

ISSUED EVERY — —
SECOND WEDNESDAY

SIXPENCE

RADIO

IN AUSTRALIA
& NEW ZEALAND

Registered at G.P.O., Sydney, for transmission by post as a newspaper.

VOL. II

MAY 28, 1924

No. 31



BROADCASTING WIDENS THE SCOPE OF THE CHURCH.

PRESCOT PORCELAIN INSULATORS

(Loop Type)



These Insulators are made of the **BEST VITRIFIED PORCELAIN**, treated with dark green glaze. The material of which they are composed is non-absorbent, and they do not depend on the glaze for their insulating qualities.

They are attractive yet inconspicuous in appearance, and as the design is such that they do not get out of alignment when erected, full advantage is obtained of their mechanical strength and electrical efficiency.

The following sizes are stocked:—

	No. 1. List No. D 4411.	No. 2. List No. D 4412
Dimensions	3in. × 1 ⁵ / ₈ in. with ¹ / ₁₆ in. holes	4 ³ / ₈ in. × 2 ³ / ₈ in. with 1/2in. holes
Working Load	500 lbs.	2,500 lbs.
Breaking Load	2,000 lbs.	10,000 lbs.
Flash over voltage (wet) ..	2,000 A.C.	10,000 A.C.
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The Genuine Honeycomb Coil. Properly wound, correct inductances. Most trustworthy and efficient Coil on the market.

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The Gentle Art of Blowing Trumpets

THERE is apparently something radically wrong with a large number of Australian wireless experimenters. Lately it would seem that they are existing, as Professor Stephen Leacock would succinctly say, "in a state of stodge." There is an air of perpetual "Monday Morning" about them, and too little of "That Kruschen feeling." To say that they are apathetic is, colloquially speaking, "boosting them up."

AND the reason for our outburst? you ask. There are many. Here are some:—

THERE are several thousands of radio experimenters in Australia and New Zealand. Apparently, if we can judge by the occasional reports appearing in the Press, all they are doing for the advancement of wireless in this community, considered in relation to their numerical strength, is startlingly close to nothing. It is not as if there were nothing to be done. There is everything. There are Australian and American broadcasting stations to be picked up. To "log" properly, that is. It is not sufficient nowadays to say that you hear 2FC or KGO last night announce that it was "1.30 a.m. Pacific time, rest drowned by static." Some months ago to perform such a feat was splendid, unprecedented, but to-day such things are commonplaces—they are being done almost every hour.

THERE are short-wave, low-power points to be decided. DX (long distance wireless communication) in Australia is practically an unexplored field. In fact, there are fifty different pressing things that await investigation and experiment by those qualified to delve into radio difficulties and mysteries.

OF course, it cannot be denied that very many conscientious and indefatigable experimenters are wholeheartedly applying themselves to these problems and securing undeniably valuable results, but there, more often than not, they stop. And that, perhaps, is the whole trouble.

WHAT possible value can the confuting of wireless fallacies and the establishment of hitherto doubted claims be to the community, wireless or otherwise, if the news is not published abroad?

WIRELESS experimenters, like any other enthusiasts, are greatly inclined to avoid all but their own cliques, and anything they succeed in discovering or proving that has not hitherto been known or achieved, they hug closely to themselves through labouring under the delusion that it would be of no interest to the outsider and probably treated with silent contempt.

NO idea was ever more erroneous. The outside, non-technical public is intensely interested in radio and all its many diversities. If there is any doubt as to this one need only go through the columns of the Australian Press from the smallest, unimportant two-page bi-weekly rural "rag" to the most conservative morning dailies; one will almost invariably find a special section set apart exclusively for the chronicling of wireless activities. Magazines devoted in part or entirely to wireless and broadcasting are springing up everywhere. But all this is as naught without the active collaboration of the experimenters.

ARE you an experimenter? Have you done something in connection with wireless for which you feel reasonably proud of yourself? Until you tell *Radio* or some other contemporary representative of the Australian Press all about it you have not done all.

THERE are many ways of helping a movement to make headway but there was never a better one than through Publicity!

IT must not be thought that *Radio* is advocating a colossal fan-fare of trumpet-blowing. What this magazine wants to see is experimenters taking a more wholesome and broader outlook of their wireless activities; not keeping the good radio things to themselves but telling the public and Press about it!

SUCH effort will repay an hundredfold. It will insure the Science becoming immensely popular and which state of affairs cannot but succeed in re-acting in favour of the experimenters.

EXPERIMENTERS, henceforth let your slogan be, "I'll tell the World!"—and do so.

The "Reso" Train

Wireless Locomotive Makes Victorian Tour



WHAT is claimed to be the first trip of its kind in this country was recently carried out when a railway train, completely equipped with wireless installation, made a journey touching the principal centres of the State of Victoria.

Known as the "Reso" (Resources) Train, it was run with a view to obtaining a better understanding of the facilities and productivity of the State, and also for the purposes of

ly, it might be mentioned that the total amount of black coal mined in Victoria last year was approximately 500,000 tons and of which the State Mine produced 400,000 tons. The principal consumer is the Victorian Railways. Giving continuous employment to 2,000 persons and producing wealth to over the amount of £500,000 sterling annually, this mine is of considerable importance.

Leaving Wonthaggi, Leongatha was reached. As is well known it is one

was heard only disjointedly. This was evidently due to the fact that his vocal tones are unsuitable for broadcasting purposes, for the next speaker, Mr. Canny, was received exceptionally well and clearly, and caused a good deal of amusement through many of his witticisms. All the passengers appreciated the speech and it was most enthusiastically received.

During the evening, the opportunity was taken to tune in to 2FC (Messrs. Farmer & Co., Ltd., Sydney) and much to the hearers' surprise, selections from the theatre and a monologue in progress at a music-hall were easily heard. The items were strong enough to operate a loud-speaker, but it was thought advisable to receive the items on the ordinary head-telephone sets owing to the heavy inductance experienced from telegraph lines while standing at stations. On this occasion quite a crowd of country people were present, and many where the expressions of astonishment when it was known that the items were broadcasted from Sydney.

From Korumburra the travellers' way lay across country until they reached Warragul, where a number of farms were inspected and notably the Booral Estate which comprises 1,100 acres, and, as it is suitable for dairying, mixed farming, potato and onion growing, will be divided into holdings of 100 acres by the Closer Settlement Board. Another place of much interest was the Casein Factory, where an infant industry is in process of growth. Here, 6,500 gallons of milk are collected daily from the surrounding farms and the butter-fat is extracted. The remaining skimmed milk is used in the manufacture of Casein, the weekly output of which is six and a half tons. This is used for the making of glue, paper, imitation tortoise shell, ivory, mother o' pearl, knife handles, piano keys and toilet requisites.

Then followed Traralgon, Kornalla, Sale, Orbost, Lochend, Jarrahmond.

(Continued on page 102.)



Baby Harry, the fourteen-months-old son of Val Heslop, Publicity Director of Universal Films, Sydney, enjoys a radio concert.

insuring constructive co-operation between the population so that its welfare might be advanced.

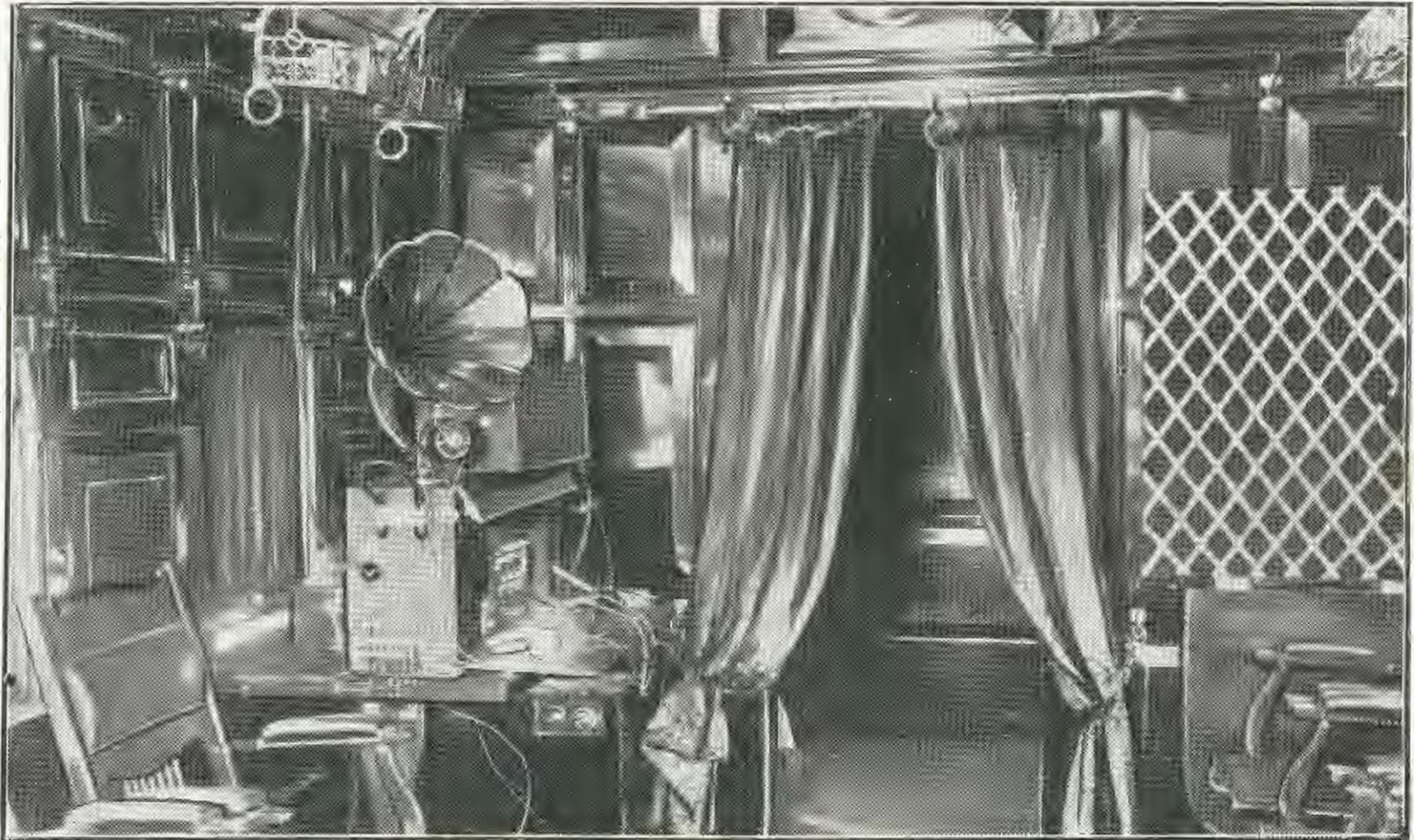
Those who made the trip state that the most striking fact which was borne upon them was the great strides that have been made in the Victorian dairying industry and also the great and valuable gifts Nature, in the way of vast timber resources, has showered upon the Southern State with such a lavish hand.

