")

Three-inch dials are about as small as will afford suitable grip for operating and four-inch dials are better. Even a three and a half inch is better than the smaller size. If small dials are used, however, the principal tuning control ought to have a large dial and knob. Fine adjustment is impossible with a tiny knob.

Failure to obtain a receiving license in Greece, as required by the Director of Greek Telegraphs, Telephones and Posts, may result in twelve months' imprisonment and a fine of 100,000 drachmas. Licenses are somewhat less expensive.

The General Electric Company recently demonstrated its short-wave radio telephone equipment designed for use on long freight trains for communication between engineer and conductor. Although the train was a mile and a quarter long, not the slightest unreliability was observed, the signals being loud and clear under all conditions. Up to this time, it has been necessary for the conductor to use the emergency brake to stop the train or to rely on whistles or flare lights which often fail because of bends in the tracks or poor weather conditions.

Many persons buy wet "B" batteries, connect them to the set, place them on a shelf or at the rear of the table and forget them. The top of the batteries and terminals collect large quantities of dust, more or less moisture and suffer corrosion from various fumes. "B" batteries should be protected from dust. They might well be placed in a box with a lid. Dust causes leakage and spoils the contact at the terminals. Dust holds moisture, which adds to the leakage and helps corrode the terminals. Mr. Merlin H. Aylesworth, president of the National Broadcasting Co., of America, said to an interviewer, recently: "We know for a certainty that big



—Andrew, photo.

MISS ESME CROW.

Miss Crow made an initial appearance "on the air" from 2YA on Thursday last in soprano solos.

things are just around the corner. We expect that we shall live to see motion pictures flashed on to the walls of our homes. Science may even find a way to break down food into electrons and transmit them to our kitchens by radio and there reassemble them for nourishment. This sounds like the wildest nonsense at the moment but the radio itself seemed like nonsense only a couple of decades ago."

In his address before the Radio Manufacturers' Association, assembled at the Chicago Trade Show, Federal Radio Commissioner Orestes H. Caldwell pointed out that, in six years of broadcasting, the radio industry had succeeded in placing radio equipment in but one-fourth of the twenty-two million homes of the United States. Considering that there are eighteen million pleasure automobiles, sixteen million wired homes, sixteen million telephones and eleven million phonographs, the radio industry has a lot of unfinished business ahead of it. The 1927-1928 season will see a marked change in the ratio of radio to non-radio homes.

The phones are a useful accessory to any valve set, and are indispensable for a crystal set. If the phones are poor crystal reception will be weak, and with a valve set it will not be possible to receive long distance stations, because the weak current that flows through the telephone windings will not be strong enough to actuate a movement of the diaphragm. Be sure that the phones are of good make and avoid disappointment.

The ordinary form of neodyne receiver is not well suited to operation with a loop aerial. The reason is that a coil aerial is employed primarily to obtain directional reception, by the proper orientation of the coil. Such a loop would in general have magnetic coupling with the radio-frequency transformer coils, thus resulting in regeneration. While there are some ways in which this effect can be avoided, as by completely shielding the receiver magnetically, there seems no great object in using a loop aerial, since a very short indoor antenna will give as good reception and will not require adjustment.

## Sunday, October 9th

1YA AUCKLAND (333 METRES)—SUNDAY, OCTOBER 9.

- 6.55 p.m. Relay of church service from Beresford Street Congregational Church. Preacher, Rev. Lionel Fletcher; choirmaster, Mr. W. Gemmell.  
8.30: Relay of organ music from Auckland Town Hall. Organist, Mr. Maughan Barnett.  
9.30: Close down.

2YA WELLINGTON (420 METRES)—SUNDAY, OCTOBER 9.

- 6.55 p.m.: Relay of evening service of The Terrace Congregational Church.  
8.15: Relay of band concert of the Wellington Municipal Tramways Band from His Majesty's Theatre. Conductor, Mr. T. Goodall.

3YA CHRISTCHURCH (306 METRES)—SUNDAY, OCTOBER 9.

- Relays of Special anniversary services from Cambridge Terrace Methodist Church Sunday School.  
2.45: Special afternoon service for children and adults.  
6.30: Special evening service for children and adults. Preacher, Rev. J. Harris. Choirmaster, Mr. T. Hallam. Organist, Miss G. Harris.  
8.30: Close down.

4YA DUNEDIN (463 METRES)—SUNDAY, OCTOBER 9.

- 6.30 p.m.: Relay of service from Methodist Central Mission. Preacher, Rev. W. Walker. Organist, Mr. Chas. A. Martin.  
8.0: Studio concert.  
9.0: Close down.

## Monday, October 10th

1YA AUCKLAND.—SILENT.

2YA WELLINGTON (420 METRES)—MONDAY, OCTOBER 10.

- 3 p.m.: Gramophone recital and relay of Manuel Hyman's Exhibition Band from Adelphi Cabaret.  
3.30: Lecturette—Miss Mann, "Fashions."  
3.40 to 5: Gramophone recital.  
6.0: Children's session—Aunt Jo.  
7.0: News and market reports.  
7.35: Lecture—Mr. Preston Billing, "Radio."  
8.0: Chimes of the General Post Office clock, Wellington.  
8.1: Instrumental—Studio Orchestra, selected.  
8.11: Piano solo—Miss Nora Gray, "First Movement Sonata," Op. 78, Beethoven (Augener).  
8.16: Mezzo-contralto solo—Mrs. P. J. Townley, "Now Shines the Dew," Rubinstein (Augener).  
8.20: Flute solo—Mr. Claude Tucker, "Scherzo Capriccio," Sabathel (Rudall, Carte).  
8.24: Vocal trio—The Wellington Ladies' Trio, "Greetings," Brahms (Boosey).  
8.28: Instrumental—Studio Orchestra, selected.  
8.38: Baritone solos—Mr. H. Pargetter, "The Rebel," Wallace; "Son of Mine," Wallace (Cramer).  
8.43: Violin solo—Mr. Desmond Lavin, selected.  
8.48: Tenor solo—Mr. Albert Loadman, "If June Were Mine," Turrey.  
8.52: Vocal duet—Misses Fenton and Gray, "Sunbeam," Landon Ronald (Elkin).  
8.56: Instrumental—Studio Orchestra, selected.  
9.1: Elocutionary—Mr. Stanley Warwick, "The Explorer," Kipling; "My Friends," Service (Methven).  
9.11: Soprano solos—Miss Nora Gray, "Dear Love, Thou'rt Like a Blossom," Liszt; "O Wonderous Mystery of Love," Liszt (Boosey).  
9.16: Flute solos—Mr. Claude Tucker, "The Whirlwind," Krantz; "Dudu," Boehm (Rudall, Carte).  
9.21: Lecturette—Lieut. Gordon Burt, "Thrilling Experiences With Polar Bears."  
9.31: Baritone solo—Mr. H. A. Pargetter, "Up in the Saddle," Wallace (Cramer).  
9.35: Contralto solo—Miss Mollie Fenton, "None but the Lonely Heart," Tschakowsky.  
9.39: Piano solo—Miss Nora Gray, "Polonaise in C Sharp Minor," Chopin (Ashworth).  
9.44: Tenor solo—Mr. Albert Loadman, "Colinette," Wakefield.  
9.48: Vocal trio—The Wellington Ladies' Trio, "The Sandman," Brahms (Bayley and Ferguson).  
9.52: Violin solo—Mr. Desmond Lavin, selected.  
9.57: Mezzo-contralto solo—Mrs. P. J. Townley, "On Wings of Song," Mendelssohn (Boosey).  
10.1: Instrumental—Studio Orchestra, selected.  
10.6: Vocal duet—Misses M. Fenton and N. Gray, "When Song is Sweet," Sans Souci (Chappell).  
10.10: Contralto solo—Miss Mollie Fenton, "The Secret," Schubert.  
10.14: Instrumental—Studio Orchestra, selected.

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3YA CHRISTCHURCH (306 METRES)—MONDAY, OCTOBER 10.

- 3 p.m.: Afternoon concert session.  
6.0: Children's session, by Uncle Jack.  
7.15: News and reports.  
7.30: Talk, by Mr. C. R. Russell, on "Wireless."  
8.0: Chimes. Studio concert by Christchurch Municipal Band, under conductorship of Mr. A. J. Schnack, and assisting 3YA artists.  
8.1: March—Band, "Old Comrades," Teike (Hawkes).  
8.12: Soprano solo—Miss Mabel Turner, "She Wandered Down the Mountain-side," Stephenson (Boosey).  
8.16: Selection—Band, "Mari'ana," Wallace (Byons).  
8.24: Banjo solo—Mr. Sydney Gibson, "Perhaps You'll Think of Me," Stone (Wright).  
8.30: Talk—Captain Findlay, of Wigram Aerodrome, "Modern Types of Aeroplanes" (second of series).  
8.45: Waltz—Band, "Songs d'Automme," Joyce (Boosey).  
8.53: Humorous sketch—Miss Phyllis Robinson, "The Burglar," M.S.  
9.0: Relay of orchestral selections from Strand Picture Theatre Orchestra, under direction of Mr. Harry Ellwood.  
9.15: Hymn—Band, "Nearer My God to Thee," Mason (Palings).  
9.20: Soprano solo—Miss Mabel Turner, "A May Morning," Denza (Chappell).  
9.24: Fantasia—Band, "Friendships," Rippin (Richardson).  
9.30: Marimba solos—Mr. Sydney Gibson, (a) "Tenderly," Lyman (Albert); (b) "She's Everybody's Sweetheart," Conrad (Albert).  
9.34: March—Band, "On Tour," White (Higman).  
9.42: Recitation—Miss Phyllis Robinson, "A Society Reciter's Troubles," M.S.  
9.46: Fox trot—Band, "Twinkle Toes," O'Leary (Wright and Round).  
9.54: Soprano solo—Miss Mabel Turner, "May Dew," Bennett (Boosey).  
9.58: Selection—Band, "Austral," Bulch (Lyons).  
10.4: Banjo solo—Mr. Sydney Gibson, "Just a Rose of Old Killarney," Swain (Prowse).  
10.8: March—Band, "On the Quarter Deck," Alford (Wright and Round).  
National Anthem. Close down.

4YA DUNEDIN.—SILENT.

## Tuesday, October 11th

1YA AUCKLAND (333 METRES)—TUESDAY, OCTOBER 11.

- 3 p.m.: Gramophone recital.  
6.30 p.m.: Children's session—Aunt Betty.  
7.15 to 7.45: News and information session.  
8.0: Chimes.  
8.1: Relay of overture from Majestic Theatre. Mr. J. Whitford-Waugh, conductor.  
8.5: Vocal—The company, opening chorus.  
8.9: Bass solo—Mr. Garry Jenkin, "Deeper," Hirst (Chappell).  
8.13: Vocal trio—The Snappy Three, popular numbers.  
8.20: Violin solos—Mrs. G. Martin, (a) "By the Waters of Minnetonka," Lieurance; (b) selected.  
8.27: Baritone solos—Mr. Ernest Snell, (a) "Tangi," Hill; (b) "Onaway, Awake, Beloved," Cowen.  
8.35: Elocution—Miss Audrey Perry, "The Storming Party."  
8.40: Vocal duet—Miss Beryl Poulton and Mr. A. Prentice, "In a Gondola."  
8.44: Soprano solo—Miss E. Stares, (a) "Summer Rain," James (Ricordi); (b) "Happy Song," Del Riego (Chappell).  
8.51: Relay of musical interlude from Majestic Theatre.  
9.0: Tenor solos—Mr. A. Prentice, (a) "Gay"; (b) "In the Winter Time."  
9.6: Weather report.  
9.7: Bass solos—Mr. G. Jenkin, (a) "Youth," Teschemacher (Boosey); (b) "Just a-Wearyin' for You," Jacobs-Bond (Bond).  
9.14: Piano solos—Miss B. Poulton, selected.  
9.20: Vocal trio—The Snappy Three, popular numbers.  
9.27: Baritone solo—Mr. E. Snell, (a) "Consecration," Manney; (b) "The Last Hour," Cramer.  
9.35: Violin solo—Mrs. G. Martin, (a) "Phantom Melody," Ketelby; (b) "Cavatina," Raff.  
9.42: Elocution—Miss A. Perry, "The Appointment."  
9.46: Relay of musical entr'acte from Majestic Theatre.  
9.50: Duet—Miss Poulton and Mr. Prentice, "I Love the Moon."  
9.53: Soprano solos—Miss E. Stares, (a) "Birth of Morn," Leoni (Chappell); (b) "Be Still, Blackbird," Sanderson (Boosey).  
9.59: Chorus—The company, "Finale."  
10.3: A thought.  
10.4: Close down.

2YA WELLINGTON (420 METRES)—TUESDAY, OCTOBER 11.

- 3 p.m.: Gramophone recital and relay of Manuel Hyman's Exhibition Band from Adelphi Cabaret.  
3.30: Lecturette—Mrs. Sinclair, "Electric Cooking."  
3.50: Gramophone recital.  
4.15: Lecturette—"First Aid," Dr. L. A. Line (St. John Ambulance Society).  
6.0: Children's session—Uncle Jasper.  
6.0: Close down.  
7.0: News session and market reports.  
7.35: Lecturette—Mr. N. R. Jacobsen, "The Giant Force: Gravity."  
8.0: Instrumental—Studio Orchestra, selected.  
8.11: Soprano solo—Mrs. L. Rosenthal, "O, Restless Sea," traditional.  
8.15: Clarinet solo—Mr. Leo Power, "Carnival of Naples," Hartman (Hawkes).  
8.19: Bass solo—Mr. W. W. Marshall, "The Last Call," Sanderson (Boosey).  
8.23: Cello solo—Mrs. Constance Fuller, selected.  
8.28: Mezzo-contralto solos—Mrs. F. E. Kelly, (a) "The Swan," Grieg; (b) "Two Brown Eyes," Grieg (Peters).  
8.32: Instrumental—Studio Orchestra, selected.  
8.42: Tenor solo—Mr. C. A. Williams, "Minnelied" (Love Song), Brahms (Lengnick).  
8.46: Pianoforte solo—Mr. Keeble Thurkettle, "La Danse d'Olaf," Pick-Mangiagalle.  
8.51: Elocutionary—Miss Lottie Rastall, "The Fallen Halo," Clarke (Reynolds).

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# Week - All Stations - to Oct. 16

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8.55: Soprano solo—Mrs. L. Rosenthal, "Vorrei" (Could I), Tosti (Ricordi).  
8.59: Weather report.  
9.0: Relay of Savage Club Orchestra.  
9.21: Bass solo—Mr. W. W. Marshall, "The Friend for Me," McCall (Boosey).  
9.25: Clarinet solo—Mr. Leo. Power, "Cavatina," Rossini (Dallas).  
9.29: Mezzo-contralto solo—Mrs. F. E. Kelly, "I Will Await Thee," Coningsby Clarke (Chappell).  
9.33: Pianoforte solo—Mr. Keeble Thurkettle, "Presto and Allegro" from Fantasia, "The Wanderer," Schubert (Schott).  
9.39: Elocutionary—Miss Lottie Rastall, (a) "The Soldier," Rupert Brooke; (b) "The Oxen," Thomas Hardy.  
9.43: Cello solo—Mrs. Constance Fuller, selected.  
9.48: Tenor solos—Mr. C. A. Williams, (a) "More Fair and Pure and Holy," Schumann; (b) "The Rose and the Lily, the Sun and the Dove," Schumann (Ruckauf).  
9.53: Instrumental—Studio Orchestra, selected.