From Melbourne, the first stop was made at Wonthaggi, where the State Coal Mine was inspected. Incidental-

of the richest of dairying centres and here the members of the "Reso" party were motored to view the surrounding hills and some very fine and up-to-date farms were visited.

The next stop was Korumburra and here it was arranged that Mr. Miscamble and Mr. Canny of the Victorian Railways Department should speak to the "Resonians" in the "Norman" car from Melbourne. The "Norman" car is Mr. Clapp's own private one, and it was here that the wireless apparatus was installed. Unfortunately, although Mr. Miscamble's voice was loud and clear, his speech

THE WIRELESS CABIN



Photograph shows the interior of the "Norman" Car, which is Mr. Clapp's own private one. It was in this compartment that the wireless apparatus was installed and here that the members of the "Reso" train tour listened-in to concerts broadcasted from 2FC. The aerial consisted of the inverted "L" type with two leads of 140 feet in length and the "earth" was taken on to the bed-plate of the under-carriage.

The "Reso" Train

(Continued from page 100.)

Bairnsdale, Maffra, Yallourn. At this last town it was arranged that Mr. Clapp should speak to the "Resonians" from the Melbourne Domain wireless station and, although the speech came in loud and strong, owing to bad "atmospherics" it was somewhat mutilated. However, it gave those present an idea of what can and is to be expected from radio broadcasting.

Arrangements were also made with the Australian Press Association, Reuters and *The Argus* for the transmission of press messages through the Melbourne radio at 6 a.m., while in the evening *The Herald* kindly allowed an evening service which was also transmitted through the same channel. These arrangements enabled the "Resonians" throughout the whole of the tour to have their news at breakfast and also an evening service with their dinner. This was greatly appreciated by all on the train, as it kept them in touch with the local and Overseas happenings. Press messages of about 1,000 words were received daily and a copy was distributed to each passenger.

The aerial of the apparatus installed in the "Norman" car consisted of the inverted "L" type with two leads of 140 feet in length—covering two carriages—looped. The "earth" was taken on to the bed-plate of the under-carriage.

The receiving equipment consisted of one Marconi type 55 7-stage amplifier with two stages of audio-frequency attached. A receiver was placed across the grid and filaments of the amplifier and consisted of a straight-out single circuit. More signals were received during daylight over distances of 500 and 600 miles, while at night, signals could be heard throughout the Commonwealth, New Zealand, New Guinea and the Indies, all of which came in strong enough to operate a loud speaker. In fact, while at Warragul, Sydney, Melbourne, Adelaide and Hobart signals could be heard at a distance of 600 feet from the car.

The most puzzling and striking radio feature of the trip was the fact that while the train was in motion

Miss Merle Robertson Plays for 2FC



Miss Merle Robertson.

EARLY this month lovers of piano music were accorded a rare treat when the pianoforte recital provided by Miss Merle Robertson, whose reputation as a pianiste is world wide, was broadcasted from the State Conservatorium by 2FC. (Farmer's Station).

all Morse signals appeared to increase in strength and could be easily read through heavy induction.

Speaking of induction it was first thought that this was caused through bad commutation from the lighting generators, but a trial run was taken on a car which carried no generating plant and still the same thing occurred, and it was eventually come to the conclusion that this was due to friction taking place between the wheels and rails while in motion—probably a static discharge.

Another wireless incident of note which occurred on the tour was the fading experienced at Orbost. This town is situated in a hollow between two ranges of hills and it was noticed that during the day-time, when the train was pulled up at the station,

No trouble was spared to ensure the perfect transmission of the recital and both Miss Robertson and the staff attached to 2FC worked hard during the day of the concert in an endeavour to secure the best results.

During the afternoon, special tests were carried out in regard to the placing of the microphone, and no less than thirteen different positions were tried out. Careful observations of the results achieved by the use of the microphone in each position were made and three of the best placings were selected for further and final tests. From experiments conducted in these positions one was at last chosen and the results fully warranted the time and trouble expended in the tests.

The various items played by Miss Merle Robertson were reproduced as clearly by wireless as if the artiste had been within actual audible distance of the listener. Her faultless technique and masterly interpretation of the collections of classical numbers which she selected for this particular concert came as a revelation to music lovers.

Farmer's are to be congratulated for having secured both the services of so famous an artist and for having carried out the transmission of the recital in so perfect a manner.

Melbourne Domain wireless station signals faded completely out, while those from Sydney radio were of a fair strength, despite the fact that they had been transmitted from at least twice the distance. On taking observation it was found that Sydney lay in a direction straight along the floor of the valley, and thus, as the hills were heavily wooded, it was thought that the Melbourne signals were absorbed over the adjoining rises in the ground, for, on passing a few miles over these, it was found that signals from the Southern Capital came in at quite good volume.

Another feature worthy of concluding comment was the little appreciable difference between the strength of I.C.W. signals between daylight and dark.

Making Wireless History

Radio Pioneers "Carry On"

The Logging of KGO



AFTER a lengthy inspection of our mail we have quickly come to the conclusion that the logging of KGO, the General Electric Company's broadcasting station at Oakland, California, U.S.A., by Australian radio experimenters from a most unlikely and unprecedented feat has developed into a habit!

Pressure on already crowded space precludes any detailed comment, even if it were necessary—but it will be noted with interest that besides the pioneers who are steadily carrying on with the good work, several newcomers have succeeded in establishing themselves in the front line of Australian wireless experimenters.

Just one word more before we place their interesting letters before our readers. Reception might be even better yet. Hitherto, no experimenter has gone beyond hearing the announcement of the name of the station, the orchestra, the conductor and the hotel at which the items are given and also the applause and the announcement of the local time. Who will be the first to tell us the titles of the musical and vocal items as they are announced? Now then, experimenters!

The following are extracts from some of the many letters we have received:—

LETTERS TO THE EDITOR.

Dear Sir,—

I wish to state that I was successful in tuning-in KGO at 6.40 p.m. on March 16. The following is a copy of the entry in the log:—

16.3.24: 6.40 p.m.—"KGO, Oakland, California." Orchestral items, music and speech QSA—audible 2ft. from 'phones, modulation excellent. Three items heard. QRM very bad from harmonics of VIS and other commercial stations, making further reception impossible.

I regret that I am unable to give the names of the items owing to interference from VIS and other sta-

tions' harmonics. I am using a four-valve set one stage radio. Two audio and aerial inverted L—2 wire 3/20 gauge, 100ft. long and 40ft. high.

Yours faithfully,
(Sgd.) D. D. CAMPBELL.

Ulmarra.

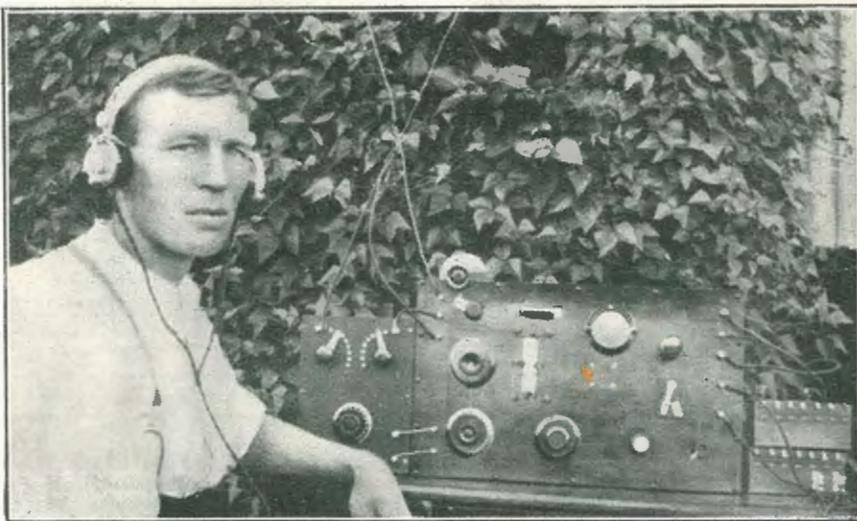
March 17, 1924.

Dear Sir,—

I beg to report having logged KGO on Sunday evening last.

I was listening-in at 5.30 p.m. and picked up the carrier at that time. A series of orchestral pieces was heard

Mr. H. G. Manley, of Mincha, was with me and can verify the above log. The set used was built by myself and consists of four D.E.R. valves, 1 h.f. (tuned anode coupling), one detector and two audio. Spider-web coils, 24 d.c.c., Kellog primary condenser. Federal 2,200 and 3,200 'phones. Three to one All-American transformers. Federal potentiometer, single circuit regenerative set, aerial twin wire, inverted L, 8ft. spreaders, 110ft. span, 14 gauge, 58ft. free end, 40ft. lead-in of 2 3/20's.



Mr. A. E. Wright, of Scarborough (N.S.W.), and the set with which he has put up such sterling performances in the "logging" of KGO.

until 6 p.m., when speech, finishing with the words "San Francisco" was heard. More orchestral items, and at 6.14 the following speech was heard. "Pacific Coast Station, KGO, broadcasting from —, San Francisco. There will now be an intermission of ten minutes, after which KGO will continue the transmission of —." The last words referred to some musical works.

I then went to tea, as I was tired after three-quarters of an hour listening. Returning again at 6.57 an orchestral item was in progress, and at 6.58 the call sign, "KGO. The next item is by the — orchestra," was clearly heard.

Has any report of KGO being heard in Victoria come under your notice before?

With all good wishes,

Yours faithfully,

(Sgd.) ERNEST SPOWART.

Mincha West, Victoria.

April 29, 1924.

(You are the first Victorian experimenter to log KGO who has come to our notice.—Ed. R.)

(Continued overleaf.)

Dear Sir,—

In reference to my two previous letters we have again been successful in receiving KGO. Logs for two nights follow:—27.4.24: Tuned in KGO at 5.2 p.m. 5.8. announced, "KGO broadcasting, Henry Hallstadt's Hotel St. Francis Orchestra, Hotel St. Francis, San Francisco." 5.14, Orchestra. Interval. 5.27; Orchestra. 5.42, Announced as above, "There will be an intermission of 10 minutes, after which KGO will continue broadcasting. Henry Hallstadt's Hotel St. Francis Orchestra, Hotel St. Francis, San Francisco. 5.51, Orchestra. 6.0, "KGO, Oakland, California." 6.2, Orchestra. Two encores. Actually heard applause! 6.7, "KGO, Oakland, California." Orchestra. 6.13, "KGO, Oakland, California." 6.28, Orchestra. 6.31, "Pacific Coast Station KGO broadcasting. Henry Hallstad's Hotel St. Francis Orchestra, Hotel St. Francis, San Francisco." 6.36, "KGO, Oakland, California." 7.0, "KGO, General Electric Company, Oakland,

California, broadcasting. Henry Hallstadt's Hotel St. Francis Orchestra, Hotel St. Francis, San Francisco. Closing down."

30.4.24: Practically a repetition of the above. We held them from 5.15 p.m. to 7.2 p.m., when they closed down as usual. At times they came through with such clearness that it was very easy to detect the American accent, and for that reason we are not certain of the words "Henry Hallstadt's", but that is certainly what it sounded like.

Yours faithfully,

(Sgd.) E. M. P. BELL,

C. P. MORGAN.

Bega.

May 1, 1924.

Dear Sir,—

KGO was very poor on Wednesday last, 30th instant. I think there were about three other carriers on top of him. At times he came in strongly, but I couldn't "clear" him.

1YA was very close up to him, causing a whistle to appear. Now and again he would get through "O.K." At 6.59 he made the usual announcement, signing off at 1.1½ Pacific time.

Yours faithfully,

(Sgd.) A. E. WRIGHT.

Scarborough, South Coast.

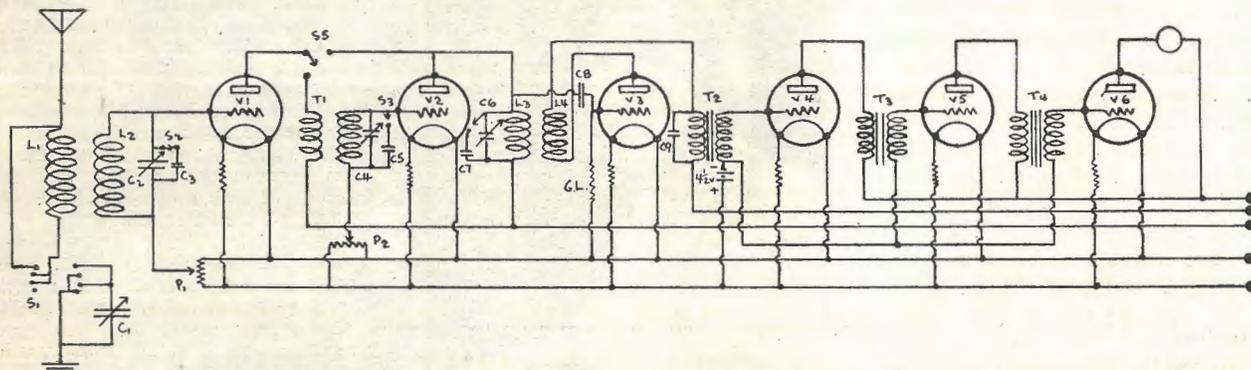
May 2, 1924.

P.S.—Amongst a number of letters written to me for circuit, etc., is one from America asking me for details of the two-valve set I am using.

Dear Sir,—

As I have been away for the past three weeks, I have not been able to get in touch with our old friend KGO until yesterday afternoon, May 4. I had with me Mr. Channon, Assistant Postmaster, Windsor, who can verify these statements. We had been working long-wave Morse for over an hour when we decided to get on to short wave and see what was doing.

DIAGRAM AND DETAILS OF RECEIVER USED BY MESSRS. E. M. B. PELL AND C. P. MORGAN, BEGA, NEW SOUTH WALES.



L1, L2: Primary and Secondary tuning coils. Spider-web coils for short wave. Duo-lateral coils for long waves. L3: Tuned anode coupling coil (spider-web). L4: Tickler coil reacting on tuned anode circuit (spider-web). C1: Variable condenser (.001 mfd.). C2, C4, C6: Variable condensers (.0005 mfd. Vernier). C3, C5, C7: Fixed condenser, .0005 mfd. C8: Mica fixed condenser, .00025 mfd. C9: Fixed condenser, .001 mfd. S1: Series-parallel switch for primary condenser. S2, S3, S4: Rotary switches for increasing range of tuning condensers for long wave work. Rotary switch with two points for changing first stage high frequency to tuned anode, and eliminating second stage high frequency. T1: Radio frequency transformer, plug-in type, with tuned secondary circuit. The set is more stable with the secondary circuit tuned. T2, T3 T4: Audio frequency transformers. 5-1 step up. G.L.: Grid leak variable 100,000 to 5,000,000 ohms. P1, P2: Poten-

tiometers, 400 ohm. V1, V2: High Frequency valves, Marconi R. Type. V3: Detector. Radiotron UV200 soft valve. V4, V5: Audio amplifiers, Cunningham C301. V6: Radiotron UV202, 5-watt tube.

All filaments controlled by suitable rheostats. The detector valve is controlled with a Bradleystat which is a great convenience for fine tuning. Set is fitted with selector jacks on detector and each audio stage, which are not shown in diagram. May be used as follows:—1 H.F. and detector. 2H.F. and detector.

1 or 2 H.F. detector and 1, 2 or 3 stages L.F. 1 stage H.F. detector and 1 stage L.F. usually used on 'phones. The set will work loud speaker on any signal readable on the above combination when the two extra L.F. Stages are used. 5BQ South Australia, has been worked so that it was audible 100 yards from the loud speaker.

Voltages: Detector variable, 20-30 volts; high frequency, 60 volts; First 2L.F., 100 volts; last L.F. (power), 150 volts. All low frequency valves are fitted with grid battery of 4½ volts.

This set is the result of a great deal of experimenting and the purity and loudness of signals are claimed to be exceptional. It will operate a large loud speaker at full volume on almost any local signals, and has operated one on 1YA (New Zealand) with good volume. The input is 150 watts with radiation of 2½ amperes. Distance about 1,100 miles air line.

Spider web coils: Twenty turns of No. 24 d.c.c. on former with eleven slots. Inside diameter, 2½ inches. Range with .001, 150-500 metres; with .0005, 150-320 metres. Aerial tuning condenser in series. Aerial: Four wires spaced 2ft. 6in. Length, 80ft. Height, 60ft. On the roof of a galvanised iron building. Earth: Galvanised iron plates.

At 4.50 p.m. we picked up the "carrier" and "hung on" and at 4.58 there was an announcement in which the only distinct word was "Oakland" but we were not satisfied as it might easily have been "Hallo!" (Static was very bad, as there seemed to be a thunderstorm developing locally.) At 5 p.m. an orchestra commenced to play and carried on until 5.18, when there occurred a short interval, the music coming through again at 5.23 p.m. This went on until 5.59, when the words "Interval" and "California" were heard. We "hung on" to the carrier until 6.13 when music began again, and we continued to hear it until 7 p.m. At 7.1½ p.m. an announcement in which the words "Pacific" and "California" were heard was made and the station closed down.