## 3YA CHRISTCHURCH—SILENT.

## 4YA DUNEDIN (463 METRES)—TUESDAY, OCTOBER 11.

3 p.m.: Town Hall chimes.  
3.1: His Master's Voice recital.  
3.15: Address on "Interior Decoration," by Miss M. Puechegud.  
3.30: Studio music.  
4.0: Book talk, by Mr. H. Greenwood, Librarian, Dunedin Athenaeum.  
4.15: His Master's Voice Recital.  
4.30: Close down.  
7.0: Town Hall chimes.  
7.1: Children's session, by Big Brother Bill.  
7.30: News and market session.  
8.0: Studio concert.  
8.1: Orchestral selections, relayed from the Octagon Theatre.  
8.15: Bass solos—Mr. E. G. Bond, (a) "Myself When Young," Lehmann; (b) "An Ancient Mariner," Sanderson.  
8.23: Flute solo—Mr. J. Stewart, "Rhapsodie Hongroise," Guill-Popp.  
8.28: Recital—Mr. Gordon Hendry, "The Irish Cricket Match."  
8.32: Mezzo-soprano solos—Miss Mattie Edgar, (a) "A Heart That's Free," Robyn; (b) "I Go On My Way Singing."  
8.39: Pianoforte solo—Miss Rita Holmes, "Butterfly," Greig.  
8.43: Address—Pastor W. D. More, "In Praise of Cranks."  
9.0: Baritone solos—Mr. R. B. Macdonald, (a) "I Will Not Grieve," Schumann; (b) "Tis Good to be Alive."  
9.6: Flute solo—Mr. J. Stewart, "Bogelsang," Guill-Popp.  
9.11: Recital—Mrs. Gordon Hendry, "Mrs. Ruggles's Children."  
9.16: Bass solos—Mr. E. G. Bond, (a) "Mine Enemy," Olga Rudd; (b) "The Merry Monk," Beaven.  
9.24: Pianoforte solo—Miss Rita Holmes, "Country Gardens," Grainger.  
9.31: Flute solo—Mr. J. Stewart, "La Messagere du Jour," J. Don Jon.  
9.37: Mezzo-soprano solos—Miss Mattie Edgar, selected.  
9.40: Orchestral selections, relayed from the Octagon Theatre.  
9.50: Baritone solos—Mr. R. B. Macdonald, (a) "Song of the Sword," Clough

## Wednesday, October 12th

## 1YA AUCKLAND (333 METRES)—WEDNESDAY, OCTOBER 12.

3 to 4.30 p.m.: Afternoon session—Selected Studio items.  
7.15: News and reports.  
7.30 to 7.45: Talk on "Physical Culture," by Norman Kerr.  
8.0: Chimes.  
8.1: Relay of overture from Strand Theatre, Eve Bentley conducting.  
8.9: Baritone solo—Mr. Walter Brough, "Five-an-Twenty Sailors," Coleridge-Taylor.  
8.14: Humour—Mr. Dan Flood, humour at the piano.  
8.19: Violin solos—Miss Marion McMurtrie, (a) "Imagination," Zachere-witsch (Schott); (b) "Minuet," Paderewski (Fischer).  
8.27: Contralto solo—Miss Ina Thompson, "Tis the Hour of Farewell," Lehmann.  
8.31: Cornet solo—Mr. Eustace Tregilgas, (a) "Wendowie," Code (Allen); (b) "Lost Chord," Sullivan (Boosey).  
8.39: Tenor solo—Mr. Arthur Ripley, "Ailza Mine," Newton (Chappell).  
8.44: Duo—Griffiths Duo, humorous sketch.  
8.49: Boy soprano—David Campbell, "Sing Me a Song of the Morning," Nicholls (Wright); (b) "Isle McLean," Mackenzie (Boosey).  
8.57: Relay of musical interlude from Strand Theatre.  
9.5: Baritone solos—Mr. Walter Brough, (a) "Fishermen of England"; (b) "Life and Death," Coleridge-Taylor.  
9.14: Humour—Mr. Dan Flood, humour at the piano.  
9.20: Violin solo—Miss McMurtrie, "Rondino—on a Theme," by Beethoven, Kreisler (Fischer).  
9.24: Contralto solo—Miss I. Thompson, (a) "When the Swallows Homeward Fly," White; (a) "I Know Where I'm Goin'," Hughes.  
9.32: Cornet solo—Mr. E. Tregilgas, "Lizzie Polka," Hartman (Hughes).

9.37: Tenor solos—Mr. A. Ripley, (a) "The Minstrel Boy," Moore (Boosey); (b) "Ah, Moon of My Delight," Lehmann.  
9.45: Relay of musical entr'acte from Strand Theatre.  
9.50: Duo—Griffiths Duo, humorous sketch.  
9.56: Boy soprano—Master Campbell, "The Fairy's Lullaby," Needham (Boosey).  
10.0: A thought.  
10.1: Close down.

## 2YA WELLINGTON—SILENT.

## 3YA CHRISTCHURCH (306 METRES)—WEDNESDAY, OCTOBER 12.

3 p.m.: Afternoon concert session.  
6.0: Children's session, by Uncle Sam.  
7.15: Addington stock market reports.  
7.30: News.  
8.0: Chimes. Relay of orchestral selections from Crystal Palace Picture Theatre Orchestra, under conductorship of Mr. A. J. Bunz.  
8.15: Mezzo-soprano solo—Miss Anita Graham, "The Kerry Dance," Molloy (Boosey).  
8.19: Pianoforte solo—Miss Phemie Suckling, "La Regatta Venetiana," Liszt (Century).  
8.23: Tenor solo—Mr. Douglas Suckling, "Life is a Caravan," Del Riego (Chappell).  
8.27: Instrumental trio—Christchurch Broadcasting Trio, Two Movements from "A Miniature Trio," Gurlett (Augener).  
8.37: Mezzo-soprano solo—Miss Anita Graham, "The Waltz Song" from "Tom Jones," German (Chappell).  
8.41: Instrumental quartet—Habgood's Quartet, (a) Gavotte, "Violet of Abuzia," Wenzel (Allan); (b) March, "American Emblem," Lincoln (Vandersloot).  
8.49: Pianoforte solo—Miss Phemie Suckling, "Spinnerlied," Bohm (Lengnick).  
8.54: Tenor solo—Mr. Douglas Suckling, "Sally Horner," anon. (Allan).  
9.0: Relay from Crystal Palace Theatre.  
9.15: Talk—Mr. Leo. Hayward, fourth series, "A Round Trip Through the Southern Lakes of Mt. Cook District."  
9.30: Instrumental trio—Christchurch Broadcasting Trio, "Serenade," Widor (Schott).  
9.35: Instrumental quartet—Habgood's Quartet, (a) Waltz, "Meet Me at Twilight," Harris (Chappell); (b) Romance, "Alice, Where Art Thou?" Ascher (Allan).  
9.43: Mezzo-soprano solo—Miss Anita Graham, "When All Was Young" from opera, "Faust," Gounod (Allan).  
9.48: Tenor solo—Mr. Douglas Suckling, "Serenade," Schubert (Boosey).  
9.53: Instrumental trio—Christchurch Broadcasting Trio, Gavotte from "Mignon," Thomas (Metzler).  
10.0: National Anthem; close down.

## 4YA DUNEDIN—SILENT.

## Thursda, October 13th

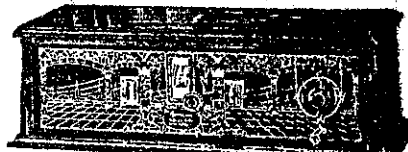
## 1YA AUCKLAND (333 METRES)—THURSDAY, OCTOBER 13.

3 to 4.30 p.m.: Afternoon session—Selected Studio items.  
7.15 to 7.45: News and market reports.  
8.0: Chimes.  
8.1: Relay of overture from Rialto Theatre. Mr. Henry C. Engel, conductor.  
8.8: Tenor solos—Mr. W. Harris, (a) "Give Me the Open Road," Ambrose (L.W. Music Co.); (b) "I Pitch My Lonely Caravan at Night," Coates (Chappell).  
8.16: Flute solo—Mr. Geo. Poore, "Du Du," Bohm (R. Carte).  
8.21: Mezzo-contralto solo—Miss Thelma Duffin, "Break o' Day," Sanderson (Boosey).  
8.25: Contralto solos—Mrs. Jellard, (a) "I'm Alone," Benedict (Paxton); (b) "When All Was Young," Gounod (Paxton).  
8.33: Tenor solo—Mr. W. Harris, "For You a Rose, For Me a Memory," Nicholls (L.W. Music Co.).  
8.42: Flute solos—Mr. Geo. Poore, (a) "Romance and Tarantelle," Barrett (R. Carte); (b) selected.  
8.51: Mezzo-contralto solos—Miss T. Duffin, (a) "Happy Song," Del Riego (Chappell) (b) "Tip-toe," M. Carew (Chappell).  
8.59: Contralto solo—Mrs. Jellard, "A Little Coon's Prayer," B. M. Hope (Boosey).  
9.4: Weather report.  
9.5: Vocal and instrumental—Walter Smith's Novelty Dance and Radio Orchestra, vocal numbers.  
10.0: A thought.  
10.1: Close down.

## 2YA WELLINGTON (420 METRES)—THURSDAY, OCTOBER 13.

3 p.m.: Gramophone recital and relay of Maunel Hyman's Exhibition Band from Adelphi Cabaret.  
3.30: Lecturette—Madame Britten, "Fashions."  
3.50: Gramophone recital.

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—Jauncey, photo.

MR. H. E. WILSON.

Mr. "Harry" Wilson, the well-known Wellington baritone, has been giving listeners to 2YA pleasure with his numbers.

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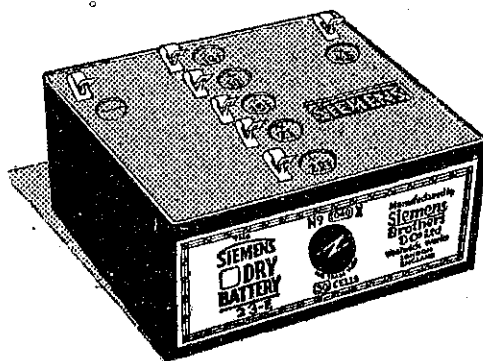
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# Programmes Continued

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- 5.0: Close down.  
7.0: News session and market reports.  
7.35: Lecture—Mr. W. King, D.B.E.A., "Esperanto."  
8.0: Chimes of the General Post Office clock, Wellington.  
8.1: Relay of Paramount Theatre Orchestra.  
8.15: Band—Band of the 1st Battalion, Wellington Regiment, march: "Steadfast and True," Teike (Hawkes).  
8.21: Baritone solo—Mr. Harry Matthews, "Tally Ho," Leoni (Allen).  
8.25: Band—Band of the 1st Battalion, Wellington Regiment, selection: "Maritana," Wallace, arr. by Trussell ("Lyons' Journal").  
8.37: Soprano solo—Miss Eva Bennett, "Love's Echo," Newton (Boosey).  
8.42: Band—Band of the 1st Battalion, Wellington Regiment, waltz: "Wyoming," Williams (Boosey).  
8.48: Elocutionary—Miss Fanny Kutner, "Just Smile," Grant (Reeder and Walsh).  
8.52: Band—Band of the 1st Battalion, Wellington Regiment, fantasia: "Le Cirque," Lithgow ("Lyons' Journal").  
8.57: Contralto solo—Miss Mary Wilson, "All Joy be Thine," Sanderson (Boosey).  
9.1: Lecture—Mr. Allen Bell, M.P., "The Winterless North."  
9.12: Relay of Paramount Theatre Orchestra.  
9.20: Band—Band of the 1st Battalion, Wellington Regiment, intermezzo: "Russe," Franke (Boosey).  
9.25: Baritone solo—Mr. Harry Matthews, "Linden Lea," Williams (Boosey).  
9.28: Band—Band of the 1st Battalion, Wellington Regiment, march: "Entry of the Gladiators," Fucik (Hawkes).  
9.33: Soprano solo—Miss Eva Bennett, "None so Pretty," Brahe (Enoch).  
9.37: Band—Band of the 1st Battalion, Wellington Regiment, selection: "Chu Chin Chow," Norton, arr. by Ord Hume (Boosey).  
9.47: Elocutionary—Miss Fanny Kutner, "Laugh and the World Laughs With You," Wilcox (Reynolds).  
9.51: Contralto solo—Miss Mary Wilson, "An Old Garden," Temple (Boosey).  
9.56: Band—Band of the 1st Battalion, Wellington Regiment, march: "Yanconwinna," Berriman ("Lyons' Journal").

## 3YA CHRISTCHURCH (306 METRES)—THURSDAY, OCTOBER 13.

- 3 p.m.: Afternoon concert session.  
6.0: Children's session, by Uncle Jack.  
7.15: News and reports.  
8.0: Chimes. Relay of orchestral selections from Everybody's Picture Theatre Orchestra, under conductorship of Mr. Albert Bidgood.  
8.15: Contralto solo—Miss Belle Renault, "An Indian Serenade," Morgan (Augener).  
8.19: Pianoforte solo—Miss Aileen Warren, "Valse Caprice," Scott (Elkin).  
8.23: Tenor solo—Mr. Russell Sumner, "Awake," Pelissier (Ashdown).  
8.27: Instrumental trio—Christchurch Broadcasting Trio, "Tempo di Minuetto" Beethoven (Augener).  
8.33: Talk—Rev. B. Dudley, F.R.A.S., "Astronomy."  
8.48: Instrumental trio—Christchurch Broadcasting Trio, selected.  
8.56: Contralto solo—Miss Belle Renault, "A Song Remembered," Coates (Chappell).  
9.0: Relay from Everybody's Theatre.  
9.15: Tenor solo—Mr. Russell Sumner, "Love Beneath the Moon," Drigo (Ricordi).  
9.19: Pianoforte solo—Miss Aileen Warren, "Clock Prelude," Chopin (Augener).  
9.23: Contralto solo—Miss Belle Renault, "Oh! Flower of all the World," Finden (Boosey).  
9.27: Instrumental trio—Christchurch Broadcasting Trio, (a) "Slavonic Dance, No. 7," Dvorak (Fischer); (b) selected.  
9.36: Tenor solo—Mr. Russell Sumner, "I Hear a Thrush at Eve," Cadman (Boosey).  
9.40: Relay from Everybody's Theatre.  
10.0: Close down.

## 4YA DUNEDIN (463 METRES)—THURSDAY, OCTOBER 13.

- 7.0: Town Hall chimes.  
7.1: Request gramophone concert.  
8.0: Town Hall chimes.  
8.1: Mezzo-soprano solos—Mrs. J. Marshall, (a) "Love Triumphant," Wright; (b) "One Fine Day," Puccini.  
8.8: Violin solo—Mrs. Attwell, "In a Monastery Garden," Ketelby.  
8.13: Pianoforte solo—Miss A. Muir, selected.  
8.17: Baritone solos—Mr. P. Marchant, (a) "Floral Dance," Moss; (b) "Lute Player," Allitsen.  
8.24: 'Cello solo—Mr. Malcolm Robilliard, "Banks of Allan Water."  
8.28: Contralto solos—Miss Winnie McPeak, (a) "Ships of Arcady," Head; (b) "Morning," Oley Speaks.  
8.35: Violin solo—Mrs. Attwell, "Le Cygne," Saint Saens.  
8.40: Pianoforte solo—Miss A. Muir, selected.  
8.45: Address—Mrs. M. F. Primmer, "Travels in China."  
9.0: Bass solos—Mr. J. Ferguson, (a) selected; (b) selected.  
9.7: 'Cello solo—Mr. Malcolm Robilliard, "Coronach," Barratt.  
9.12: Mezzo-soprano solos—Mrs. J. Marshall, (a) "Until," Sanderson; (b) "The Meeting of the Waters," Moffat.  
9.20: Orchestral selections from Empire Theatre.  
9.25: Baritone solos—Mr. P. Marchant, (a) "Drink to Me Only," Callcott; (b) "Scots Wha Hae."  
9.32: Violin solo—Mrs. Attwell, "Auld Scotch Songs," Murdock.  
9.36: Contralto solos—Miss Winnie McPeak, (a) "Beyond the Dawn," Sanderson; (b) "Caro Mio Ben."  
9.42: 'Cello solo—Mr. Malcolm Robilliard, selected.  
9.46: Pianoforte solo—Miss A. Muir, selected.  
9.51: Bass solo—Mr. J. Ferguson, (a) selected; (b) selected.  
10.0: Close down.

## Friday, October 14th

### 1YA AUCKLAND (333 METRES)—FRIDAY, OCTOBER 14.

- 6.30 p.m.: Children's session—Tom Thumb.  
7.15: News and sports session.  
7.30 to 7.45: Talk on "Motoring," by Mr. Geo. Campbell.

An American scientific writer presents information relative to the nature of space surrounding the earth. Three layers of gases are said to be found varying in height and having different temperatures. The lower layer or blanket, about seven miles high, contains mixed gases and varies considerably in temperature. The middle layer, about 80 degrees below zero Fahrenheit, is about 25 miles in height. The upper layer, about 400 to 600 miles high, is supposed to have a temperature of about 80 degrees above zero Fahrenheit. This latter is said to serve as the protecting blanket, surrounding the earth, against the many meteors which would otherwise destroy everything on the surface. It also serves as the reflecting layer for many radio waves, being commonly called the Heatside Layer. It is ionised by the aurora is said to be displayed. Above the ultraviolet rays from the sun. In it this layer, space at a temperature of 460 degrees below zero is supposed to exist.

Strange though it may seem a great many listeners have not bought a hydrometer for use in testing their storage batteries. This is the only instrument that will accurately tell one the condition of the battery. And if the battery is not charged at certain intervals its life is materially shortened. It is an investment, not a luxury, to procure a hydrometer.

The heating of a filament rheostat is no cause for alarm. The very purpose of such a device is to waste some of the current from the battery, so that the amount flowing through the tube itself can be regulated. The retarded electricity is dissipated in the form of heat. Some aeriels receive very much better in one direction than in another, and this applies particularly to long low aeriels in which the lead-in is taken from the end of the aerial. Tests have been made frequently, and it was found that an aerial not more than 100 feet in length and not less than 30 feet above the ground has very little directional effects. In aeriels where the directional effects are noticeable it usually will be found that the horizontal length is equal to or more than four times the vertical height, and in constructing an aerial fans should try to avoid such a condition.