You will now see that we held this station for two hours 11½ minutes without once losing it, and the music came through all the time. Owing to heavy local static I was unable to use third stage of audio and loud speaker, and from 5 p.m. until 6 p.m. suffered plenty of jambing from VIS.

In writing this letter I do not wish to claim any medals but only to point out that there seems to be plenty of evidence that it is possible to receive these DX stations. In conclusion, I would like to extend an invitation for any experimenter who might care to bring along his set and try it out on my aerial as there may be something in the old argument about Locality and Freak Reception.

Yours faithfully,
(Sgd.) J. G. ONUS.

Windsor.

May 5, 1924.

(We don't think so in *your* case, Mr. Onus!—Ed. R.)

Dear Sir,—

I beg to bring under your notice reception of KGO on March 30 and May 5.

30.4.24: P.M., 6.38, "KGO broadcasting from —, San Francisco," then an orchestral item. 6.43, "KGO, Oakland, California." Transmission station ceased for ten minutes after this. 7.5, "KGO closing down. Good morning everyone." A couple of orchestral items preceded the closing down, and the words, "KGO, Oakland, California." A reference was also made to San Francisco. 4.5.24: P.M., 5.36, Orchestral item. "KGO — garden — San Francisco." 5.37, Orchestra. 5.41, "KGO —," 5.47, "Pacific Coast Station KGO, broadcasting from — Oakland, California. There will be an intermission of ten minutes after which KGO will continue transmitting —." 7.2, Static was now very bad, and I went to tea. On returning I changed to three valves, 1 hf—det—1 lf. "KGO, Oakland, California," and a little later, "KGO, closing down, time 1 — a.m."

Reception was through very bad static. Mr. H. G. Manley was with me on this occasion. Under good conditions KGO would be quite clear on three valves, 1 h.f.—det—lf. The set used was as before, except as stated above. This is my third reception.

Yours faithfully,
(Sgd.) ERNEST SPOWART.

Mincha West, Victoria.

May 5, 1924.

Dear Sir,—

On Friday last, I added a one stage of Radio-Frequency to my three valve set—making a four-valve set of

numerous readers, that my set is an ordinary three-coil set with one stage of radio frequency and two stages of A.F. amplification.

Yours faithfully,
(Sgd.) CLEMENT J. HENRY.

Uralla.

May 6, 1924.

Dear Sir,—

The following are particulars in reference to picking up KGO, Oakland, California.

I heard KGO Sunday, April 27, and quite plainly the announcement:—"There will be 10 minutes' interval,



Hiram Percy Maxim, Radio Engineer and President of the American Radio Relay League, who recently, for a period of three months, was engaged in making a study of European wireless conditions. The picture shows Maxim at the radio set which he had specially fitted up aboard the boat on which he returned to America.

same. On Friday and Saturday I listened between the hours of 6 and 8 o'clock p.m., but failed to hear any carrier-wave on KGO's approximate wave-length, but on Sunday night, although QRN and QRM were very bad, I picked up the wave at 5.45 p.m. At 6.10 p.m. orchestral items were clearly received and at 6.25 the announcer was heard clearly and strongly to say "KGO, Oakland, California." This announcement, in conjunction with orchestral items was heard at frequent intervals up till seven p.m. I might state, for the information of your

after which KGO will again transmit music" at 6.46 p.m. 4.5.24: 6.17 p.m., "KGO, Oakland, California. Music from St. Francis Hotel Orchestra, under the baton of Henri Holburg." 6.23, "General Electric Company, Oakland, California. There will be an interval of 10 minutes." Listened-in and heard soft music and KGO. 5.5.24: Transmitting gramophone music from 5.25 p.m.

Mine is a home-made set, using three coils, two valves (Phillips D.1 Detector and UV201a as L.F. Amplifier). Mr. G. C. Finch, Macauley Avenue,

(Continued overleaf.)

Bankstown, also gets the same station very easily, having picked it up seven times. He uses the same aerial and two valves, one a home-made set (D.1 Phillips as Detector, 1 Phillips L.F. Amplifier). We have compared notes and agree on reception, only living one street apart. I may state that it is hard to hear the whole of the transmission from KGO on account of local interferences, howling valves, transmitting stations, etc.

Yours faithfully,

(Sgd.) BERNARD C. MARTIN.

Mona Street, Bankstown, Sydney.

May 15, 1924.

Dear Sir,—

In order to show that the logging of KGO on the 20th ult., was not merely a freak I submit herewith the subsequent receptions of that station.

23.4.24: Received faint music from 5.45 onward but did not log the call until 6.37, the station closing down about 7 p.m. KGO faded rather badly. 21.4.24: First heard music at 5.47 and at 5.51 got the station call-sign. The first really intelligible announcement was at 6.11, when an intermission was announced, also that the music was by the St. Francis Hotel Orchestra, San Francisco. The station signed off at 6.59 p.m. Fading was again rather pronounced. 30.4.24: Owing to various causes, did not tune in until 6.40, to hear KGO announcing ten minutes' intermission. The station closed down at 7 p.m. Time, approximate only. 4.5.24: First tuned in at 5.20 to hear the orchestra going strong. P.M., 5.23, Announcement, "Pacific Coast Station KGO, Oakland, California. . . . There will be a short intermission . . . KGO will continue . . . Hotel, San Francisco . . . 5.32, Orchestra. 5.35, Announcement followed by orchestra which faded out at 5.36. 5.40, Announcement. 5.43, Orchestra came in faintly. 5.47, Announcement of an intermission. 6.9, Orchestra. 6.13, "KGO, Oakland, California." The item which followed this announcement was a dance number with the orchestra singing the chorus. 6.21, Orchestra came in fairly strongly but QRN had become so bad that I was forced to cut out one stage of audio. 6.24, Announcement of intermission. 6.42, Orchestra. 6.44, Announcement . . . "KGO, Oakland, California, signing off . . ."

The station faded much more than on any previous occasion and after 5.50 p.m. QRN was bad.

You will note from the above that all loggings are on Sundays and Wednesdays. So far I have not been able to find a trace of KGO on Fridays. Perhaps the station gets off the air earlier on that day. On Wednesdays,

23rd and 30th ult., I used the 'phone line antenna and on Sundays, 27th ult. and 4th inst., a single wire inverted L 25ft. high by 90ft. long. The latter seems to give the better results but QRN is more troublesome. However, by the end of next week I hope to have a much better aerial arrangement and, given good conditions, KGO should then be quite loud.

Mr. Wright's logging of 13th ult. will take some equalling, and considering the number of valves he is using he must be a "Wireless Wizard." Good luck to him.

Wishing *Radio* every success.

Yours faithfully,

(Sgd.) N. O. GLASSON.

"Shiel," Woodstock.

May 6, 1924.

and I heard the following speech as I can remember it at 5.45 p.m. :—

"Station KGO, Oakland, California—" and then missed a few words owing to heavy QRN but caught something about "Henry Holburge—this station will continue broadcasting in—" the rest was lost owing to really bad QRN. Heard his music and voice very faintly up till 7 p.m. On a clear night I could have heard everything, as at 5.45 the letters "KGO" were as loud as a lot of Sydney amateurs.

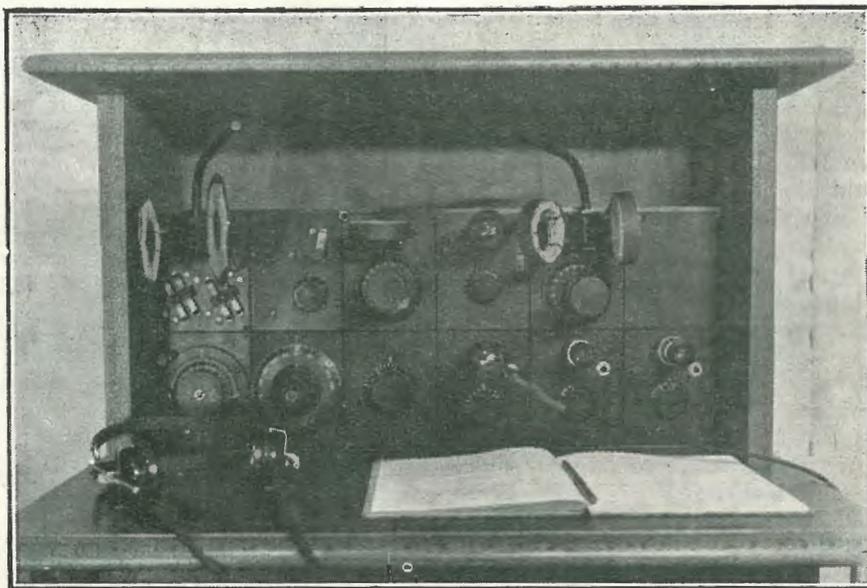
My set is a three-valve detector and two audio, all of my own construction. The valves are of the dry cell type, using an Ediswan AR-06 as a detector and two UV199's as amplifiers.

Yours faithfully,

(Sgd.) T. F. EVANS.

Charles Street, Blayney.

May 7, 1924.



This set which was used in the first Trans-Pacific Tests held last May belongs to Mr. A. J. Holland, of Essendon, Victoria. It has been built up panel by panel, and considerably extended since those experiments. At the time, one H.F. Valve and Detector, Tuned Anode Coupled were used, both Valves being Marconi Dull Emitters. As now arranged, the panels are:—Top Row, 1, Aerial and Closed Circuit Coils, Series Panel Switch and Single Circuit—Double Circuit Switch; 2, First H.F. Valve, with Cut-out Switch; 3, First Anode Coil and Condenser; 4, Second H.F. Valve; 5, Second Anode Coil, Condenser and Reaction Coil; 6, Blank, Bottom Row, 1, Aerial Tuning Condenser; 2, Closed Circuit Condenser; 3, Potentiometer; 4, Detector Valve; 5, First Audio (resistance coupled); 6, Second Audio (transformer coupled). The Aerial used was a Single Wire, 140 feet long and 75 feet high, running East and West. The Lead-in was at the Western end.

Dear Sir,—

This evening I decided to have a try for KGO. I started to listen-in at 5.40 p.m. and picked up a carrier and some faint music immediately. This seemed to be orchestral, gramophone or otherwise, I cannot say. In a few minutes this ceased

Dear Sir,—

I would respectfully state that on April 13, at about 6.40 p.m., whilst testing the development of distant carriers on a certain method of current control, I clearly heard jazz music being played by a band of many instruments. When it finished I heard,

"This is K— California," the other portion of the sentence being obliterated by a burst of static. It was then 6.45, and as Broadcasters' started it was impossible for me to hold the American station further.

I have since heard them, however, every Wednesday and Sunday evening between 5 p.m. and 6.45 p.m. The music is much of the same sort, being mostly jazz, which seems to be of the very latest and something quite new to Australia. The announcement, too, is nearly always the same, principally the words, "KGO, Oakland, California, St. Francis Hotel Orchestra, San Francisco."

The reception was made on two valves only, one detector, one audio, and although I have not yet had an opportunity to test with more than two, their modulation *when correctly tuned*, is perfect, being clear and distinct.

As to details in receiving this station I would state that from the position I am located it is most difficult to hear complete speech owing to very bad interference, noisy valves being the worst offenders. The music, however, can be heard quite clearly, different instruments being distinctly heard; most noticeable being drums, cornet, piccolo and various others that make a tuneful noise.

I have just heard them again this Sunday evening, the music being particularly clear, although fading was very noticeable, the transmission seeming to come in waves of about 30 seconds interval and, although audible all the time, it would gradually fade for about half a minute and then build up again in great strength, which caused the detector to oscillate altern-

ately. As general heterodyning was taking place, however, the fading may have been from this cause. Jazz music was principally played and several times the announcement "KGO transmitting from Hotel St. Francis, San Francisco" was made.

I hardly deem it necessary to have witnesses to prove this correct but I would welcome anyone who would care to listen with me any evening KGO may be transmitting.

Yours faithfully,
(Sgd.) G. C. FINCH.

Macauley Avenue, Bankstown,
Sydney.
May 11, 1924.

Dear Sir,—

On Sunday evening the 4th inst. I started to look for KGO and at 6.25 p.m. got his "carrier" and then music.

At the conclusion of the piece the announcer stated that they were closing down for ten minutes. On resuming he clearly said, "KGO, Oakland, California, transmitting." The music continued without interruption till just before 7 p.m. The announcer then stated, "Pacific Coast Station, KGO, Oakland, California. This concludes the music played by the St Francis Orchestra, KGO, Oakland, California. Signing off at one o'clock."

Yours faithfully,
(Sgd:) R. J. FAGAN.

Sunny Ridge, Mandurama, N.S.W.
May 10, 1924.

Dear Sir,—

After reading letters in *Radio* from people in the country who had heard KGO I decided that the city also should have a look in and on Sat-

urday, May 11, I listened-in for that station.

At about 6 p.m. I picked up faint music just on VIS's 300-metre harmonic and finally at about 6.20, after previous announcements had been drowned by VIS, VIM and static, I heard the following announcement quite distinctly:—"KGO Broadcasting music San Francisco." This was followed by music.

I was using two valves, one H.F. and regenerative detector.

Yours faithfully,
(Sgd.) A. W. GILL.

"Illaroo," Greengate Road,
Killara, Sydney.

LETTERS TO MR. FISK.

Mr. E. T. Fisk, Managing Director of Amalgamated Wireless (A/sia.), Ltd., has received several letters concerning KGO which read as follow:—

Dear Sir,—

I have noted your remarks in Friday's issue of *The Sun* under the heading, "Future Wireless."

It has interested me in view of the fact that on Sunday evening, May 4, at from 6.25 to 7 p.m. I distinctly heard KGO, Oakland, California. The article in *Radio*, "Wake Up, Experimenters!" awakened me, and I set out to "look for" KGO. I got his carrier and then heard music. At the conclusion of the piece the announcer stated they would be closing down for ten minutes. On opening up, he was clearly heard to say that it was KGO, Oakland, California, sending. The orchestral pieces continued—all jazz music, titles not announced—until just before 7 p.m. when the announcer said, "Pacific Coast Station KGO,

(Continued on page 111.)

Why wait for the Regulations to Change?

We can supply you with a "BURGINPHONE" RECEIVER NOW.

We will also guarantee to alter it to conform to any NEW REGULATIONS if such are in force within 6 months from purchase.

"BURGINPHONE" WIRELESS RECEIVERS comply with Government Regulations, and are thoroughly efficient. THEIR RECORD:—Reception of American Broadcasting.

Send for Illustrated Catalogue and Price List, or Call and have a Demonstration.

BURGIN ELECTRIC COY.

Showrooms and Sales Dept.:

WIRELESS ENGINEERS AND SUPPLIERS,

1st FLOOR, CALLAGHAN HOUSE, 391 George Street, SYDNEY.

Wireless Institute's Annual Dinner



At the Wentworth Hotel on May 6 the N.S.W. Division of the Wireless Institute of Australia held its Annual Dinner, which was very well attended.

The President, Mr. C. D. Maclurcan, who had only recently returned from America, was in the Chair, and all other officers of the Institute were present. The visitors included Mr. W. T. S. Crawford, N.S.W. Radio Inspector; Mr. S. E. Tathom, Editor of *Radio*; Mr. Phil Nolan, son of Mr. Spencer Nolan, the well-known Sydney experimenter; Master Jack Davis

and Mr. J. C. Wyatt, of *The Daily Telegraph*.

The menu was most appropriately printed, the various dishes appearing on the card in Morse Code.

Mr. S. E. Tatham in proposing the toast of "The Institute" wished the Society every possible success during the ensuing twelve months. He urged all experimenters to advise the various magazines and newspapers of their activities, as he considered Australian experimenters were far ahead of experimenters in other countries.

The Vice-President, Mr. F. Basil Cooke, in responding, heartily en-

dorsed and thanked Mr. Tatham for his very cordial remarks.

Mr. Phil. Renshaw, the hon. secretary of the Institute, in proposing the toast of "The Visitors," cordially welcomed them all and stated that the Wireless Institute had been closely watching the development of radio generally and emphasised the fact that the Institute was out to assist both the authorities and everybody else as far as possible in advancing wireless generally throughout Australia.

Mr. Crawford, Radio Inspector, in responding, said he was pleased to say

The World - Renowned
BALDWIN PHONES
 ARE ONLY £3/17/6
 AT DAVID JONES'.

Other items are also attractively priced:

- Copperweld Aerial Wire, per 100 ft. Price 2/6
- Bestone Variable Condensers with Dial 12/3 and 16/3
- High-tone Buzzer. Price 4/9
- Freshman Continuously Variable Grid Leaks..... 3/6
- Baby Brown Loud Speakers. Price £4/4/-
- Frost Fones, high quality instrument. Price 27/6
- Remler Extension Handle. Price 1/8
- Master Radio Frequency Transformers. Price ... £1/7/6
- Eldridge Radiation Meters. Price £1/15/-
- W. D. 11 Tube Socket Adaptors. Price 4/6
- Remler Adaptors. Price 5/-
- V. T. Control Units complete. Price 22/6

Watch for future Specials at Most Attractive Prices.

DAVID JONES'
 RADIO SECTION,
 252 YORK STREET.

Menu

"TRY THIS ON YOUR PIANO"

C Q . D . E . 2 H H .

Q . R . X .

Q R Q .

Q . R . K

Q . R . S .

Q . R . L .

Q . R . M .

Q R T .

In the words of the song, "What Was There Was Good!" but to the untutored eye it might not so at first appear. It is to be hoped that those whose Morse was not up to standard did not go dinnerless!

that since he had had the pleasure of speaking to members of the Institute at the last Annual Dinner, there had been a big improvement in experimental transmissions in New South Wales. The operation and general procedure had improved considerably. In reply to a question about the proposed new regulations Mr. Crawford stated that he felt sure that the genuine experimenter would always be fully protected.

Master Jack Davis in also responding to the toast of the Visitors, thanked everybody for the very kind invitation he had received to attend the Annual Dinner of the Institute and remarked that, although he was leaving the remarks about the recent trip on the *Tahiti* to the President, Mr. Maclurean, he would like to say that he (Jack Davis) was ready for another trip as soon as anybody else was ready to go!

Mr. Malcolm Perry, in proposing the toast of Affiliating Societies stress-

ed the importance of the close co-operation between all clubs and the Institute.

Mr. R. C. Marsden responded and heartily endorsed Mr. Perry's remarks.