The use of a straight line condenser to tune the secondary circuit will facilitate the tuning of any receiver. When using these condensers the increase in wave-length is proportional to the degrees of the dial on the condenser and this makes it possible to plot a straight line wave-length graph for the receiver. By referring to this graph, in which wave-length in metres is plotted against the degrees on the secondary condenser dial, it is possible to find the approximate dial setting for any station, the wave-length of which is known.

Crackling in the phones may be caused by a broken phone cord. After the phones have been used for some time the fine braided wire in the cord gets broken in spots. The test for this is to shake the cord. If the noise continues with the shaking get a new phone cord. It is frequently difficult to locate the mounting screw holes for instruments to be placed on a panel. If you have to template place the screws in the holes of the instrument to be mounted, place white ink or other colouring matter on the heads of the screws and insert shaft in its hole, allowing screw heads to come against panel. Remove and drill where spots of colour are left.

Never unscrew the caps of telephone receivers unless absolutely necessary. There is the double danger that the diaphragm may be bent, and the hairlike wire on the magnet coils broken.

If the average valve is allowed to burn in a horizontal position it will cause the filament to sag, and this will change the operating characteristics of the valve, and will also shorten the life of the filament. It is, therefore, wise to mount the valve in a vertical position. Cushion supports made from sponge rubber could also be placed under the valve socket whenever possible, as this helps to absorb mechanical vibrations which cause noises in the receiver.

In using a crystal detector it will be found that each one will vary in the respect of which direction the current enters. Some operate louder when the current enters through the catwhisker and others when the current enters through the crystal and leaves through the catwhisker. Try reversing the terminal connections, and a difference will be noticed in most cases.

To many listeners who are just building their first set the most difficult problem encountered in the construction is the determination of just which wires are connected and which are still to be connected. To eliminate this uncertainty as each wire is laid in the set the corresponding line in the diagram should be crossed out with a coloured pencil line.

It is generally not advisable to add a third stage of audio-frequency amplification to any set; the third stage never gives the expected amount of amplification and it is always noisy, in fact so noisy that the music is sometimes lost. A new audio amplifier, however, is now marketed in America, with three stages.

A potentiometer is just what its name implies, that is, it is a potential meter. In radio receiving sets there are many uses for a potentiometer, one of the most common being to regulate the grid potentiometer. When a potentiometer is employed for this purpose the resistance coil is connected directly across the "A" battery and the slider is connected to the grid return of the valve.

- 8.0: Chimes.  
Relay of concert from Messrs. John Court's, Ltd.  
8.30: Flute solo—Mr. Hal McLennan, "Valse Caprice," Howe (Fischer).  
8.34: Baritone solos—Mr. Barry Coney, (a) "Shake the Rosy Apples Down," Anatin (Larway); (b) "Il Pleure dans mon coeur," Debussy (B.M. Co.).  
8.42: Soprano solo—Miss Myrtle Burns, (a) "Spring," Henschel (Boosey); (b) "Loreley," Liszt (Boosey).  
8.50: Flute solo—Mr. H. McLennan, "Spanischer Tanz," Sabathil (Carte).  
8.54: Duet—Miss Burns and Mr. Coney, "Calm, Silent Night," Gotze (Lengnick).  
8.58: Flute solo—Mr. H. McLennan, "The Nightingale and the Frogs," Eilenberg (Fischer).  
9.2: Baritone solo—Mr. Barry Coney, "Shepherd, See Thy Horse's Foaming Mane," Korbay (Schott).  
9.6: Weather report.  
9.7: Organ and vocal—Mr. Arthur E. Wilson and assisting vocalist, organ recital and vocal selections.  
10.0: A thought.  
10.1: Close down.

## 2YA WELLINGTON (420 METRES)—FRIDAY, OCTOBER 14.

- 3 p.m.: Gramophone recital and relay of Manuel Hyman's Exhibition Band from Adelphi Cabaret.  
3.30: Lecture—Miss Marion Christian, "Gas Cooking."  
4.4: Gramophone recital.  
5.0: Close down.  
6.0: Children's hour—Uncle Ernest.  
7.0: News session and market reports.  
8.0: Chimes of the General Post Office clock, Wellington.  
8.1: Studio concert by the Radio Four, from 8.1 to 9.1 p.m., approx.  
Elocutionary—Mr. R. Walpole, "More Anonymous Nonsense."  
Piano novelty—Mr. J. F. Skeddon, "You Tell 'em, Ivories," Confrey.  
Concerted numbers—The Radio Four, (a) "Honolulu Moon," Lawrence; (b) "The Rosary," Nevin.  
'Cello duet—Messrs. Walpole and Proctor, "Barcarolle" from "Tales of Hoffman," Offenbach.  
Tenor solo—Mr. S. Hall, "When My Ships Come Sailing Home," Dorel.  
Humorous song—Mr. C. E. Proctor, "Sandy McCluskey," Jackson.  
Pianoforte solo—Mr. J. F. Skeddon, "To the Spring," Greig.  
Humorous recitation—Mr. R. Walpole, "Under the Impression," Foy.  
Male quartet—The Radio Four, (a) "In the Garden of To-morrow"; (b) "Absent."  
'Cello duet—Mr. R. Walpole, "Echo," Somerset.  
Tenor solo—Mr. S. Hall, "Elegie" (with 'cello obbligato), Massenet.  
Humorous recitation—Mr. R. Walpole, "Monty on Health," Milton Hayes.  
Baritone solo—Mr. C. E. Proctor, "A Dinder Courtship," Coates.  
'Cello duet—Messrs. Walpole and Proctor, "Serenade d'Amour," Von Blon.  
Piano solo—Mr. J. F. Skeddon, "Valse in A Major," Chopin.  
Humorous song—Mr. C. Proctor, "When Richard the First Sat on the Throne," Jackson.  
Male quartet—The Radio Four, "The Old Folk at Home."  
9.1: Weather report.  
Lecture—Editor-Announcer, "Imperial Affairs."  
9.16: Instrumental—Studio Orchestra, selected.  
9.22: Soprano solo—Miss Kathleen Ferris, "Be Still, Blackbird," Sanderson (Boosey).  
9.26: Violin solo—Mr. C. Rosen, "Valse Triste," Sibelius (Brietkopf).  
9.30: Relay of Manuel Hyman's Exhibition Band from the Adelphi Cabaret.  
9.35: Soprano solo—Miss Kathleen Ferris, "Rose, Softly Blooming," Spohr (Boosey).  
9.40: Violin solo—Mr. C. Rosen, intermezzo, "Cavalleria Rusticana," Mascagni (Ascherberg, Hopwood and Crew).  
9.45: Relay of Manuel Hyman's Exhibition Band from Adelphi Cabaret.  
9.50: Instrumental—Studio Orchestra, selected.  
10.0: Relay of Manuel Hyman's Exhibition Band from the Adelphi Cabaret.

## 3YA CHRISTCHURCH (306 METRES)—FRIDAY, OCTOBER 14.

- 3 p.m.: Afternoon concert session.  
7.15: News and reports.  
8.0: Chimes. Relay of orchestral selections from Liberty Picture Theatre Orchestra, under direction of Mr. Ernest Jamieson.  
8.15: Pianoforte solo—Miss Hannah Packer (a) "Fantasia Impromptu," Chopin (Augener); (b) violin solo, "Cavatina," Raff (Bayley and Ferguson).  
8.23: Baritone solo—Mr. W. J. Richards, "The Connemara Shore," Fisher (Boosey).  
8.27: 'Cello solo—Mr. Harold Beck, "I'm a Traveller to the Grave," Benjamin (Curwen). (Based on an American negro jubilee song.)  
8.31: Soprano solo—Miss Ella Skurr, "Laugh and Sing," Logan (Albert).  
8.35: Pianoforte solo—Miss Kathleen Stout, Valse, "Chromatic in G Major," Godard (Hengel).  
8.40: Talk—Rev. H. E. Warcham, M.B., Ch.B., medical missionary, "Central Africa."  
9.0: Relay from Liberty Picture Theatre.  
9.15: 'Cello solo—Mr. Harold Beck, "Harlequin," Popper (Augener).  
9.19: Baritone solo—Mr. W. J. Richards, "A Song of the North Wind," Hind (Cramer).  
9.23: Instrumental trio—Christchurch Broadcasting Trio, "Trio in One Movement," Coerne (Bosworth).  
9.28: Soprano solo—Miss Ella Skurr, "Pale Moon," Drummond (Carry).  
9.32: Pianoforte solo—Miss Kathleen Stout, "Arabesque in G Major," Debussy (Durand).  
9.37: Violin solo—Miss Hannah Packer, "Cherry Ripe," Horn (Bayley and Ferguson).  
9.41: Baritone solo—Mr. W. J. Richards, "The Curfew," Gould (Chappell).  
9.45: Instrumental trio—Christchurch Broadcasting Trio, "Spring Song," Mendelssohn (Metzler).  
Relay from Liberty Theatre. Close down.

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# Programmes Continued

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## 4YA DUNEDIN (463 METRES)—FRIDAY, OCTOBER 14

- 3 p.m.: Town Hall chimes.  
 3.1: His Master's Voice recital.  
 3.15: Afternoon tea music from the Savoy.  
 3.30: Studio music.  
 4.0: Cookery talk, by Miss M. Puechegud.  
 4.15: His Master's Voice Recital.  
 4.30: Close down.  
 7.0: Town Hall chimes.  
 7.1: Children's session, by Big Brother Bill.  
 8.0: Studio concert.  
 8.1: Baritone solos—Mr. J. Clark, (a) "Myself When Young," Lehmann; (b) "The Pirate King," Sullivan.  
 8.8: Guitar solos—Mr. Norman Scurr, "Hawaiian Melodies."  
 8.11: Humorous—Mr. Jesse Benfell, "Animal Imitations."  
 8.16: Light vocal—Mr. Billy Gay, (a) "That's a Good Girl," Berlin; (b) "She Knows Her Onions."  
 8.24: Violin solos—Mr. A. Roberts, (a) "Cavatina," Raff; (b) selected.  
 8.33: Humorous—Mr. Jesse Benfell, "The Gardener's Story."  
 8.39: Guitar solo—Mr. Norman Scurr, selected.  
 8.42: Baritone solos—Mr. J. Clarke, (a) "When the Sergeant-Major's on Parade"; (b) selected.  
 Address—Workers' Educational Association.  
 9.5: Dance music by Ern. Beecham and His Orchestra, relayed from the Savoy.  
 10.0: Close down.

## Saturday, October 15th

### 1YA AUCKLAND (333 METRES)—SATURDAY, OCTOBER 15.

- 7.15 to 7.45 p.m.: News and sports results.  
 8.0: Relay of Municipal Band from Town Hall. Mr. Christopher Smith, conductor.  
 9.30: Relay of dance music from Click-Clack Cabaret by the Click-Clack Radio Orchestra, under Mr. Walter Smith.  
 11.0: A thought.  
 11.1: Close down.

### 2YA WELLINGTON (420 METRES)—SATURDAY, OCTOBER 15.

- 3 p.m.: Gramophone recital and relay of Manuel Hyman's Exhibition Band from Adelphi Cabaret.  
 7.0: News session, market reports, and sporting results.  
 8.0: Chimes of the General Post Office clock, Wellington.  
 8.1: Studio concert by the Petone Black and White Benefit Entertainers. Chorus—The company, "Funiculi Funicula," Denza (Ricordi).  
 8.6: Violin—Miss Dorothy Nolan, "Romance," Op. 9, d'Ambrosio (Decourcille).  
 8.10: Vocal duet—Miss Margaret Scott and Mr. Les. Boyd, "O, Lovely Night," Ronald (Enoch).  
 8.14: Recitation—Miss Kerry Rowe, "The Aspiring Warbler," original.  
 8.19: Tenor—Mr. Eddie Napier, "Meadow Lark," Keidel and Fiorito (Albert).  
 8.23: Humorous sketch—Miss Jean Leadbetter and Mr. W. Rowe, "Packing Up," original.  
 8.33: Song and chorus—Mr. R. Park and the company, "Eileen Alannah."  
 8.38: Piano duet—Miss Margaret Scott and Mrs. Woodley, "Qui Vive," Ganz (Ashdown).  
 8.43: Soprano solo—Miss Sheehan, "Lay My Head Beneath a Rose," Falkenstein.  
 8.47: Recitation—Miss Molly Bradstock, "Bertie," original.  
 8.52: Soprano solo and chorus—Miss Molly Keating and Maori boys of the company, "Waiata Maori," Hill (McIndoe).  
 8.56: Instrumental—Studio Orchestra, selected.  
 9.2: Maori vocal and instrumental—Maori members of the company, "Maori Melodies," traditional.  
 9.14: Vocal duet—Messrs. R. Park and J. Warren, "I'm Telling the Birds," Wendell Hall (Albert).  
 9.18: Recitation—Mr. W. Rowe, "Little Nell" ("The Old Curiosity Shop"), Dickens.  
 9.23: Tenor solo—Mr. Les. Boyd, "Kashmiri Song," Woodforde-Finden (Boosey).  
 9.27: Violin solo—Miss Dorothy Nolan, selected.  
 9.31: Vocal—Miss Joan Craig, selected.  
 9.34: Piano duet—Miss Margaret Scott and Mrs. Woodley, "Doll Dance," Brown (Allan).  
 9.39: Vocal duet—Mr. R. Park and Miss Margaret Keating, "Charmaine," Rapee and Pollack (Allan).  
 9.43: Elocutionary—Miss Kathleen Bartosh, selected.  
 9.48: Chorus—The company, closing chorus.  
 9.53: Instrumental—Studio Orchestra, selected.  
 10.0: Relay of Charles Dalton's Columbian Solo Six Dance Orchestra from the Columbian Cabaret, Kilbirnie.

### 3YA CHRISTCHURCH (306 METRES)—SATURDAY, OCTOBER 15.

- 6 p.m.: Children's session, by Uncle Sam.  
 7.15: News and reports.  
 7.30: Sporting results.  
 8.0: Chimes, Relay of orchestral selections from Grand Picture Theatre Orchestra, under conductorship of Mrs. Black.  
 8.10: Banjo solo—Mr. Arthur Hodgson, "Advance Guard," Bonheur (Paxton).  
 8.14: Violin solo—Mr. Robert Clarke, "Pregliera," Tartini-Kreisler (Schott).  
 8.18: Baritone solo—Mr. W. J. Salkeld, "King of the Mist," Jude (Larway).  
 8.22: Banjo and mandolin duet—Messrs. Perce Skinner and Stan. Birch, (a) "Colonel Bogey March," M.S.; (b) "Popular Chorus Switches," M.S.  
 8.32: Recitation—Mr. James Laurensen, "Home Brewed," Thomas (Putnam).  
 8.36: Instrumental trio—Christchurch Broadcasting Trio, "Hungarian Dance, No. 3," Brahms (Metzler).  
 8.40: Banjo solo—Mr. Arthur Hodgson, "Comical Coons," Grimsbaw (Essex).  
 8.43: Baritone solo—Mr. W. J. Salkeld, "The Gallant Salamander," Barnard (Enoch).  
 8.47: Violin solo—Mr. Robert Clarke, Mazurka in "A Minor," Chopin-Kreisler (Schott).  
 8.52: Banjo and mandolin duet—Messrs. Perce Skinner and Stan. Birch, "Old Darkie Melody Switches," M.S.  
 8.57: Recitation—Mr. James Laurensen, "And Yet I Don't Know," Weston.  
 9.0: Relay from Grand Theatre.  
 9.10: Banjo solo—Mr. Arthur Hodgson, "Il Bacio," Arditi (Boosey).  
 9.14: Instrumental trios—Christchurch Broadcasting Trio, (a) "Souvenir de Sorrento," Severne (Cincaf); (b) Prelude in "C Minor," Rachmaninoff (Metzler).

## EMPIRE BROADCASTS

### AN EMBASSY COMING

#### VISION OF THE FUTURE.

Recent successes in international broadcasting by stations in Europe and the United States and later the re-broadcasting in Great Britain of a programme from 2FC, Sydney, have created intense interest in Great Britain.

There has been a strong demand that the British Broadcasting Corporation, which is controlled by the British Post Office, should instal a short wave transmitter of high power similar to successful European and United States transmitters for Empire broadcasting. Engineers of the Broadcasting Corporation, however, have taken a strong stand against this proposal, declaring that wireless telephony has not yet been developed sufficiently to permit successful and dependable Empire broadcasting to be attempted. Led by the Wireless Association of Great Britain most wireless interests have strongly criticised the stand of the Broadcasting Corporation.

A communication was received in Melbourne recently from the secretary of the Wireless Association of Great Britain (Mr. H. A. Hankey) stating that he will visit Australia, New Zealand, and other parts of the Empire shortly to obtain technical evidence confirming the possibility of establishing Empire broadcasting services.

#### SMALL BOOM COMING.

Broadcast listeners are going to take up short-wave reception in great numbers before long, and radio dealers will advisedly prepare for the boom by laying in stocks of short-wave component parts. The wireless writer of the Melbourne "Argus" says:—It seems certain that within a year or two hundreds of international short-wave broadcasting stations situated in all parts of the world will be working.

## INCREASING SELECTIVITY

### A NEW IDEA VENTILATED.

"Nature," of August 13, 1927, says:—The ether is becoming seriously overcrowded with radio waves. Two or more stations having nearly the same official frequency often "jam" one another in an ordinary receiving set. The problem of inventing a simple method of cutting out the interfering stations is, therefore, one of great importance to the radio engineer. In a paper read by G. G. Blake to the Radio Society of Great Britain on May 25, a description is given of a method of improving the selectivity of a receiving set by means of ordinary sound resonators. The results obtained were most encouraging. Even when several stations were working with considerable mutual interference and bad atmospheric were present, it was found possible to isolate the selected station by means of a sound resonator. It is concluded that there is no reason why many more frequencies could not be selected for stations in the wave bands at present employed for broadcasting. The author suggests that by the use of a hot wire microphone and a number of sound resonators each tuned to a different station, all the signals could be heard or recorded simultaneously. He points out that the hot wire microphone or thermotelephone receiver was described by Sir William Preece to the Royal Society in 1880. It consists of a tightly stretched fine platinum wire fixed at one end and attached at its other extremity to the centre of a diaphragm. The wire is heated by a current from a battery, and the expansion or contraction of a wire in response to words spoken towards a microphone in series with it cause the diaphragm to vibrate.

Concerning the recent short-wave concert broadcast by 3LO, Melbourne, a Melbourne writer says: "No one expected 100 per cent. of success at this early stage. The British Broadcasting Company, older, possessed of special research scientists, aided by amateurs with years of experience, has not yet been able even to make a start in world broadcasts. 3LO has gone much further than its older brethren among stations. The success on September 6 was a qualified one as far as transmission went. Heard clearly in Java, less so in Japan, the signals were picked up fairly in Holland, and a certain speech was heard in London in the latter hours of the Wednesday morning's transmission, as night there was falling. That measure of success is gratifying to a station which had just begun to operate its short-wave instruments."

## S-O-S

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- 9.22: Baritone solo—Mr. W. J. Salkeld, "Will o' the Wisp," Cherry (Ashdown).  
 9.26: Relay of dance music from Caledonian Hall, by arrangement with Mr. Reg. Stillwell.  
 9.40: Rebroadcast 2YA, Wellington, circumstances permitting, otherwise relay continued from Caledonian Hall.  
 Close down.

### 4YA DUNEDIN (463 METRES)—SATURDAY, OCTOBER 15.

- 7.15 p.m.: News service.  
 8.0: Town Hall chimes.  
 8.1: Tenor solos—Mr. J. McDonald, (a) "Homing" (del Riego); (b) "You in a Gondola."  
 8.8: Cello solo—Mr. A. Bonner, "Ave Maria" (Schubert).  
 8.13: Recital, Mr. J. B. McConnell, "A Dorg's Life."  
 8.18: Mezzo-soprano solos—Miss Yanda Duncan, (a) "Vorre" (Tosti); (b) "The Virgin Lullaby" (Picolomini).  
 8.24: Piano solo—Miss J. Lawrence, selected.  
 8.28: Violin solo—Mr. A. R. Watson, "Indian Lament" (Kreisler).  
 8.33: Baritone solos—Mr. Reg. Richards, (a) "Ships of Yule"; (b) "The Devout Lover" (White). Violin obbligato by Mr. Watson.  
 8.39: Cello solo—Mr. A. Bonner, selected.  
 8.42: Vocal solos—Master Eric Johnston, (a) "Wet Sheet and a Flowing Wind" (Dunhill); (b) "Freckles."  
 8.49: Recital—Mr. J. B. McConnell, "Jimmy's Boots."  
 8.54: Contralto solos—Miss Rita Raffills, (a) "If Any Little Song of Mine" (del Riego); (b) "Song of Hope" (Wood).  
 9.1: Piano solo—Miss J. Lawrence, selected.  
 9.6: Tenor solos—Mr. J. McDonald, (a) selected; (b) selected.  
 9.15: Violin solo—Mr. A. R. Watson, "Balet" from "Orpheus" (Gluck).  
 9.20: ———  
 9.28: Cello solo—Mr. A. Bonner, selected.  
 9.33: Baritone solos—Mr. Reg. Richards, (a) "Annie Laurie" (Lehman); (b) "Eleanore" (Coleridge Taylor).  
 9.41: Recital—Mr. J. B. McDonald, selected.  
 9.46: Piano solo—Mr. J. Lawrence, selected.  
 9.52: Contralto solos—Miss Rita Raffills, (a) "Ships of Arcady" (Head); (b) "Four by the Clock" (Mallinson).  
 10.0: Close down.

## Sunday, October 6th

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

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

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

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

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

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

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

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

A proposal which may seem fantastic, but may be some day realised, is made by an English correspondent, G. Chapman, in "Wireless World" (London), to the effect that, with the increasing demand for television, a worldwide wave-length should be set aside for synchronising signals. A highpower station, according to this plan, would be devoted to sending forth standard-frequency signals of this kind, by which all television machines could be regulated, as well as radio clocks operate. While in the future, this idea seems like one which may be practical with the development of the art.

The new broadcast station at Innsbruck, in the Tyrol, relays Vienna programmes on 294 metres, 500 watts. This station is linked with the studio by four hundred miles of land-line. Of this distance a large portion is covered by power lines, over which the programmes are sent at radio frequency. They are again stepped down at Worgl, 45 miles from Innsbruck, and complete the journey by regular telephone cable. A high-power, long-wave (900-1300-meter) station has been established in Warsaw by the "Polskie Radio" broadcast company. It has a 1000-watt output, and is erected on the Szczerbiwice fort outside the city. The height of the masts is 275 feet.

## U. D. L.

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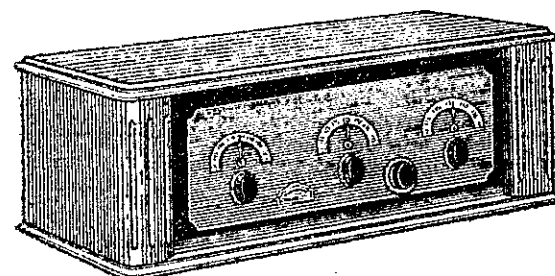
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AGENTS WANTED IN UNALLOTTED TERRITORY.

The conference was opened in the Dominion Farmers' Building on Thursday, September 29, the Mayor of Wellington, Mr. G. A. Troup, being in the chair.

The Hon. W. Nosworthy, Postmaster-General, said: "I am pleased that you have given me the opportunity of saying a few words to you on this very auspicious occasion, the first general gathering of New Zealand broadcast listeners. Since accepting the office of Postmaster-General I have had many interesting experiences, but none, I think, of more interest than my connection with wireless. My first public appearance in this connection was at the opening of the Auckland station, 1YA, in August, 1926. Since that time I have had to consider many wireless matters, and I have had to deal with numerous letters from Radio Societies, Listeners' Leagues, and others, setting out their views of the broadcasting position, and submitting what they consider to be well-grounded complaints. I have made it my business to keep well informed in regard to the progress that is being made by the company, and I have satisfied myself that nothing is being left undone to build a broadcasting service that one can be proud of. I understand that certain societies and leagues consider that they were the cause of the improvements that have gradually taken place. The statement has actually been written by a responsible officer of a radio society that the activities of societies had caused the present improvement in broadcasting. These gentlemen are quite entitled to their opinion, which may be a very good one to have, but such an opinion indicates that in certain quarters the impression has been created that my Department and the Broadcasting Company are indifferent to the interests of listeners. It is opportune to say here that such an impression is quite erroneous. It should be clearly understood by all those interested in this matter that the Government, represented in this case by myself, with the Post and Telegraph Department to carry out the policy, is directly representative of every listener in the country; and the interest of every listener is, and will be, safeguarded in every possible way, consistent with the Government's duty to the public generally, and to the Broadcasting Company."

#### VALUE OF UNIFIED OPINION.

"For reasons that must be obvious to you, I am pleased to see this gathering of delegates from Listeners' Leagues, and trust that it is fairly representative of all districts throughout New Zealand. Broadcasting in New Zealand is a fairly recent development, and has now reached the stage that representation of the views of listeners should be put on a basis that will prove of value to the scheme as a whole. While I do not desire to influence the opinion of any representative, I am convinced that much more good can follow if representation to the controlling authority and the company is conflicting. As you will realise, I have had some representations from leagues, and up to date there has been little agreement among the leagues regarding the points raised. If, then, your conference comes to some arrangement whereby matters of importance to listeners can be represented to the Department or to the company as the combined desire of listeners, it is likely that much more weight can be attached to the points raised."

#### KEEPING A FAIR BALANCE.

"I am somewhat in the dark regarding your proposals, but I have no doubt that before long you will be in a position to enlighten me in that respect. Should you be able to agree upon a line of progress, I shall be pleased to give any representations made by you the fullest consideration. I realise that, as Postmaster-General, I have a responsibility, not only to the Broadcasting Company, but to listeners; and I can say without hesitation that, while I have to see that listeners get a reasonably good service, I have to appreciate that if I press the company too hard—and I have often been urged to press harder than I thought necessary—you as listeners may be without a broadcasting service. My duty is to keep a fair balance between the company and the listeners, and I can with some considerable satisfaction regard the steady and very marked progress made in the past year."

#### NECESSARY TO HASTEN SLOWLY.

"I have been content to hasten slowly; and as I am in possession of all the facts regarding finance and new projects, I have taken the course of advancing slowly, but as fast as circumstances would permit. To-day we have a broadcasting service of which we are proud, and every week improvements are being effected. That this is no idle statement can be realised by a perusal of wireless notes of six months ago and those of to-day. From Auckland, with its great number of listeners and thus great claims, I see appreciative notes, and yet improvements are not at

# Dominion Conference of Listeners' Leagues

## Successful Two-Day Meeting in Wellington

A conference attended by fourteen delegates of various North Island radio societies and Listeners' Leagues, was held in Wellington on September 29 and 30. Some interesting information was given by the Postmaster-General, the Hon. W. Nosworthy, the Secretary of the Post and Telegraph Department, Mr. G. McNamara, Mr. A. R. Harris, General Manager of the Broadcasting Company, and Mr. W. J. Bellingham, musical Director of the Society. A number of remits were considered including a proposal to form a Dominion League, involving the appointment of a paid secretary. While the principle was approved, action was deferred to the next conference to be held on a date to be fixed later. The members of the conference were shown the studio and station of 2YA, in which much interest was expressed.

and many more will be given effect to in the next few months. I have realised that the pioneering work could not all be done in a few months, and it is therefore gratifying to read on all sides that to-day the average listener is appreciating the service.

"I look forward to great developments in broadcasting. To-day the encouragement given is real—some months ago there was little or none, but plenty of criticism. The policy of erecting a large station has been more than justified by the results, and I feel sure that the listeners will be gratified to know that the financial position is not such as to occasion any fears that broadcasting in New Zealand will not continue to progress on good and sound lines."

"I wish you success with your deliberations, and trust that any conclusions reached will be well considered and helpful to broadcasting in New Zealand."

#### DEPARTMENT AS REFEREE.

The secretary of the Post and Telegraph Department (Mr. G. McNamara) said that the consensus of opinion of listeners-in would be of very great value not only to the Department but also to the Radio Broadcasting Company. The Department was more or less a referee in the matter of broadcasting. In the past it had been criticised for its low standard of opinion regarding broadcasting. At the same time it had to consider the means at the disposal

to see that an endeavour was being made to organise Listeners' Leagues and Societies in various parts of New Zealand. No one would be more pleased than the Radio Broadcasting Company to see such a state of affairs come to pass.

They had heard a good deal of late about co-operation and it was a very much abused word. One definition of co-operation was "putting yourself in the condition that the other fellow can work with you."

The company was now working on a public relations scheme with this end in view, but it could help towards its success only from the side of putting themselves in a position where representatives of Listeners' Leagues could work with them. It was not practicable for them to confer with listeners individually. They must be represented by delegates having the confidence of the majority. Herein laid the work of the Listeners' Leagues.

"Organisations in which a few executives express and circulate their own propaganda as the considered opinion of the listener generally must be avoided if leagues are to do any service for the country," said Mr. Harris. "Minor organisations are a curse to public service. Take for instance the Customs tariff, we have heard so much about of late. Every faction appears to be organised for or against it, except that great majority, the Consumer. We do not want this state of affairs in broadcasting."

interests of the public and to guide the company in its policy. Both the Auckland and Wellington societies had been active in regard to the proposal, and it was suggested that the Government be asked to legislate for a board to be set up comprising the Broadcasting Company, listeners, dealers, and the Post and Telegraph Department. The original Advisory Board had not functioned since August, 1926.

#### THE QUESTION OF A LEAGUE.

The first items on the order paper dealt with the question of a league, but objection was taken to dealing with this issue first. The objectors carried the day, and this discussion was deferred till the end of the conference, when an animated discussion took place.

Mr. R. L. Jones, the originator of the scheme, said that, after giving a great deal of his time to the undertaking, it came as a complete surprise to him to find that the Auckland society which had agreed to the proposal, were now opposed to it. The Auckland delegates had come down and now desired to dominate the conference. He felt very much like washing his hands of the whole affair.

Mr. H. Hintz (Auckland) said that he took exception to several of Mr. Jones's statements. In the first place, he objected to the statement that Auckland had agreed to join the league and had then backed down. He could confidently assert that in drawing attention to the Government's unsatisfactory attitude towards broadcasting

## Distinguished Instrumental Trio Engaged for 2YA

The Broadcasting Company has engaged the well known instrumental trio, Ava Symons, Gordon Short and George Ellwood, known as the Ellwood Trio, for 2YA. This distinguished trio, whose services have been secured by the Company's Musical Director, Mr. W. J. Bellingham, is to play four nights in the week and listeners will have the pleasure of hearing the best of instrumental music interpreted by a combination of artists which has been described in the Press, and acknowledged by all who have heard it, as being one of outstanding merit.

Of the individual members of this trio, much could be written, but it is sufficient for the present to say that each has had a unique musical career second to none in Australia and New Zealand, and has studied his or her instrument with some of the most noted masters in Europe and Great Britain.

The trio was heard from 2YA on the opening night. Their regular appearance will be instituted at an early date.

of the company. If greater pressure had been brought upon the company listeners would have suffered in the long run. In Australia, for instance, the present system was in danger of breaking down, strictly, of course, from a financial point of view. With the exception of 3LO, none of them had shown a profit.

The New Zealand company, continued Mr. McNamara, was always ready to meet the Department, and during the past six months there had been a very noticeable improvement all round. Every effort was being made to place broadcasting on a sound and firm basis.

Urging upon listeners the necessity for taking out licenses, he pointed out that unless the income of the Broadcasting Company was assured listeners could not depend on good and regular programmes. He warned "pirates" that they could expect no quarter from the Department.

For the six months prior to the opening of station 2YA the average weekly increase in the number of licenses issued was 450. After the opening of the station in question the average weekly increase was 900. He had no hesitation in saying that when the 38,000 mark had been reached New Zealand would have an excellent broadcasting service.

#### VIEWS OF THE COMPANY.

Mr. A. R. Harris, general manager of the Broadcasting Company, said that the Broadcasting Company was glad

"We want you all to sink your private opinions and work for the good of the majority of listeners. This can only be done by electing representatives under an approved method of election and representative of the majority."

"When you have lifted this ideal from the abstract into actuality no one will be more pleased to see it than the Radio Broadcasting Company of New Zealand."

The company had invested a lot of money and would be pleased to have suggestions, and so long as they did not impair efficiency they would be given the utmost consideration and, where possible, co-operation.

#### OTHER SPEAKERS.

The Mayor (Mr. G. A. Troup) said that the conference marked an epoch in the history of wireless in New Zealand. Very marked progress had been made in the past year until to-day the broadcasting service was on a firm and sound basis. He hoped that the conference would be productive of much good, and that the visitors would thoroughly enjoy themselves while in Wellington.

Sir John Luke, M.P., referred to the benefits wireless had conferred on the whole world.

Mr. E. J. Howard, M.P., said it seemed to him that the gathering was something like a three-valve set—Government, Broadcasting Company, and listeners-in—and unless all three were in tune there would be some ungodly howling. (Laughter.)