Mr. F. O'Donnell, in proposing the toast of Foundation Members of the Institute chiefly referred to the old days and many interesting incidents were recalled.

Mr. H. A. Stowe, in responding, thanked Mr. O'Donnell for his remarks and stated that he would like to place on record the courtesy always shown to the Institute by Amalgamated Wireless (A/sia.) Limited.

Mr. Chas. Maclurean, the President, then made a very interesting address. After general remarks, he referred to the recent trip that he and Jack Davis had made to America to ascertain the possibility of short-wave, low-power communication. Mr. Maclurean mentioned the great assistance that he had received from Amalgamated Wireless,

who had treated both he and Jack Davis very generously. "If it had not been for Amalgamated Wireless," said Mr. Maclurean, "there would have been no trip, and all credit is due to that Company."

Mr. Wyatt proposed a vote of thanks to Mr. Maclurean. Mr. O. F. Mingay, Hon. Treasurer of the Institute, seconding the vote of thanks, said he considered Mr. Maclurean absolutely the best amateur wireless experimenter in the world.

Mr. F. Basil Cooke, during the course of his remarks said that he wished to place on record the splendid work done by Mr. Bon Gow and also the wonderful assistance received from Amalgamated Wireless (A/sia.) Limited during the tests with the *Tahiti*. He said it was intended that the Institute would send a letter of appreciation to Amalgamated Wireless (A/sia.) Ltd., for the excellent assistance and co-operation they had received from the Company generally.

Artist Harry Julius' Impressions of 2CDM's "Tahiti" Trip



IN NEW ZEALAND THEY MET THE PLEASANT RADIO BELL.

2 C.M. I HEAR THEE CALLING

THE AUSTRALIAN RADIO FANS CONTINUALLY ENQUIRED AFTER THEIR HEALTH.

2 CDM AND ASSISTANT JACK DAVIS MAKING RADIO HISTORY IN THE PACIFIC.

IN RARATONGA JACK DAVIS HAD A NARROW ESCAPE FROM CAPTURE BY NATIVES.

THEY PICKED UP AUSTRALIA IN 'FRISCO.

2.C.M

Harry Julius

Broadcasting and "Gipsy" Smith

THE popularity of radio and the uses to which it is put in the United States was the subject uppermost in the mind of Captain "Gipsy" Smith, the Scottish Evangelist who arrived at Auckland by the R.M.S. *Niagara*. While in Los Angeles, he said, he spoke at meetings which were attended by over 200,000 people and besides this vast audience, his message was carried to many thousands by means of a broadcast system. At one meeting he asked wireless enthusiasts who were listening-in to his address to write to him telling him of the success of the plan and confining his appeal to those 1,000 or more miles away. He received well over 400 messages, and from Philadelphia, approximately 3,000 miles distant, came a letter announcing that the talk had been clearly received and enclosing 500 dollars towards the work of the mission. From New Zealand Captain Smith will go to Australia, where his engagements will occupy several months.

Cherniavskys at 2FC

MUSIC-LOVERS were accorded a rare treat on the night of Saturday, May 10, when portion of the programme provided by the famous Cherniavsky Trio at the Conservatorium



was broadcasted by Farmer and Company Limited from 2FC.

Mr. Leon Cherniavsky's violin solos, which were exquisitely rendered, Mr. Jan Cherniavsky's piano recitals, and

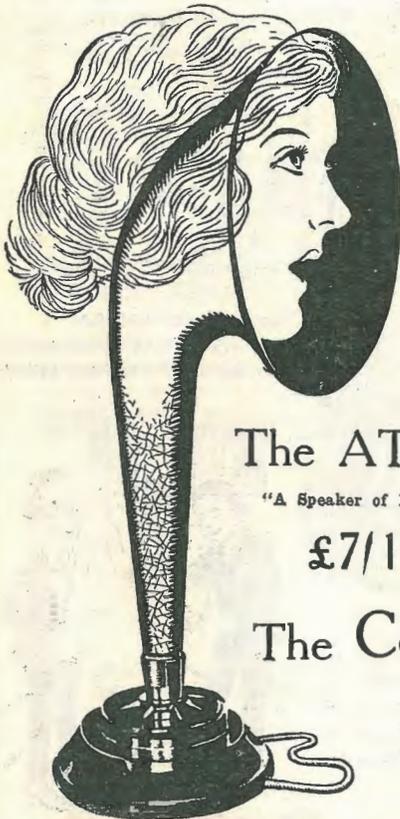
Mr. Mischel Cherniavsky's 'cello solos were reproduced by wireless with all the quality, clarity and charm which characterised their original rendering on the concert platform.

The ensemble numbers proved particularly suitable for broadcasting and "listeners-in" in all parts of the State have written expressing their pleasure at hearing the recital.

A further recital was given on the following Tuesday night, when many of those who had listened-in on Saturday were able to repeat their pleasure.

Wireless Beacons

ONE of the first steps to be taken in wireless activity on the meeting of the N.Z. Parliament will be in the direction of radio beacons. The Minister of Marine states that he intends to ask the Government for a grant to set up an experimental radio beacon on Tiritire Island, the signalling post of the Auckland port. Members of the Merchant Guild will be invited to go to sea in the Government steamer *Tutanekai* and test it.



The ATLAS

"A Speaker of Distinction,"

£7/10/-

The Colville Moore Wireless Supplies Ltd.

10 ROWE STREET, SYDNEY.

Sales and Office: B 2261.

Works: B 1721.

Don't Envy Your Neighbour

who gets such good reception. You can do equally as well, if not better, by using quality apparatus.

Send for our NEW PRICE LIST, showing Keen Prices of Modern Apparatus.

Making Wireless History

(Continued from page 107.)

Oakland, California. This concludes the music played by the St. Francis Hotel Orchestra, San Francisco. KGO, Oakland, California signing off at 1 o'clock."

There is no doubt about the reception.

Owing to my absence on one of my other properties I have not had a chance to listen for KGO again, but will do so at the first opportunity and when atmospherics allow.

Yours faithfully,

(Sgd.) R. J. FAGAN.

Sunny Ridge, Mandurama, N.S.W.

May 10, 1924.

Dear Sir,—

In the issue of *The Sun*, May 9, the doubt as to reception of music and speech from America was raised. I have written a full report to the Editor of *The Sun* of my reception.

On March 19, 30 and subsequent dates I have repeatedly heard music and speech as follow:—

On March 30 from 5.35 p.m. to 7.10 p.m.: "Pacific Coast Station KGO, Oakland, California. Transmitting from the St. Francis Hotel, San Francisco. Henry Halstead (or Falstead), conductor." Music (jazz band) was then transmitted for about seven minutes, when "KGO, Oakland, California" was repeated and the music resumed. At the end of the item an announcement followed—"Pacific Coast Station, KGO, Oakland, California. There will be an intermission of ten minutes, after which KGO will transmit from the St. Francis Hotel, San Francisco. Henry Halstead, conductor." In 10 to 12 minutes we could always pick them up again. On one occasion the transmission was from "The Garden Room St. Francis Hotel."

I have several witnesses, notably my father, Manager of John Danks & Son, 321 Pitt Street, to whom I would ask you to refer for confirmation. The speech was plain and distinct and obviously the intonation of an American. My set is a three-valve, three-coil regenerative. Sunday and Wednesday nights are usually the nights on which I can most easily pick them up.

Yours faithfully,

(Sgd.) H. M. CUTLER.

Moruya.

May 9, 1924.

Dear Sir,—

I wish to report that on Sunday evening last, the 11th instant, I again got KGO at 6.5 p.m. The music continued until 6.30 p.m., when there was an interval of ten minutes. After that it continued till just before seven o'clock when the announcer said "KGO, Oakland, California, General Electric Company's "Station" (?). This concludes the music played by the St. Francis Hotel Orchestra, Garden Room of St. Francis Hotel, San Francisco. KGO closing down at 1.1. Good morning!"

There is now no doubt at all in my mind about this station. The type of

music transmitted and the quality of the transmission are such as I have never heard before.

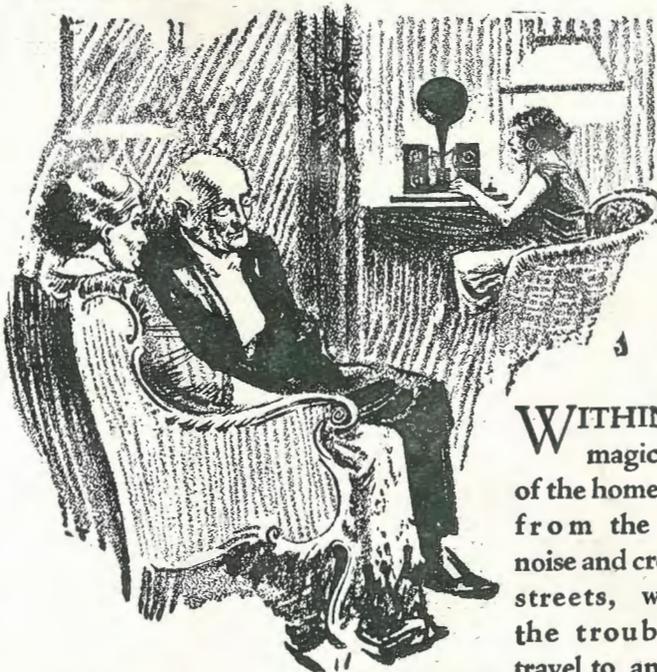
Atmospherics were fairly bad. As a result I am not too clear about the word "station."