#### THE CONFERENCE.

On resuming in conference the chairman (Mr. J. H. Owen) said that it was felt that a Dominion body embracing all the radio societies was necessary in the interests of licensees. A few years ago an attempt was made to form a Dominion body, but although a conference was called nothing eventuated except generalities. Broadcasting had attained a definite place in daily life, and many were anxious to see it placed on a sound footing. Already a considerable income was available to the Broadcasting Company, and in the interests of all New Zealand listeners it was desirable that there should be a control board to watch the

Auckland had taken a more active part than any other province in the Dominion.

Mr. Jones: That is quite correct. Proceeding, Mr. Hintz stated that when Mr. Jones came up to Auckland to explain the objects of the proposed Dominion league, the Auckland society had to pay his expenses. They found that they in Auckland knew very much more about radio matters than did Mr. Jones. He did not see that the creation of a Dominion Radio League was justified at the present time. They had no expression of opinion in favour of the league from Auckland, Christchurch, or Dunedin, and if a league were formed it would be laughed at by the powers that be. The actual formation of a Dominion league would be a retrograde step for listeners-in, and would be premature at the present time. An annual conference could achieve all their objectives quite successfully. If ever occasion arose to make a protest, a storm would arise from all parts of the Dominion. If a league were in existence the protest might be left to officialdom, which would be a small minority.

The chairman (Mr. J. H. Owen) said that Mr. Jones had worked like a Trojan in the work of establishing a Dominion Listeners' League. This was the first conference of the kind, and excellent work had been done, even if the league did not eventuate.

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He could assure Mr. Jones that his efforts were by no means abortive, and that he could console himself with the knowledge that he had done excellent work. The meeting was by no means antagonistic to the formation of the league. It took 18 years to bring in daylight saving, and what did it matter if it took twelve months to form a Dominion Listeners' League?

#### A START WANTED.

Mr. A. S. Tonkin (Hastings) moved that a Dominion Radio Listeners' League be formed. Speaking to his motion, Mr. Tonkin said that they in the smaller centres were at a great disadvantage, as they knew very little about radio management. The formation of a league would be a great help to the smaller societies, as it would supply a central body, which could reply to inquiries. If they formed a league it would grow, and it would pay them to have a common meeting ground. The punch given by a united body would be greater than that from a large number of small societies. Even if Auckland would not come in, he claimed that they should proceed with the formation of the league. No Minister or Department could afford to ignore the combined wishes of listeners-in, which could be expressed through the league.

Mr. E. J. Hill (Wanganui) seconded the motion, declaring that a start must be made some time.

#### POSTPONEMENT URGED.

Mr. A. Hintz (Auckland) moved that the question of forming a Dominion league be postponed until the next annual conference. He contended that the formation of a league was premature. To form a league with the South Island not represented would be presumption.

Mr. E. J. L. Payne (North Taranaki) seconded the amendment, remarking that his society considered that the formation of a Dominion league was not at present justified. The number of listeners was growing rapidly, as high as 1000 per week. They had no quarrel with the principle of a league, but they considered that the administration costs would be too great a drain on the societies. At present there was too great a variation in local conditions, and he thought it would be wise to hold the proposal over until next year.

Mr. A. C. Jacobs (Auckland) said that the whole question of broadcasting was in the melting-pot. At present the Government and the Broadcasting Company did not know where they were; broadcasting matters were in a chaotic state. They did not consider that a small executive sitting in Wellington would carry much weight with the Government.

Mr. G. W. Morgan (Rotorua) said his club was strongly in favour of the formation of a Dominion league. He would, however, not like to see such a step taken unless it were unanimous.

Mr. Hintz at this stage withdrew his amendment, and Mr. Morgan then moved the following amendment:—

"That this meeting of delegates from radio societies, whilst agreeing with the principle of a Dominion Radio Listeners' League, in view of the fact that there is a difference of opinion on the question of the immediate formation of the Dominion league, resolves that all delegates will do their utmost to get their societies to agree with the said formation at the next conference to be held on a date to be decided later, and that the Wellington society be asked to convey this resolution to all radio societies not represented at this conference."

Mr. Hintz seconded the amendment, which was carried unanimously.

#### HELPING COUNTRY SOCIETIES.

Mr. Hintz then moved: "That the societies in the four centres at wherever required on behalf of the country societies in regard to matters appertaining to local stations, and that it be a recommendation to the four main societies that one of their executive members may act as a representative of such provincial society, such representative to be an honorary member of the society he represents, and to act as official correspondent."

The motion was seconded by Mr. Tonkin and carried.

#### REMITTS PASSED.

The following remits were passed:— That it is essential, if broadcasting is to progress on sound lines, and give satisfaction to listeners, the authorities must take active steps to minimise as far as possible all interference.

That there should be more alteration of programmes on individual nights, and if a silent night is considered necessary, that no two stations be silent on the same night.

That the Broadcasting Company be earnestly requested to co-ordinate their programmes in such a manner as to avoid two stations transmitting speeches

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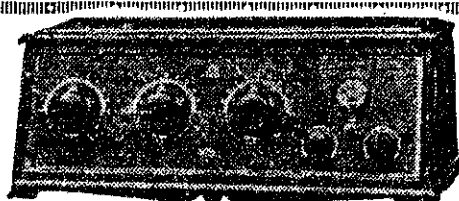
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or other talk at the same time; that as far as possible all such addresses be transmitted prior to the commencement of the 8 p.m. session.

That the Broadcasting Company be requested to continue transmitting from each of the New Zealand broadcast stations under its control, on Sunday evenings, until at least 10 p.m. In the event of relays finishing prior to 10 p.m., further studio items be provided, and if individual artists are not available, suitable items be dispensed per medium of a player piano or some other mechanical instrument.

That the radio regulations be amended as follows:—The following clause to be added thereto: That it is a breach of the Act for any dealer to supply a crystal set complete, or a valve receiving set complete, or any other type of receiving set, to any person (other than a licensed dealer for trade purposes) without first having perused the actual purchaser's license; further, that an intending purchaser must first obtain a license to use a receiving set. For every breach of this regulation the minimum fine shall be £100 for dealers and £5 for the purchaser.

That the Post and Telegraph Department be requested to provide correct and up-to-date lists of licensees, comprising name and address of each person holding a receiving set license, at a reasonable charge.

That this conference protests against the statement made by the Postmaster-General to the effect that no others would entertain the proposition of broadcasting; further, it is within the knowledge of delegates that several gentlemen were prepared to undertake broadcasting in New Zealand but were never given the chance to do so, and that the Wellington syndicate was not given a chance to submit fresh proposals.

That the Post and Telegraph Department be requested to publish monthly the number of licensees (both listeners and dealers) for the four main districts, Auckland, Wellington, Canterbury, and Otago; separate figures to be given for listeners and dealers.

That the Government be requested to engage the services of an expert radio engineer from overseas to advise them in respect of broadcasting in New Zealand.

That the Department be requested to definitely prevent any dealer, wholesale or retail, from displaying in windows, selling to the public, or demonstrating receiving sets, until the type or types of receiving sets it is proposed to sell to the public shall first have been approved by the Department.

That the Government be requested to publish regularly the amount paid to, or held on account of, the Broadcasting Company, as representing listeners' and dealers' license fees.

That the Postmaster-General be notified that station 2YA (Wellington) is not transmitting efficiently, as is proven by the widely known fact that reception of 2YA, even in Wellington, is, on the whole, most unsatisfactory. With crystal set reception, the station frequently fluctuates in volume, and transmission is frequently distorted by 2YA. It is therefore manifest that if reception of 2YA is bad in Wellington, it is futile to hold fading tests and to blame atmospheric and other obscure causes for the vagaries of 2YA station as heard at more remote places in New Zealand.

[If the station transmission is at fault, obviously records of the fault would show uniformity in time of reception by listeners. The records of the fading investigation now being examined will for the first time permit of that point being determined. Until that is fixed, it is a gratuitous assumption that the transmission is in error. We have already seen sufficient of the results to promise listeners something of interest on this point.—Ed.]

That this conference strongly deprecates the use of broadcasting for the purpose of political propaganda or advertising.

That this conference is of the opinion that the best quality of transmission is not being obtained from the four New Zealand stations, especially 2YA, and is of the opinion that an expert engineer from overseas should be engaged to advise the Government on the matter.

That as the submission of wiring diagrams is quite ineffective for preventing interference, the Department be asked to frame more suitable regulations to check the purchase and use of sets which can create interference.

This conference requests that weather forecasts be broadcast every night, including Sundays.

A remit requesting valve operators not to "howl" was passed.

The next conference will be held in Wellington in the first week of September, 1928.

The Ninth Radio District, with Chicago as its headquarters, boasts of 288 active broadcasting stations out of a grand total of 694 now on the air. This is approximately 34 per cent. of the stations. Chicago may pride itself on being the noisiest place on earth.

## AVOID

## DISAPPOINTMENT

Place a Regular Order for the "Radio Record" with your dealer, bookseller, or ourselves—P.O. Box 1032, Wellington—3d. weekly or 10/- per annum, Post Free.

Weekly programmes, hints and constructional data.

## Our Mail Bag

### ANSWERS TO CORRESPONDENTS.

F.G. (Hataitai, Wellington).—Replies can be forwarded only where a stamped addressed envelope is sent in. (Your envelope wasn't stamped.) It is not necessary to make the mast higher on the chimney, although better results will be obtained if you do so. It is better to use an insulated lead-in wire. The running of the lead-in back under the aerial is undesirable. Your water-pipe is quite a good "earth." The circuit asked for will be published shortly.

R.W.M. (Nelson).—Quite agree and passing your suggestion on.

### Who's the Stranger?

V. G. Bryan King (Dunedin): In your issue of September 23, F.J.R. (Taumarunui) asks for the name of the station which comes in quite close to 2BL, Sydney. I feel certain that the one he refers to is KFWB, Los Angeles, California, which can be heard most evenings about the time mentioned. Recently I had this station on the loudspeaker, using only four valves, coming through almost as strongly as 2BL.

J. L. Lethbridge (Cromwell): In reply to query by F.J.R. (Taumarunui) re whistle on 2BL, Sydney. This is caused by station KIR, Seattle, working on 349 metres as against 2BL's 353 metres. I have tuned them in at good strength several times after 6.30, when 2BL have closed down for tea. I was successful in getting a good description of the Dempsey-Tunney fight through 2FC, Sydney, yesterday at 2.30 p.m.

### Carry On.

Well Pleased (Waiata): You were overwhelmed with letters when "Radio Record" was first issued, and

I understand you wish for suggestions from listeners. One has to live away out in the country to realise what a boon and blessing radio is, even if half the programme does not please. A country dweller cannot get the concerts, etc., that a city person can. Even the market reports are worth listening to, even if they do not have an interest in buying and selling. Everything seems to take on an added interest, and I feel as if I know the announcers quite well, and have added them to my list of friends! (Do they object?) 2YA's announcer seems to have a "twinkle" in his voice! Think of the joy and amusement of the children, oh, ye growers; how eagerly they listen to the Uncles and Aunts. Talk of the Pickwick, the Owl, and the Waverley pen being a boon and a blessing to men, why, radio is threefold in its blessings. One gets such a lot of hints from the lectures, too. Ours is a "Polar Twin" with amplifier, and we get Australian stations on loudspeaker; not troubled with "Oswalds," somehow. Perhaps set is not strong enough. Carry on with the good work. You can't please everybody.

### New South Wales Pleased.

A writer at Ashfield says: "The first time we listened in to 2YA was about a fortnight ago, and the transmission was perfect. It was every bit as clear as local stations, and entirely free from static or any atmospheric disturbance at all. In fact, so clearly did it come through that my father thought I was having a joke, and wasn't satisfied until he heard your announcer state: '2YA, Wellington.'"

### Talks and Sermons Enjoyed.

J.A.R.: "Personally, I prefer elocutionary items, sermons, lectures, talks upon any subject, but am unable to hear a sentence if I attend a meeting. Thanks to wireless, I can now

"Mirama" in his desire that Sunday be devoted to church services and sacred music only. We have six days a week for ordinary entertainment, and Sunday might be, and should be, used for something higher and better. At any rate it is a great mistake, and I am sure offensive to the majority of respectable people, to broadcast a beautiful church service on a Sunday evening and then to follow immediately afterwards with a noisy concert from some theatre as is sometimes done.

### FIRST ON THE AIR

### INTERESTING REMINISCENCES.

J. V. Farrell (Wellington): While looking through the "Radio Record" just received I saw a photograph of Manuel Hymen, stating that his band had the distinction of being first on the air in New Zealand. I should like to correct the above and state that his band missed being first past the post by about four years. About five or six years ago I was playing with what was the leading band then (Tutschka's Orchestra). We were asked to broadcast our band from the studio at the top of Ford's Building, Courtenay Place, which we did on two occasions.

To give you an idea of how early in broadcasting we were, I recollect the announcer before and after every item asking listeners to 'phone the studio if they had heard us playing.

It came as a very great surprise to us and to all concerned when somebody rang up from Wanganui, although listeners in the city could not hear us too good.

The studio was a small room a few feet square, and it became so hot with the crowd in it that we were obliged to play with our coats off.

A New Zealand radio journal pub-

## THE CHURCH AND BROADCASTING

### (To the Editor.)

Some weeks ago a minister from one of our pulpits asked listeners-in for their ideas on putting Sunday evening services on the air. He got a lot of replies. The ones published in Christchurch papers were from old people—invalids and cripples who are unable to leave their rooms, and people in the backblocks who are miles from a church. To say the least, they were pathetically touching. The letters convinced me that church services must be continued, or the churches would not be doing their work. We cannot leave these dear people out in the cold who are pleading so hard to come in. Let us ask ourselves, "What would Christ have done?"

Forty years is a long time for a man never to have been into the House of God; but I have not forgotten the words of the Nazarene, "Ask and ye shall receive, knock and it shall be opened unto you." Fellow-listeners, these people are knocking. What are you going to do about it? Get busy at once: "Lest ye forget," send your ideas to "Radio Record" editor as to the best way to help.

The minister also said at the same time that some of his congregation thought some of them would stay at home listening in and the church's funds would suffer. That's soon remedied. Let them do as I have done ever since I heard him. I got a tin, soldered it up, made an opening to take up to half a crown, and that box with "church service and broadcasting voluntary contributions for helping the church to broadcast" on it—that box goes round regularly every Sunday exactly at the same time it goes round in the church. Oh, ye of little faith, cannot you see that wireless has put into the hands of ministers a wonderful power of doing good, and it behoves the choir and congregation to help him for all they are worth, to use their talents. Rest assured, they will return good interest, so that the Master on his return will be able to say, "Well done thou true and faithful servant."

I do not want to preach. In fact, I couldn't if I tried. I want you, my fellow-listeners, to help me. "Many can help one when one cannot help many." It simply wants a start. My idea is to get the "Radio Record" editor to undertake the receiving and acknowledging of donations, which can be sent in once or twice a year as arranged. Failing this, get the Broadcasting Company of New Zealand to allow the four stations to do it.

I feel certain the company will do all they possibly can to help us in every way, as they are doing and have done ever since it was incorporated. They have taken a big risk, and I trust they will lose nothing by it.

We should be justified in asking the Government to subsidise our subscription, as broadcasting means a big thing in many ways to it. Get the ministers of the broadcasting churches together and tell them the listeners have subscribed, say, £10,000 for them to divide amongst the churches broadcasting in the four centres or stations of New Zealand.

As I am writing this I am listening to the children's choir from New Brighton. Unfortunately it is a very bad night. Uncle Sam's voice comes through good. It is very interesting and understandable. These children have been brought to Christchurch. That means expense to somebody. You and I are powerless to help, for want of organisation, as our donations would cost 25 per cent. in most cases to transmit. It's a case, therefore, of "Take all and pay nought" (nothing). And I am certain there are thousands like me who would like to do their little bit and feel happier for it.

I will ask some of you to write to the editor giving your ideas of the best way to help. I am certain he will do his utmost, and any ideas sent to him will be thankfully received.—Ben T. Watkinson, Te Karaka, 205 Lichfield Street, Christchurch.

### ARGENTINA HEARD

Mr. Pierce, Wellesley Club, Wellington, while listening in at 10 o'clock on Sunday night, received Station RCBS, Carlos Braggi, Buenos Ayres, at 45 metres. A long talk in Spanish, which came through very strongly, was followed by two musical items. The announcer in closing down spoke in broken English, "Hoping to be heard in Australia and New Zealand. Hullo! Hullo! RCBS calling." This was followed by his regular close down spoken in Spanish at 10.25 p.m.

## Petone Black and White Benefit Entertainers

Full Programme from 2YA, Saturday, October 8



—Photo, Tosca Studio.

The whole of Saturday evening's concert at 2YA will be presented by the Petone Black and White Benefit Entertainers, a concert party well-known throughout the Wellington district for their efforts on behalf of charities. A feature of this entertainment will be a number of traditional Maori melodies, sung by the Maori members of the company. These items, full of the harmonious charm peculiar to the Maori, will assuredly afford much pleasure to listeners throughout New Zealand and Australia. The "Black and Whites" are a talented combination of wide versatility. Their "bill of fare" for Saturday evening will include vocal and instrumental items, solo and concerted, and a tasteful variety of elocutionary and humorous items.

now the deluge has subsided somewhat I would like to thank you for complimentary copies. Also congratulate you on the excellence thereof. The programmes "on the air" are simply splendid, the 2YA orchestra ranking first in my estimation. I only wish we could have more of it; but I must not be greedy. Some there are who object to certain portions. I wonder how many "growlers" are owners of crystal sets. The majority, I fancy. They cannot tune in to the various stations; but, at the same time, why don't they realise that radio is only in its infancy, and cultivate a little patience. Compare the original gramophone and motor-car with the present ones, and I think you will find that radio is a more "hefty and lusty infant." I don't care too much for some of the items, but there are others who do, and if the growlers had the arranging of the programmes, would they please everybody? Fading is worse in my opinion; but eventually that will be overcome, so I am possessing my soul in patience, and as I have not got a large stock of the latter, I find it hard, but I am not venturing my grievance. However, I suppose "growlers" serve their purpose. It gives the announcer an idea of the public taste, and he can arrange his programmes accordingly. (It is not only per medium of "Radio Record" grievances are ventilated; the daily papers have a good share.) I think a little more humour could be safely included. Is it possible for 1YA and 2YA to choose different nights for their band concerts? On the 22nd the Aeolian Orchestra gave a splendid concert, and 2YA had a band concert. My husband wanted band; I, orchestra; so we listened to 1YA till 9 p.m. and then tuned in 2YA. Band and orchestra are favourites, but 1YA and 2YA, having both same night, well—However, I am not "growling," but

enjoy every word by the use of headphones, whilst the other members of the family and our friends enjoy the same through the loudspeaker. I can assure you it is a very great boon to many besides myself. I wanted to say that many of my friends who are much more interested in music than I am have often expressed a wish for more elocution and talks on various topics and a little less orchestral items. If this can be done I feel sure it will be appreciated by many.

### Dempsey-Tunney Fight.

R. A. Lanning (Napier): "I, along with others, that were listening-in were greatly disappointed, as we fully expected that 2YA would rebroadcast the Tunney and Dempsey fight round for round. As one that had lost time from work to hear it, you will understand why I for one was disappointed when you mentioned that the fight would be described as above, yet you could only announce the final."

[This letter is unjust. Both the company and ourselves were cautious not to make undue promises. Our statement of September 16 said definitely this and this only: "If any results can be received from the short-wave broadcast due to begin about 2.30 p.m. they will be announced." In the present state of knowledge and equipment it is impossible to be certain of good reception beforehand; hence the caution of the company and ourselves in preliminary promises. As stated last week, what reception was secured in Wellington was largely spoiled by howling valves, and that reception certainly was not strong enough for rebroadcasting. If it could have been rebroadcast, obviously the easiest thing to do would have been to put it on the air.—Ed.]

### SUNDAY CONCERTS.

Listener (Christchurch): Allow me to cordially support your correspondent

lished a full page photograph of the band at that time.

I might mention that the above band was the only band on modern lines at that time, that is, they included the banjo and saxophone.

I also broadcast in the interval with other dance bands up in the Dominion studio several years ago. I think I have proved by the above that H. J. Tutschka's orchestra was the first and pioneer band to broadcast in New Zealand.

The Chicago "Radio Age" announces that Radio Corporation of America, makers of the "Radiotron" valves, will shortly produce another new valve which is said to be something important in its way.

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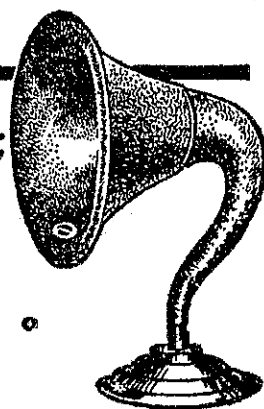
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**ATWATER KENT RADIO**





# Mainly about Construction

BY "MEGOHM"

## CHARGING THE 112-VOLT B ACCUMULATOR

### HOW IT CAN BE DONE AT 20 VOLTS BY MEANS OF SMALL ADAPTER

(Continued from Last Issue.)

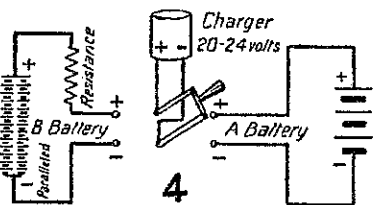
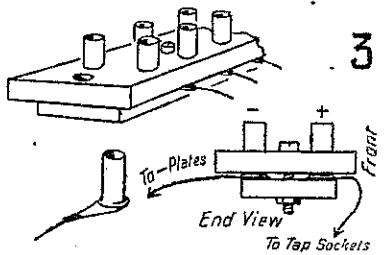
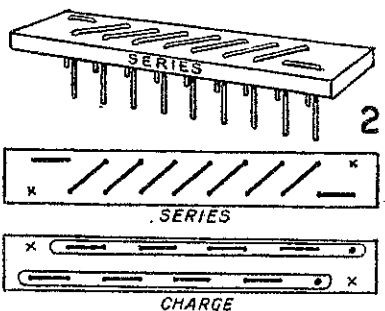
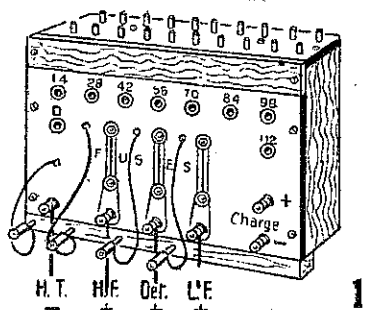
This device, the description of which was commenced in last week's "Record," is an attachment to the 112-volt B accumulator described in Nos. 2 and 3 of the "Record." By means of this idea a high-tension battery may be charged at low voltage by a full-wave valve rectifier intended for A battery charging, and giving about 20 volts. For the convenience of readers who have not seen the battery article, this description will be made as complete as possible, so that it could be constructed for attachment to any existing B battery.

#### THE DISTRIBUTION PANEL.

Figure 1 shows the ebonite distribution panel 6½ by 8½ inches, which is already a part of the B accumulator. The extra attachment is the strip of ebonite at the top, through which are inserted small copper mercury cups, into which suitable connectors are placed, so that the rows of cells in the battery are connected in "series" for discharging, and in "parallel" for charging. It might here be mentioned that the use of mercury about a radio set is not to be recommended in a general way, but, used in the way here indicated, no trouble can possibly be caused, and the contact obtained is more certain and reliable than can be obtained by other means. The idea could certainly be carried out with sockets and split pins for contacts, but the accurate drilling required to do this would prove a stumbling-block to most amateurs.

A panel arranged as shown is a convenient attachment for any B battery when experimental work is carried out, and varying voltages are required, as the plug-in system is so much more convenient than loose clips. Any number of additional voltages can be provided by inserting extra sockets connected to a wire tapping the row of tubes or cells at the required point. It will be noticed that four flexible leads come through holes in the panel, and to the end of each of these a split plug is attached, which may be fitted with a short piece of 3-8-inch ebonite rod as a handle. The left-hand flex is the negative connection, and forms a handy means of cutting off the H.T. at any time without taking out the ositive plugs, which, however, must always be taken out when the battery being charged. When not in use, the plugs are inserted into holes drilled in the strip of wood below panel, as shown. The fuse provided on each stage to protect valve filaments is a nice precaution. The fuses are made by pasting a strip of cigarette tin-foil on a piece of writing paper, and then cutting this into the finest shreds with sharp scissors. The best cuttings about an inch or three-quarters long can be stuck with secotone to a strip of strong paper, trimmed to size, and the ends slipped under the washers provided, held down by ½ in. brass bolts through the panel, with the nuts out-

ing each centre. The two holes marked A are ½ in. diameter, for the purpose of taking the brass bolts that hold a strip of ebonite ½ by ½ inches, placed underneath to hold the cups in position. This strip is drilled with two holes in corresponding position. The hole at either end marked B is to take a screw to hold the ebonite down to the wooden side supports. The most suitable article to serve for mercury cups is empty .22 rifle cartridge cases. Mercury can do no harm in contact with copper, so these



serve the purpose admirably and should be easily obtained. Twenty will be required, all being selected for being of correct shape and unblemished. These cases are now cleaned by placing them to soak in battery strength acid for an hour or so, then washed and rinsed well in water. Now, with a knife round the end of a piece of stick to fit into the cups, placing a pinch of pumice powder in each and working the stick round to clean the inside. The outside must also be brightened by rubbing with

and it will be found that a fifteen sixty-fourths twist drill makes a hole that is a splendid fit. It is not an easy matter to drill a row of holes so that they all line up exactly, unless special precautions are taken, and the best way to ensure accuracy is to use the drill to make a hole through a 3-16 piece of brass. Clamp this in turn over the place where a hole is required, and drilling through the hole in the brass, the drill is bound to pierce the ebonite in the proper place. When these and the four extra holes have been drilled, assembling may be done by placing the cups in the ebonite held downwards, placing the holding strip on top and bolting it in place.

If your battery is already built, the panel need only be unscrewed and the top tilted forward slightly. The cup panel can then be held on edge, cups facing outwards, and the leads from positive cups connected to the back of tapping sockets, and other connections made according to diagram. The hole for extra charging terminal should be drilled before panel is unscrewed. Now the cup panel can be folded back, and the negative wires passed through slot to tubes. The positive wires to sockets must be sufficiently long to allow of front panel being lowered an inch. This inch space allows of the connecting wires inside being regulated not to touch each other after both panels are fastened in place, then the space is closed by a strip of wood, as shown. Enamelled wire is the best to use, as the spray from an accumulator soon rots cotton covering. In adjusting connecting wires they should be arranged to "fall" away from the panel so that the moisture may not run down and corrode brass nuts. A slight U bend made in any wires pre-venting from battery to panel will prevent any drops of moisture from running down to the latter.

#### THE CONNECTORS.

Figure 2 shows the "series" connector or "comb" as they may conveniently be called. Two of these will be required, one for charging, the other for discharging. The combs consist of a piece of close-grained wood 3-8-inch thick, 5-8 long, and 1-1-8-inch wide. These are finished off with glass-paper and given a coat of shellac varnish, and are then marked for position of holes with the paper templet, two rows of ten holes each, just as on the cup panel, but the holes must be drilled to take the 14's copper wire which is used in making the connecting staples. The diagrams below give the connections on the combs. There is a projecting wire below each hole, except those marked X. The staples are bent with a pair of square-nosed pliers, and must project about ¼-inch below wood. The best way is to make them too long, afterwards trimming equal. In the series comb most of the staples run diagonally, as shown, with the exception of one at each end. In the parallel or charging comb, all negative cups down one side, and all positive on the other side, are to be connected together, and this may be done in any way that seems most convenient. The method shown is to screw a strip of thin brass along each side, then drill this from underneath, the holes in wood guiding drill. Black lines show tops of staples, but there is also an odd projection at one end of each brass strip. The staples are now pushed through, and the tops secured

half filled with mercury, and the less the better, provided that it is not much more than one-eighth inch deep. The wire connector takes up space, and if the cups are too full the mercury will spill over when they are put in. The best way to fill the cups is to take a cartridge case as used for the cups, cut it down to the depth the mercury is to be, twist a bit of 20's wire round for a handle, and use as a ladle to get just the right amount and place in each cup. A shilling's worth of mercury is more than sufficient for the lot.

To adapt this idea to other batteries, say of 24-volt units, the connector in the centre of each unit is cut, giving 12-volt units. The positive and negative end of each 12-volt group is then connected to its proper cup, which will be numbered according to the voltage, 12, 24, 36, etc., and a charger giving more than 12 volts, say 16 or more, may then be used.

In case it is desired to vary the method of construction in any way, it should be mentioned that the only metal that can safely be used in permanent contact with mercury is copper. It eats away brass or zinc, and solder it dissolves in a very short time, so that it cannot be safely used for many purposes for which it would otherwise be well suited where absolute contact is essential.

in quality. The best effects come when one instrument has a greatly differing tone to the other. One will look after the rich deep effects, while the other will give you brilliance. A horn model in tandem with a hornless type should give you this combination.

The best balance reproduction comes with two loudspeakers of similar resistance, else one may be greedy and overpower the other.

The two loudspeakers, one high and one low in tone, may be used separately to get the best results from solo broadcast items. The low-toned instrument will enrich a violin or piccolo, while the shriller loudspeaker will add brilliancy to a heavy bass voice.

This method has been extensively used for some time in both Britain and America, and it undoubtedly gives the best reproduction obtainable under present circumstances, neither the horn nor the cone speaker being as good by itself.

"Megohm" has been testing out the idea for about three weeks with an "Ellipticon" double-action cone speaker and a medium-sized horn speaker, and finds it to be all that is claimed for it. One advantage is that neither speaker is overloaded, and yet both are giving maximum undistorted volume. The melody, emphasised by the horn, stands out against the deep sonorous bass

## Next Week's Feature

### A STURDY FULL-WAVE B ELIMINATOR.

Next week "Megohm" will commence a description of a thoroughly reliable and efficient full-wave B eliminator, capable of running a five or six-valve set. This eliminator works from 230-volt A.C. mains without the slightest trace of hum, and is equally reliable on the most distant DX reception as on the local station. It has even been found better than a battery on DX, as the liberal smoothing arrangements tone down static considerably, rendering it less objectionable. Where current is paid for at the rate of 6d. per unit, the cost of running this eliminator is 25 hours for 6d., or one-farthing per hour. Construction of the transformer will be fully dealt with, illustrated with all necessary working drawings, and the construction of other parts will be similarly dealt with in as full a manner as possible.

## CELLULOID ACCUMULATOR CASES

### REPAIRING LEAKS.

Sometimes a celluloid accumulator case will develop a leak, and unless this is repaired in a suitable manner will continue to give trouble, despite the best efforts. If the leak is not very large there is no reason why it should not be repaired by any handy person.

Buy a few pennyworth of acetone from the chemist and dissolve a few pieces of celluloid—perfectly clean pieces they must be—in it. The celluloid should be added until the solution becomes rather thick in consistency. Keep the acetone corked up while the dissolving is being carried out, as it is extremely volatile and would soon evaporate if allowed to remain in the open.

It is best now to empty the accumulator—it need not be rinsed out or dried—and then apply the solution, which should be practically thin paste by now, to the leaky portion of the accumulator. Allow to dry and then apply more. Do this three or four times, when it will be seen that a considerable layer of celluloid has covered and filled up the leak. It is necessary, of course, to have the portion of the battery round the leak free from dirt.

As soon as the celluloid paste applied to the leaky portion has dried—it will do so very quickly—the acid can be poured back into the battery and the cells are ready for work once more.

It is important that the celluloid dissolved in the acetone should be free from dirt. Pieces of old photographic film will be quite suitable if the gelatine is removed by soaking in hot water previously.

## TRY TWO LOUDSPEAKERS

### CLEARER ORCHESTRA RECEPTION

Have you ever heard your wireless set as reproduced by two loudspeakers?

With only one source of sound you are apt to call a violin solo "splendid" and a full orchestra "fuzzy." One reason is that the ear is accustomed to hear a voice or a solo instrument coming from one definite spot, and the single loudspeaker gives you this condition. On the other hand, the music of a band or orchestra heard in the concert hall comes from an area of many square yards and not from a single focus.

In such a case the single loudspeaker cannot help giving a false impression in this respect.

Try the experiment of connecting two loudspeakers to your set, placing them some distance apart. The illusion of an orchestra is greatly improved, because you have more than one source of sound and obtain something of a stereoscopic effect. For a casual see-how-it-works experiment the loudspeakers should be connected in "parallel."

You do not double your volume, but you should find a marked improvement

notes given by the cone, but almost or entirely lost in the horn. The consequence is a surprising clarity, otherwise unknown in band and orchestral items.

The best arrangement is to have the two speakers on the table about a yard apart, backs to the wall, both facing the same way.