Yours faithfully,

(Sgd.) R. J. FAGAN.

Sunny Ridge, Mandurama, N.S.W.

May 13, 1924.



WITHIN the magic circle of the home, away from the city's noise and crowded streets, without the trouble of travel to and fro,

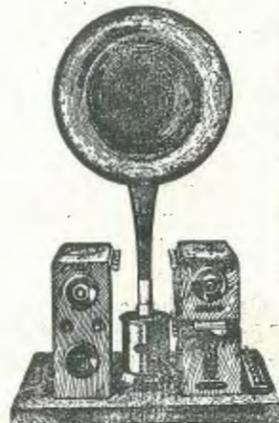
every form of entertainment is now brought right into that charmed home circle through the wonders of radio. Old and young can sit at home in their favourite chairs and hear the host of performers which are yours to command when you own

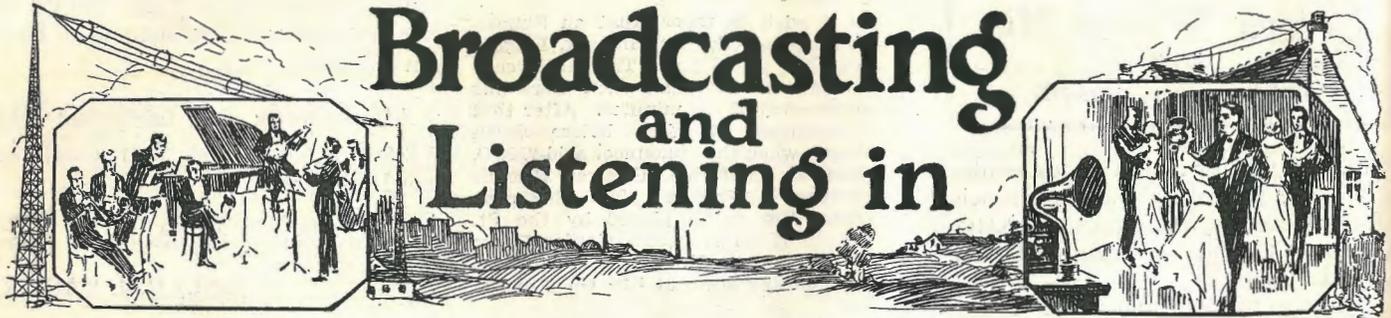
Western Electric RADIOPHONES

The correct volume and purity of tones, together with the absolute simplicity of manipulation, are predominant features of Western Electric apparatus. If you would have the best results, your choice must be Western Electric, a choice that every user has found correct. Descriptive literature and advice on application to:

Western Electric Company (Australia) Ltd.

192-194 Castlereagh Street, Sydney.
Telephone Nos: City 336 & 356.





RECENT interesting feature of broadcasting is the adoption of a slogan by broadcasting stations. A station at Oakland,

California, opens its programmes by describing the city as the place "where Earth and Water meet." This description is followed by a locomotive whistle and a ship's bell. A station at Tacoma, Washington, uses the slogan, "The Lumber Capital of the United States." Another station calls San Francisco "The Commercial Capital of the Golden West." A Canadian station is distinguished by the inflection of the voice of the announcer; he informs his listeners that the station is located at "Alberta-a-a, Canadaw."

* * *

MR. STANLEY PRICE, of the One Mile Estate, West Ipswich, enjoyed an unique experience the other evening, when he was spoken to by 2BL, Broadcasters, Sydney, Ltd. While testing some coils and a new aerial he heard someone calling "Price, Queensland," and immediately listened in, to hear the announcer at Broadcasters' congratulate him on some experiments which he had been conducting, and of which the speaker had read in a newspaper. It was fortunate that he happened to be testing at the precise moment at which Sydney was calling him, as had he been a minute or so later, he would have missed the message. It certainly must be a rare occurrence, so far as amateurs in Australia are concerned, to be spoken to from a distance of 600 miles. On another occasion, Mr. Price heard Mr. J. S. Marks, of Rose Bay, Sydney, speaking to 2JM (Mr. R. C. Marsden), Sydney, telling him that it was 8 p.m., and his turn to transmit.

A REPORT from New Zealand states that Farmer's broadcasting service at Sydney was received distinctly by Messrs. J. Sewell and J. Mintron of Woolston, near Christchurch. Most of the concert was heard

as music, Scottish history, science and French are to be transmitted from the Glasgow broadcasting station and received on wireless apparatus in the schools in the city.

* * *

ONE of the most interesting features of the Henley Fair recently held in Melbourne was the police wireless marquee on the Yarra bank. Visitors heard messages and music clearly, broadcasted from Russell Street police headquarters, through the aid of the wireless receiving set used on the police patrol car. One afternoon there was a special press demonstration. The following message was heard from Russell Street: "This is the effort of the wireless police to augment the funds of Queen Victoria Hospital. With this receiving set, messages can be picked out when the patrol car is travelling at 50 miles per hour. Since it came into use, the efficiency of the motor patrol has increased 85 per cent. As an instance of the value of wireless, take the case of the single-seater buff-coloured car, No. 40,419, which was stolen from Collins Street at 6 last night. All persons listening are requested to keep a look-out for this car, and note the description of occupants if it is seen, then ring up Russell Street police, Central 376. It is proposed at a later date, when wireless will be installed in many homes, to broadcast a police budget of such items as this. The public will thus have an opportunity of helping the police." Then came a selection of gramophone music beautifully reproduced.

* * *

THE operators at the Awarua radio station have several times lately heard speech at 6 o'clock in the morning transmitted from the Eiffel Tower, Paris, on 2,600 metres wave-length.

2FC

BROADCASTING TIMES.

Sydney Mean Time.

P.M.	
12.55:	Tune in to the Music of the Chimes.
1:	"Sydney Morning Herald" News and Cable Service.
1.25:	Coastal Farmers' Market Reports.
1.30:	Stock Exchange Intelligence.
1.52:	Weather Report.
1.55:	Midday "Evening News" News and Cable Service.
1.45:	Close down.
3:	Chimes.
3.5 to 3.45:	Musical Programme.
3.47:	Afternoon Weather News.
3.50:	"Evening News" News and Cable Service.
4:	Close down.
6.30:	Chimes.
6.33:	Children's Time — Lamplighter Stories.
7:	Dalgety's Market Reports.
7.5:	Fruit and Vegetable Market Reports.
7.7:	Closing Stock Exchange Intelligence.
7.10:	Late "Evening News" News and Cable Service.
7.15:	Close down.
7.55:	Tune in to the Music of the Chimes.
8.00	} Entertainment.
to	
10.00	} See List hereunder.

EVENING ENTERTAINMENT.

Mondays:	Popular Concert.
Tuesday:	Theatrical items.
Wednesday:	Dance Programme by Farmer's Novelty Jazz Orchestra.
Thursday:	Music Lovers' Night.
Friday:	Popular Concert and Amateur Theatricals.
Saturday:	Choral and Popular numbers.

using an aerial of an average height of 60 feet. Mr. J. G. Henderson, of Sterling, New Zealand, reports that he has received Farmer's broadcasting service, using only one valve.

* * *

THE Glasgow Education Authority has approved of a scheme for the use of broadcasting in teaching school children. Lectures on such subjects

Gifts to the Blind

VERY generous presents have been made to the Sydney Industrial Blind Institute by the Neutral Bay Radio Club (N.S.W.) and Amalgamated Wireless (A/sia.) Limited.

On a recent evening the Concert Hall of the Institute was crowded with members to receive a wireless receiving set from the members of the Neutral Bay Radio Club and an Amplion Loud Speaker from the Wireless Company.

Mr. N. S. Gilmour, president of the Neutral Bay Radio Club, in making the presentation, explained that at the third meeting of the club it was decided to make and instal a receiving set for the Blind Institute. It took several months to complete the set and everything had been done and bought by members in their own time. Together with the set was presented a Government license and also letters from Messrs. Broadcasters (Sydney) Limited and Farmer and Company Limited, giving the Blind Institute permission to avail themselves of the programmes from 2BL and 2FC without charge.

Sir Alfred Meeks, the president of the Blind Institute, in acknowledging the presents, said that it was realised the gift was both kind and valuable and the fact that the Neutral Bay Radio Club had not a set of their own showed that they thought of the comfort and happiness of the blind before they gave any thought to their own pleasure.

During the evening those present in the Concert Hall, numbering approximately 200, listened-in to a varied broadcasting programme.



The Three-valve Receiving Set presented by the Neutral Bay (N.S.W.) Radio Club and the "Amplion" Loud Speaker presented by Amalgamated Wireless to the Sydney Industrial Blind Institute.