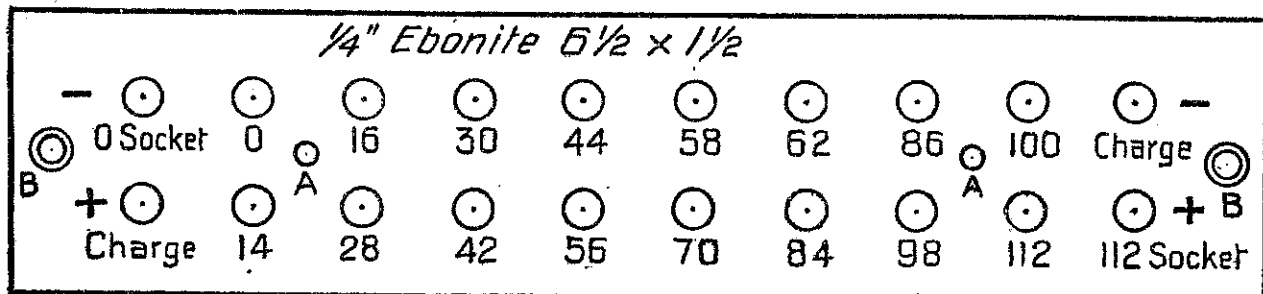
## LOOK TO YOUR AERIAL

### IS THE LEAD-IN JOINED ON CORRECTLY?

Glancing skywards, one cannot help noticing the different ways in which aerials are erected, and the lead-in wires arranged. Some otherwise very good inverted L aerials are spoilt by the lead-in being attached to the aerial wire at a distance of anything up to five or ten feet from the actual end where it should be placed.

Then there is the aerial that pretends to be a T, but isn't. An efficient T aerial should have arms of equal length, that is, the lead-in must be joined on at the exact halfway point. Yet it is a common thing to see such an aerial erected and the lead-in joined on many feet from the centre, and one naturally wonders just how much trouble this misplacing of the lead-in is causing.

How does the oscillatory flow of current take place in the case of the T type aerial when induced by the incoming ether waves? It will commence its flow from the two extreme ends of the two "arms" simultaneously, will combine at the point where the down lead is connected, will rush to earth through the set, back through the set up the down lead (or should we say in this case up the up-lead?), divide at the point of connection, flow to the extreme ends of the two arms, and will return and repeat the cycle until "worn out," or will continue its "swing" if the circuit is tuned so that it arrives back at its starting point just in time to be pushed off by the next incoming wave—in other words, if the circuit is tuned in. Now what happens when the two "arms" are not of equal length is simply this, and that is that in the first place the current starting from the extreme end of the shorter arm will get to the down lead first and will precede the current from the other arm, will complete its journey to earth first, naturally, and will have turned to come back only to find that the other is opposing it as it has not yet finished its journey to earth. So instead of combining together at the down lead each time and again at their point of return, thus forming, as it were, one combined current, it will tend to be divided into two separate currents which will oppose each other at various points, with the result that reception will be, to say the least, inefficient. This condition must obtain, therefore unless the down-lead is in the absolute centre or at one extreme end of the aerial.



side, handy for replacement of fuses. The lower end of the fuses is connected to the corresponding terminal by a strip of thin brass. All connections are shown in the wiring diagram published last week.

#### THE MERCURY CUPS

We now come to the portion that is the actual addition to the battery as already specified. A full-size templet of the cup panel is given, so that the ebonite can be marked out accurately by placing the paper over it and punch-

pumice and water on a rag. Small tags of copper foil about ½ in. long are now cut the width of bottom of cups at one end, tapering to almost point at the other. A cup is now soldered to the broad end of each tag, and a 22's enamel wire to the other end. Eight of these wires must be long enough to reach the front negative plate of each row of tubes, and the other wires long enough to connect to back of panel. The cartridge cases measure about five-eighths inch long and just under a quarter-inch wide,

to the brass strip. The two holes being missed at the ends, cuts out all connection to the set when charging is being done, thus absolutely preventing current accidentally reaching the set from this source.

#### GENERAL REMARKS.

The charger leads may remain permanently connected to the charging terminals, and a double-pole, double-throw switch can be provided as shown in diagram, to charge either A or B battery as required, being held in neutral position when not required. In case of the charger being accidentally switched over to the B battery with the series comb in position, nothing would happen, as this comb cuts off all connection to the charging circuit. When the battery is not in use the series comb can be taken out, so that the highest voltage is then only that of one row, 14 volts, which reduces any chance of leakage.

As there are seven cells in each row, the total voltage of these will be 14 volts, so that a charger giving about 20 volts will answer well, current being regulated by a short piece of resistance wire, if required. Half amp. or a little more, will be a good charging current, and charging should be complete in about an hour and a half. The cups are not to be more than

## HOME CONSTRUCTORS

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# Hints for Listeners

## ELIMINATING NOISES

The following talk by Mr. Preston B. Billing, of the Wellington Amateur Radio Society, was delivered through Station 2YA recently:

Noises within your radio receiver are due to one or the other of the following causes: Crackling noises often mistaken for statics are due to defective or run-down B batteries. If any one of the 15 or 30 cells are run down or polarised, amplification of the resulting voltage fluctuations cause crackling in the loudspeaker. In order to determine if the batteries are really run down or defective, one can substitute another battery and note if there is any improvement in the reception. Batteries which show less than 75 per cent. of their initial voltage should be regarded as suspicious.

The next place to look is in the A battery. If dry batteries are in use in this part of the set, the remedy is fairly obvious they should be replaced. The accumulator type of A battery does not as a rule give any trouble if the battery is kept well charged, and it is not very old, there should be no trouble from this source. Very often noises will be encountered through a defective grid leak; try one or two leaks and see if there is any improvement. All wiring in the set should be rigid, and connections securely made; flux of any description should be cleaned away immediately the soldering of the joints has been effected. If plug in coils are in use make certain the plugs are clean, and make contact with their respective sockets. Very often these noises can be traced to bad contacts at the base of the tube sockets, or in the case of the later style of sockets on the side of the valve pins. Sometimes the withdrawal and reinsertion of the valves will clear away the obstruction. If this fails the valve prongs should be cleaned together with the springs of the valve sockets. Bad tubes are frequent offenders, and one would be well advised to make certain of this factor. The noises from this cause are usually more violent, exhibiting themselves as a violent break in the circuit. The trouble is usually due to leakage or to a poor connection between the pins in the base of the valve, and the elements to which they are connected, namely, the grid and the plate. The filament usually does not give any trouble, and if no flickering is observed they should be all right. Audio-frequency transformers with defective insulation, especially between the primary and frame, and between windings (the primary and secondary), cause noise. Microphonic noises are due to the valves themselves; firstly, the valve sockets should be sprung in order to eliminate noises arising from people walking about the room, and also to prevent noises, due to the operator of the set touching the dials in the tuning process.

If you are in doubt as to whether or not your receiver is the cause of the noise, remove the aerial terminal, the set should be perfectly quiet, and only a slight hiss should be heard from the valves themselves.

## THE RADIATION TROUBLE.

Speaking of noises leads us to a further problem, and a very annoying one at that. I am speaking of radiation. This form of trouble seems to be on the increase, and before closing I would like to say a few words about it. If I have received one request to say something of this matter, I have received dozens, especially in the last few days. Now the atmospheric conditions have not been too good during the last week, and possibly there have been listeners straining their sets in order to hear distant stations. This in itself is bad enough, but listeners should realise that on nights when the static is bad there is no hope of receiving distant satisfactory reception. Why, then, all this straining to bring them in? All that is happening is that your set is adding to the din already manifest. Now, of course, there are some types of set which do not radiate, and it is high time some listeners gave their sets a look over so that their next door neighbour may enjoy the concerts also. In purchasing a set you should obtain an assurance that the receiver will not radiate. Dealers have been instructed that they are not to offer for sale receivers which offend in this respect. Most of the trouble from this cause is due to the constructor himself. He purchases a promising kit of parts, assembles and wires it himself, and then commences to drag in the stations without neutralising his set correctly. The net result is that he secures indifferent reception. What he does get is of a distorted nature, but right apart from this his fellow-listeners are compelled to listen to the awful squeals and howls which emanate from their loudspeakers and phones, and which finally compel them to close down altogether. On the other hand, there are some constructors (amateur) who can assemble and operate a receiver, taking care to adjust it so that it will cause no annoyance. It would be far better for the listener to have his set tested for radiation, and thereby eliminate a lot of unpleasant noises.

My next talk will have more to do with this matter, and I will endeavour to explain how you can ascertain for yourself whether or not your receiver is oscillating, and what is best to be done with it.

## WEAK RECEPTION

Your ear is your best guide. The signals become weaker as the "B" battery voltage decreases. As long as the "B" battery contains useful energy the drop in voltage from day to day is so slight that it cannot be noticed. However, as the battery becomes exhausted its voltage begins to fall more rapidly and its effect is noticed in markedly weaker signals.

When you have increasing difficulty in getting distant stations, and when the local stations fail to come in as loud as usual, it is fair to assume that the B battery is exhausted and should be replaced.

It will be found in most cases that this occurs when each 24-volt unit has dropped to the neighbourhood of 17 volts. It is time then to throw them away.

Your A battery should be tested in this case, however, for the same effect of weakened signals is noticed when it, too, is becoming exhausted. Lacking a suitable hydrometer, or voltmeter the best guide to the condition of the A battery is the brilliance of the filaments of the valves. If that is less than usual and does not increase perceptibly as you turn the rheostat the A battery is exhausted.

However, these are by no means the only causes of a weakening in signals. The weather has a great deal to do with distant radio reception. Electrical storms usually make distant reception difficult or impossible and cut down the volume of distant and even local stations. Fog, rain, sleet or snow may cover your aerial insulators and allow the signals to leak away to the ground before they reach your set. Sometimes there even may be no appreciable change in the weather, yet atmospheric conditions may be such as to interfere with reception.

Still another cause of weak signals is the exhaustion of tube filaments. The WD-11 and WD-12, UX-199 and C-203, and the UX-201A and C-301A valves have a special filament whose life is generally ended not by burning out but by exhaustion of certain active materials. If your valves have been in use for a long period a weakening in signals is perhaps a sign that new ones are needed.

If your set is suddenly unsatisfactory, your valves are new and your batteries seem all right on test, call up a neighbour or two and ask if they also are having difficulty. If they are, the trouble lies in conditions no one can remedy, and in a day or so when the weather clears up your set will be working as perfectly as ever.

Often a distant station will vary greatly in intensity from time to time, being alternately strong and weak. This is known as "fading," and likewise is due to atmospheric conditions beyond anyone's control.

## POSITION OF RHEOSTAT

There are many radio diagrams that are practically identical except for the method in which the rheostats are connected. In some cases the rheostat is connected in the negative lead of the A battery, and in other diagrams it is shown in the positive lead.

In some receivers the rheostat may be connected in either lead of the battery and equal results will be had; however, in audio amplifiers it is very important that the rheostat be in the negative lead, and it is equally important that the grid return from the amplifying transformers be connected directly to the negative of the A battery, rather than the filament of the valve. This is so that a negative voltage will be applied to the grid of the audio amplifier valve.

### Soft and Hard Valves.

In the detector circuit when a soft valve is used best results will usually be had when the rheostat is connected in the positive lead of the battery, and then the grid return should be connected direct to the filament of the valve. When a hard amplifier valve is used as detector the rheostat should be in the negative lead and the grid return should be connected to the negative of the battery.

The radio frequency amplifier valves in neutrodyne receivers are usually operated at zero grid voltage, and, therefore, if the radio and audio frequency valves are operated from separate rheostats, the rheostat controlling the filament current of the radio frequency valves may be in either side of the line

## OUTDOOR AERIAL BEST

There is no doubt whatever but what an outdoor aerial is by all odds and under all conditions far superior as a collector to anything else. If you have or can get an outside aerial do so, by all means, regardless of what set you have. Even an earth wire to the indoor loop helps tremendously in volume. You can attach it to negative A battery or to the centre of the loop winding. The earth connection may be to any cold-water pipe, hot-water pipe, radiator, through one of these lamp socket gadgets to the electric line, to the bell wiring, to the telephone instrument or what not. Even to a fire escape or kitchen stove it will help some. Try it if you have a loop set of any kind.

Oftentimes when a set is built for an indoor loop alone and there is no room for more instruments on the panel or in the cabinet you can attach an aerial to the grid side of the loop and ground to filament side. This the loop will be your tuning inductance. One make of set in particular is an example of a good commercial receiver specifically arranged this way, but any set can be so connected. If you are troubled with so-called body capacity when using a loop a single wire run to ground connection will clear this up.

# The Children's Corner

By "ARIEL"

MY DEAR RADIO FAMILY,—

There were such lots of pretty pictures this time, and many of them so beautifully painted, that it was harder than ever to choose a winner. I was ever so pleased with the beautiful smooth walls some of you got, and the patchwork quilts were real "colour schemes"!

Quite a number of new artists have come into our Corner. I hope these won't feel too disheartened at not having won the prize. They will all have more chances later on. As Big Brother Bill said to his boys and girls in Melbourne, "We can't always win, and we can't all win. Every win means a loss to the other fellow, so we've just got to learn how to lose well and how to win well."

Several children have asked me for crossword puzzles. Now, I thought they were all "dead as the dodo" long ago, but if a sufficient number of you really want them, why, of course, you shall have them. So, hands up for crossword puzzles! Just say if you like them when you write. Cheerio,—ARIEL.

## COMPETITION RESULTS

### PAINTING.

#### Prize-winners.

Hazel Howard (10 years), A-25, Railway Terrace, Kaiwarra, Wellington.

### HIGHLY COMMENDED.

Irene Fleming, Hataitai.  
Bruce Jones, Musselburgh.  
Mervyn Jillings, Hastings.  
Patricia Thorley, Kamo.  
Thora Rodden, Palmerston North.  
Mary Steele, Oamaru.  
Anna Williamson, Portland.

### COMMENDED.

Edna Hill, Khandallah; Dorothy Jourdain, Kilbirnie; Joan Adams, Northland; Rita Jarlov, Motuhora; Joan Hounsell, Napier; Derek Cochrane, Lyall Bay; Edna Sadler, Kilbirnie; Shirley Hopkins, Wellington; I. D. McLean, Milton; Nancy Robins, Devonport; Betty D. McLaren, Hataitai; Phyllis McCabe, New Plymouth; Doris Golding, Wadestown; Lesley Cossgrave, New Brighton, Christchurch.

## COMPETITIONS

1. Our Wireless Zoo. "Surprise" and verse; closing date October 19. Prize 5s.
2. The Best Story; closing date October 12. Prize, a book.
3. The Best Poem; closing date October 19. Prize, a book.

In case you have forgotten, the story is to be written about any pretty advertisement from any paper. The poem is to be about any pets you may have, or anything you use every day, such as a thimble, or a comb, or a fork or anything you like to choose.

## ANSWERS TO PUZZLES

### MISSING E's.

Persevere, ye perfect men; even keep these precepts ten.

### MISSING WORDS.

A vile old woman on evil bent,  
Put on her veil and away she went;  
"Ah," said she, as she walked away,  
"How am I going to live to-day?"

### DOUBLE ACROSTIC.

N	aple	S
R	lb	A
W	ashinto	N
C	incinnatt	I
A	msterda	M
S	tambon	L
T	orne	A
L	epant	O
R	clipti	C

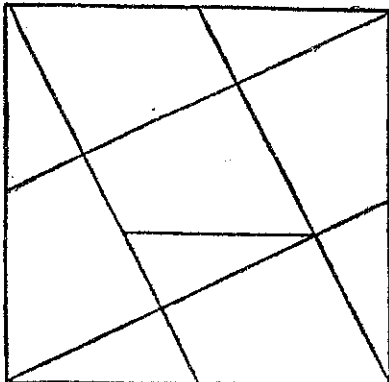
Newcastle—Coalmines.

### BURIED TOWNS.

1. Bly, Lyons.
2. Bruges.
3. Perth, Rome.
4. Tenby, Cork.
5. Crewe, Berne, Rye.

### PERFECT SQUARE.

These are the solutions of the "Perfect Square" and "Crossing out the Dots" in last week's corner.



A small girl was on a visit to her aunt and grandmother. "Grannie," she said, when her aunt had left the room, "How old is Auntie Agatha?" "I couldn't tell you, dear," answered Grannie, "without looking it up in the family Bible." "Goodness me," gasped the child, "is she old enough to be mentioned in the Bible?"

## WHAT AM I?

My head and tail both equal are  
My middle-slender as a bee  
Whether I stand on head or heel  
Is quite the same to you or me.  
But if my head should be cut off,  
The matter's true, though passing strange,  
Directly I to nothing change.  
Answer: The figure 8

## A WONDERFUL CAT—CH!

"Mother," said little Joan, "I know a girl who has got a cherry-coloured cat with rose-coloured spots. It's such a beauty!"  
"My dear," exclaimed her mother, "you really must not tell such stories. There couldn't be such a cat."  
"But, mother, it's quite true," Joan persisted. "Surely you have heard of black cherries and white roses!"

What islanders are represented by these letters: E, B, F?  
The islanders are Cingalese (single E's) of course!

How could I say to you in one word that you had some refreshment between nine and eleven?  
AT-TEN-U-ATE. (Attenuate).

## HINTS FOR STAMP COLLECTORS

Who collects postage stamps? Boys—and girls, too—of Australia are lucky enough to have someone to tell them all about stamps. They are having a series of talks on stamp collecting during the Children's Hour, from 3.10 Melbourne. An expert is telling them all about their origin, values, watermarks; how to start a collection, how to classify specimens, and a thousand and one other things connected with this fascinating and absorbing hobby. It is making every boy long to possess a stamp album of his own.

Do any of you collect stamps? If so, you know for yourselves how fascinating it is. To get the best out of it you have to make a really serious study of postage stamps, and learn the different value of the rarer kinds. By this means you will be able to make careful exchanges, and you will always enjoy the thrill and excitement of hoping to possess a valuable stamp!

Most children, because they don't know, ruin their specimens by sticking them down with gum, so that they can never be taken off without cutting the paper.

The correct way to stick them down is to use proper mounts. This will protect your collection from damage. It is as well to remember that it is not only very old stamps that are most valuable—it is the fact that there are not many of them that make some specimens worth so much. Then, again, their condition alters their value—sometimes the post-mark nearly ruins them, or they may be nearly defaced. The perforations (round the edge) count for a lot, and the kind of paper they are made from; but you really need an expert philatelist (the proper name for a stamp collector!) to tell you all these things. Who knows? We may find one to talk to you before long! I expect you know that a number of stamps were issued during the war, and they will never be issued again; these, of course, will in time become valuable, so if you have any be sure to keep them.

## MARBLES ON TREES

Do you know what makes marbles and apples grow on oak trees, and pinecones on wild rose bushes? Early in the spring, a gossamer-winged insect, called a gall-wasp, alights on an oak twig, and piercing a hole in the bud with her long probe, places an egg inside it. Then a wonderful thing happens. Instead of the bud withering and dying away, it grows quickly round the egg, putting on a round tough covering. Soon the egg hatches, and the baby insect finds itself inside a growing nursery, with plenty of food all round it. When it is full-grown, it bores its way out of the marble "gall," and is ready to start life. So you see, when you find an oak-apple, if it has a little round hole anywhere, you may be sure the baby gall-wasp has flown; but if it is intact the baby is still in its nursery.

## THE NEW PLAYTHINGS

"Humph!" growled the elephant, "Squeak!" cried the Teddy-bear, Thrown down together Beside the armchair, "Things in the nursery Won't be the same again!" Puffed out indignantly The clockwork train. Great consternation Among all the toys, Now that their master, Like other little boys, Plays with the wireless, The silly old wireless! "I call it unfair!" Wailed the Teddy-bear. "Humph!" growled the elephant, "Puff!" said the train. —Rachel Macandrew.

Mother had been annoyed by the noise of the dust-bin being rolled round and round the yard by her young son. "John, you really must stop making such a noise," she said at last. "But I'm amusing baby for you," protested the small boy in an injured tone. "But I don't see baby," said his mother. "Oh, he's inside the dust-bin!" was the reply.

## A WORD SQUARE

Can you complete this word square by inserting a letter in each of the places indicated by a dot? No. 1 across is the same as No. 1 down, and the same thing applies to Nos. 2, 3, 4, and 5.

- Here are the clues:—  
1. Very wise people.  
2. A truthful saying  
3. A measure.  
4. Urged.  
5. To be in poor health.

S				S
	D			
		U		
			R	
S				Y

## QUEER THINGS

The following sentences can be read the proper way from left to right, or Chinese fashion, from right to left. Try for yourself and see:

- "Was it a rat I saw?"  
"Rise to vote, sir."  
"Madam, I'm Adam."  
"Able was I ere I saw Elba."

In this little story each left out word can be spelt forwards or backwards. For instance, the first sentence is:—"It was a lovely day between noon and eve when Bob, his sister Hannah, and their father decided to pop down to the meadow to have a peep at their pet ewe." See if you can find out the rest. It's rather good fun.

### The Excursion.

It was a lovely day, between — and —, when —, and his sister —, and their father decided to — down to the meadow to have a — at their pet —. "Look," said the children, "there is a blue — in the tree —! If it — us, it will fly away, for it will soon have its — on us." They called at a cottage to fetch a wee — that their father had bought as a pet, and had a — at the baby girl, whose mother was just tying on her — before giving her some —. The children just loved watching the little — have her tea. The mother gave — an orange to eat, and he allowed a — to fly in the — of a demure — who was paying an afternoon visit. Her face grew — and —, and she said:—"But I am sure you — it by accident." "I am very sorry —," he replied. "Of course, it was not an intentional —." The good lady was kind enough not to — any further to the matter. They then walked along the — seashore to — out their time, and saw a ship in the distance with the captain on the — and the boatswain in the —. " —!" they shouted merrily, waving their hands. Before returning home the children, who were a little tired, had a bathe, and found it an excellent —.

## TWO CLEVER SNAILS

Snails do not look to us to be very clever. And yet they can find their way home. Here is a true story of two snails who helped one another. One snail was strong and sturdy, and the other was frail and delicate; and they both lived in a garden where there wasn't much to eat. So the strong snail climbed patiently up the garden wall and down the other side, to see what things were like next door! He found there was plenty to eat over there, so after being away about a day, he came climbing back again to fetch his delicate friend. Somehow or other — we are not clever enough to know how — he told his good news; and the two snails set off together and made their new home in the next door garden.

Now that the weather is getting milder, snails will be beginning to come out of their winter houses. They creep into holes in walls and under rubbish last autumn, and sealed up their shells with a thin coating of lime to keep out the cold. Soon they will be opening their front doors to come out again and look for food. Who will be the first to meet a snail out for the summer season?

## SPARKS

### A Bright Answer.

It was a Terminal Music Examination at school, and Smith, minor, was asked, "What is a Fugue?" He thought hard for a few minutes, and then replied brightly, "A fugue is what happens in a room when you have all the windows shut."

### Quite Cured.

Brown: "The doctor said he would put me on my feet again in six weeks." Smith: "And did he?" Brown: "Yes, I had to sell my car to pay his bill!"

# Findings of Australian Commission--Professional Trio for 2YA--The Church and Broadcasting--Listeners' Conference

## THE RADIO RECORD

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### PART V.

The plate current, although dependent on the plate and grid voltage, cannot be increased indefinitely. With a given filament brilliancy the number of electrons shot off per second is limited, and when all of these reach the plate no increase of plate pressure will increase it. The value is then said to be delivering its saturation current. The saturation current can be increased by passing more current through the filament, thus increasing its brilliancy, but this is obtained at the expense of the life of the valve.

### THREE ELECTRODE VALVE AS AMPLIFIER.

This piece of apparatus has so many uses that the name "valve" is too limited, and the American appellation, "tube," is better. The term "valve," however, is still used in England.

When the voltage between the grid and filament is gradually varied, the repulsive action of the grid on the electrons is gradually varied in the same way, so that a feeble current in the aerial circuit will produce a much larger current of exactly the same kind in the plate circuit.

When one considers the exceedingly complex form of sound wave coming from, say, an orchestra, and that the current from the microphone is amplified by valves several times in succession at the studio, sent up to the transmitting station by telephone wires, amplified there by more valves, and then broadcast, amplified, perhaps, another six times in the receiving set, the wonder is, not that the signal is slightly distorted, but that it should be recognisable! This will show that the modern amplifying tube is well-nigh perfect.

It has uses other than in wireless telephony. It is used frequently in long telephone lines overland, where the resistance of the wires would cause the messages to become too faint. In this way very much smaller and thinner wires can be used, and the saving in copper is many times greater than the cost of the valves.

### DULL EMITTERS.

The ordinary valve filament has to be raised to a high state of incandescence before it will emit electrons in sufficient quantity. The filament, as a matter of fact, burns more brightly as a valve than does the ordinary electric lamp for illuminating purposes.

It was found that if the filament were coated with the metal thorium (a metal closely allied to radium) this thin coating would give off electrons in as great a quantity when it was

## The Why of Wireless

### Interesting Series Setting Out Scientific Facts Simply

(By "Electron.")

operating at a dull red heat. A valve of this type is known as a "dull emitter," and has the advantage of requiring much less power to operate it, as well as having a longer "life."

The dull emitter must not be run higher than its rated voltage, as the coating will be burned off, and it will thereafter have the characteristics of a bright emitter. If a dull emitter of 1 volt is given the full pressure of a 2-volt accumulator, the result would be the same as trying to run a 100-volt lamp off the 200-volt mains.

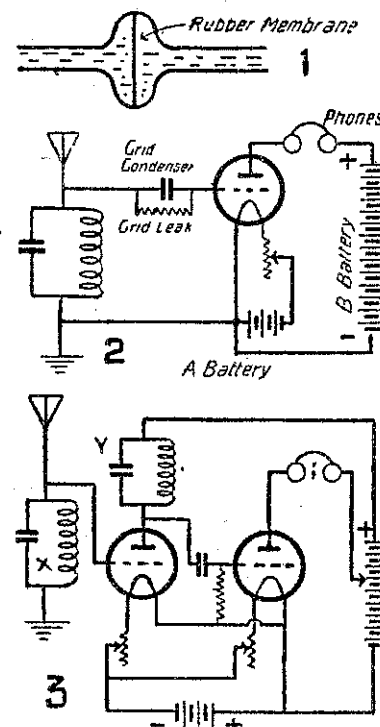
The dull emitters have been condemned as being "microphonic." What is meant is that if the valve is tapped or jarred when alight, it will cause a peculiar singing or twanging sound in the phones. The reason for this is that the filament core is made of a very hard metal, which at the dull red heat is still considerably "springy." When the tube is jarred the filament vibrates to and fro, and the relative movement of filament and grid causes a variation of plate current, with the aforementioned effect. The filament of the bright emitter is quite soft at its working temperature, and does not vibrate when jarred. This tendency of dull emitters can be nullified by using some feet of rubber for the set, if these noises are prevalent, but in the vast majority of cases no trouble will be experienced.

Dull emitters will be found to give off a small plate current, even when cold, so that it is advisable to disconnect the "B" battery when the set is not in use, in order to prevent it being run down needlessly.

Later advances by the manufacturers have produced a valve which operates at a temperature so low that it is not even red. These valves are the true "dry cell" valves, and no accumulators are necessary at all. These valves are particularly useful for owners who are an inconvenient distance from battery charging stations, and who have no "battery charger" of their own.

### THE VACUUM TUBE AS DETECTOR.

In the preliminary discussion on three electrode tubes it was stated that when the grid is made positive it will cause a large increase of plate current, and if made negative it will decrease the plate current.



When the tube is required to act as a detector (that is, as a non-return valve) the characteristics required are that normally no current should flow in the plate circuit and when the grid becomes positive a current will flow, the value of this current being of course proportional to the voltage of the grid. When the grid becomes negative it must suddenly stop all plate current from flowing.

Tubes can be manufactured quite easily with these characteristics, but they must be used in a special way. Firstly, the plate voltage should be low—just about 25 to 30 volts, otherwise the attraction of the plate for the electrons will be greater than the repulsive action of the grid when it is a negative, and the tube will cease to rectify. Secondly, the grid for this purpose should be slightly positive, and this is obtained by means of a small condenser called the grid

condenser. The capacity of this condenser is exceedingly low, about .0002 of a micro farad, and its action is that while it allows the high frequency currents to flow (as explained in a previous article), it will not allow the electrons which have collected on the grid to escape.

The action of this grid condenser in allowing the high frequency currents to pass "through" it is very similar to a thin membrane of rubber in a water pipe, figure 1. If the water is forced from the left the membrane will stretch or yield to the right, but as soon as the pressure is released it will come back to its vertical position. If the right hand side is compressed the membrane will stretch towards the left. If now the water is alternately pushed and pulled from, say, the left, it will cause all the particles of water to oscillate to and fro along the pipe, and to this motion the membrane will offer practically no resistance. It will, however, effectually prevent a steady flow of water from traversing the pipe.

The grid condenser therefore will allow the grid to have its pressure raised and lowered just as if it were not there, but will keep the electrons on the grid and thus have it always slightly positive.

In order to prevent the grid from becoming too positive (due to fresh electrons alighting on it every time it rises in pressure) they are allowed to leak away slowly through a very high resistance connected across the plates. The value of this resistance is in the vicinity of one million ohms which, for convenience, is called one megohm. The actual value of this "grid leak" must be adjusted to suit the particular valve and sometimes rises to as much as 5 megohms.

The arrangement of a tube fitted with grid condenser and grid leak to form a single valve detector is shown in figure II, which should now be self-explanatory.

### THE HIGH FREQUENCY AMPLIFIER.

The detector valve described in the preceding paragraph is perfectly satisfactory if the signals in the aerial are loud enough to be heard in the 'phones after detection. If the distance from the broadcasting station is too great, then the signals must be amplified before being applied to the detector and

the tube arranged for this purpose is called a high frequency amplifier, since it amplifies the high frequency waves just as they are received from the aerial.

The arrangement is shown in figure III. The feeble high frequency currents in this case go straight to the grid of the first valve and corresponding, but much magnified currents flow in the plate circuit. Note here that these plate currents are still of high frequency, and therefore must still be tuned so that another coil and condenser are required as shown at V. For certain reasons to be explained later it is illegal in New Zealand to connect the grid to the aerial direct, but these diagrams are explanatory only.

These magnified high frequency currents flow through the grid condenser to the grid of the second valve, where they are rectified as previously described.

Several new points are of note. First the pressure of the plates of these two valves should not be the same, so that separate contacts have to be supplied. Secondly, if the grid leak were connected straight across the grid condenser it would raise the grid of the second valve up to that of the plate of the first. This would obviously render the second valve useless, and therefore it is connected straight on to the filament. Thirdly, it will be seen that the same "A" and "B" batteries can be used for both valves, although the actual pressures and currents are not the same. The brilliancies of the filaments are regulated by means of the variable resistance shown in the negative side of the filaments.

The two-valve set shown in figure 3 will bring in distant stations quite clearly, but perhaps somewhat faintly. We could strengthen the signals further by adding another high-frequency valve before the detector, but this is not advisable for several reasons. First, if we add more H.F. stages of amplification we must necessarily increase the number of controls, since each H.F. valve must be tuned. Secondly, the amount of amplification thus obtained is not so great as can be obtained by amplifying the signals after they have been detected, because all the wires in the H.F. side act like little condensers if they run parallel to any other wires, with the result that the electrons are tempted to stay at all corners or where the wires are in close proximity to others. This property is so pronounced that it has been found that a considerable increase of signal strength can be obtained by winding the tuning coils as an open helix with a space between each turn. In fact, the main difference between the popular Browning-Drake and many other sets is merely in the design of the coils. This is what is meant by the phrase "low loss coils."

## Both Aerial and Earth should be Carefully Insulated

### Reception will be Materially Improved

Insulation is a point where there is a "leak." That is, the current is able to flow off the aerial wire and into the roof or the walls of the house. This involves a loss which manifests itself in weaker signals.

### Use Best Insulation.

Impulses picked up by a distant receiver are so very minute that the most effective collective device possible should be used, and every possible method of insulation be utilised in order to give them a "clear track" into the set. When an aerial is on the roof, the lead-in should be held away by insulation from the sides of buildings. The lead-in should also be run through the wall or window with a porcelain tube or like insulation.

### To Avoid Losses.

Inside the room short leads are best,

but regardless of whether the lead is long or short, it should be insulated just as well as the wire on the outside of the house or apartment. The popular theory that inside or outside wooden, stone, or brick walls will not deduct from the efficiency of an aerial is false. The radio listener who has his lead-in tacked to the surface of a building may not think that power is diminished, yet there is probably a loss here that is reducing his range and selectivity. Even if the wire has an insulating covering it should not be run directly against a wall. The very proximity of the wall may cause a loss.

### Insulate Earth Wire.

After passing through the receiving instruments the signal currents flow into the ground, and here insulation is again highly important. At first sight it

seems unimportant by what path the impulses get into the ground. One would think that the more paths that were provided the better. This, however, is not the case. Only one earth should be provided, and that one the best earth available.

The important thing about the ground connection is that it have as low a resistance as possible. High resistance reduces the signal strength. The singular thing about radio currents is that they do not follow the path of least resistance. The word resistance is here used in its technical sense of electrical resistance. They follow the easiest path, to be sure, but this is not necessarily the path of least resistance. The easiest path for radio currents is the shortest path. We can, therefore, have the following queer condition:

Suppose a radio receiving installation has two earth connections, one near the

receiver and the other at some distance from it. Most of the signal current will flow into the ground through the nearer earth connection. Very little of it will flow through the distant earth connection. If, therefore, the nearer earth connection happens to have a large resistance, the signal strength will be reduced. Now, if the nearer earth is removed the current must flow through the distant earth connection—it has nowhere else to go, and if the resistance of this ground is low the signal strength will be greater than when there were two grounds.

The practical application of all this is to be sure to support the ground wire on insulators up to the point where it is connected to ground. Water pipes are about the best thing on to which to connect the ground wire, and the connection at this point should be as positive as possible.

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