STROMBERG-CARLSON

SUPER No. 2-A Radio Headset SENSITIVE

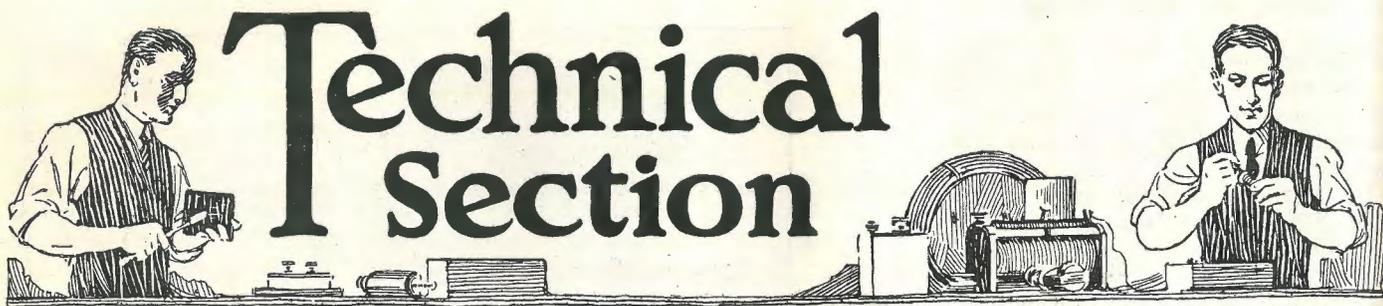
£2/5/-.

Why buy a cheap inferior set when you can obtain a high efficiency No. 2-A at half the cost of an equal set? It is built by Telephone Manufacturers of 30 years' standing. DURABLE, COMFORTABLE, ACCURATELY REPRODUCES VOICE and MUSIC. Permanent adjustment, unaffected, by climatic and temperature changes. Also RADIO PLUGS and JACKS; MICROPHONES, all types.

Ask your dealer or write us direct.

Aust. L.P.R. BEAN & CO. LTD., 229 Castlereagh St., Sydney Reps

Interstate:—BRISBANE: S. H. Smith, Radio House. ADELAIDE: Chas. Atkins & Co.
PERTH: T. Muir & Co., 99 William Street. MELBOURNE: Homecrafts, 211 Swanston Street.



Experimental C.W. Transmitters

By J. G. REED



OW that radio telephony has been taken up commercially by various organisations in the form of broadcasting, and an Australian branch of the Radio Relay League has been formed, all experimenters worthy of the name are deserting the microphone and renewing their acquaintance with the morse key. A telegraph transmitter is much more easily installed and operated than a telephone station, and, in addition, is a great deal more interesting to the operator

a transmitter operating entirely without batteries and their attendant disadvantages. If an ordinary direct current valve transmitter is taken, and in place of the normal high tension supply an alternating current of suitable voltage is applied to the plate circuit, the set will oscillate on every half cycle of the wave when the plate is positive with regard to the filament. When the supply is at a frequency of fifty periods per second, there will be one hundred alternations of potential applied to the plate circuit every

transmission is unnecessary, as this station is audible at all places within a 3,000 miles radius of Sydney. The commercial fifty cycle supply available to experimenters while giving a rather low note makes a good readable signal which can punch through static. When the receiving station employs autodyne reception there will be a very distinctive ripple in the beat note produced which will serve to distinguish the transmitting station from the many howling valves which grow more numerous as time goes on. This

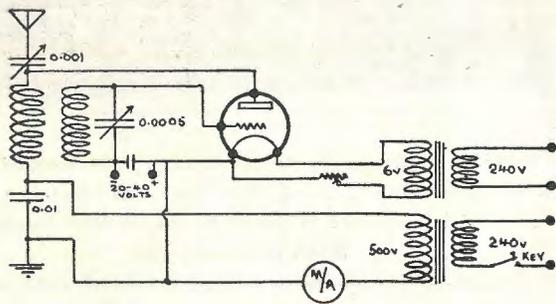


Fig. 1.

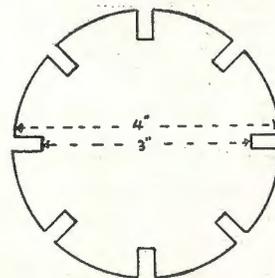


Fig. 2.

than acting as gramophone attendant to a more or less silent audience. (Howling valves belonging to the latter class.)

In *Radio Numbers* 18 and 11, simple transmitters using an induction coil for the plate current supply have been described, and for the experimenter whose home is not connected to the electric light system, they form an excellent means of getting into touch with brother workers "on the air." Where a supply of alternating current is available, it is possible to construct

second, and for fifty of these the transmitter will function, giving a low humming signal in the receiver of corresponding frequency. This method of signalling is known as I.C.W. or interrupted continuous wave, and if the original alternating current is of high initial frequency the resultant note will be very pleasing to read. This method of transmission is employed by the Coastal Radio Station at Sydney (VIS); with a current supply from a 400 cycle alternator. Further comment on the excellence of the

advantage will be appreciated after the first night's "DX" work, for even if a local receiving station produces a loud howl in the telephones the distant station can be still read owing to its super-imposed fifty cycle modulation.

In Fig. 1 is given a circuit for a transmitter employing alternating current for the plate supply, and if the following directions are adhered to, there should be little difficulty in the way of the materialisation of that longed-for transmitter. Commencing

with the tuning inductances, the aerial coil is wound on a former four inches in diameter and six inches long. The losses due to eddy currents induced into imperfect dielectrics in the magnetic fields of coils carrying high frequency currents are more serious than many experimenters imagine, and to make these losses as low as possible the squirrel cage construction should be employed. Take two four-inch discs of bakelite or ebonite one quarter of an inch thick, and with a fret-saw cut in each of them eight grooves as shown in Fig. 2. These grooves serve to hold the eight horizontal cross pieces which form the octagonal former. Each cross piece should have a series of "V" grooves cut along one side with a triangular file to hold the winding, which consists of 30 turns of 3/20 wire spaced one-eighth of an inch apart. For greater strength a centre supporting disc can be used. These discs need not be made of hard rubber or other expensive insulating material. Good dry close-grained wood soaked in paraffin wax will do just as well. On the remaining two inches of the former, and separated about half an inch

from the end of the aerial winding is placed the grid reaction winding consisting of twenty turns of No. 22 d.c.e. wire soaked in paraffin wax.

The series aerial condenser shown across the secondary winding of the high tension transformer must be of high capacity to effectively by-pass the radio frequency currents and in addition have very little effect upon the

HAVE YOU HEARD HIM?
Mr. W. A. Wilson, of Ballarat, (V.) would like to hear from "Radio" readers who have logged his transmissions on Monday and Friday nights and Sunday mornings. His call sign is 3RY and wavelength 230 metres.

tuning of the circuit. A suitable value is 0.01 microfarads, and as a short circuit in this member is almost certain to have fatal consequences for the house lighting fuses, it should be built with a high factor of safety. The writer built this unit in the following manner:—

Take thirty half-plate photographic plates which measure 6 1/2 in. x 4 1/4 in., and wash thoroughly clean in hot water. When dry, assemble them with pieces in heavy tinfoil 5 in. x 3 in. with lugs protruding alternately to the right and left. Bind these tightly with linen tape and place inside a 50-number cigar box. After making the necessary connections to terminals on the lid of the box, fill the whole outfit to the top with molten paraffin wax.

A condenser built according to these specifications will withstand a voltage of 5,000 without any trouble.

The second series condenser controls the tuning of the aerial circuit and if its dielectric losses are low, it will occasion only a negligible loss of power. This condition is always found in air condensers, particularly those known respectively as "Cotoco," "General Radio" and "Cardwell." With very small aerials not more than about 50ft. long and 20ft. high, this condenser can be dispensed with. Across the reaction coil is another tuning condenser which can be of the ordinary receiver pattern because the voltages and cur

(Continued on page 120.)

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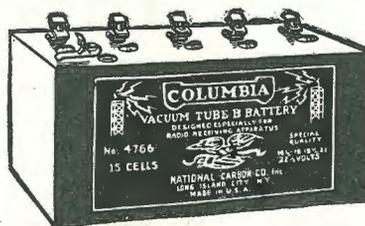
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Highlights of Radio Broadcasting

What Selectivity Accomplishes

By ALFRED N. GOLDSMITH, B.S., Phd., Fellow I.R.E.,
Chief Broadcast Engineer, Radio Corporation of America
(Special to "Radio.")



On a winter's night, there may be passing through the air, waiting to be trapped by a suitable receiver, literally hundreds of radio messages from broadcasting stations, trans-oceanic stations, and marine stations. It is clear that some powerful scientific agency is required to pick out any desired one of these messages sharp and clear, and free from interference from the rest of the myriad of hurrying signals which accompany it. Every broadcast listener knows the practical side of the solution, namely the process of "tuning" his receiver to the desired signal to the more or less complete exclusion of all the other signals.

Every signal has its own wave frequency (expressed in kilo-cycles) or wave-length (in metres). Consider a 750-kilo-cycle (or 400-metre) signal. In part "A" of the drawing accompanying this article, the tuning dial of the receiver is shown set to this frequency, and the strength of the signal is then "very loud," and is indicated by the height of the dashed-line curve drawn above the scale on the dial. If, however, the incoming signal were of the same power, but of a frequency of 730 kc. (kilocycles), its loudness in the telephones would be less, as shown at the point marked "loud" on the dashed-line curve. If the signal frequency were 700 kc., it would become "readable" only, and if the signal frequency were 670 kc., it would be practically "inaudible." Such a receiver as this would therefore discriminate completely between equal signals, one of which was on 750 kc. (400 metres) and the other on 670 kc. (448 metres). A good crystal receiver will have about this selectivity or power of selection between signals of different frequencies, but the radio engineer would regard this as poor selectivity for any vacuum tube set. Sets employing radiotrons

should give much greater selectivity than this. To take an extreme instance of excellent selectivity, the effects shown in the lower portion "B" of the first drawing should be studied. It will be seen that while the signal is very "loud" at 750 kc., it remains

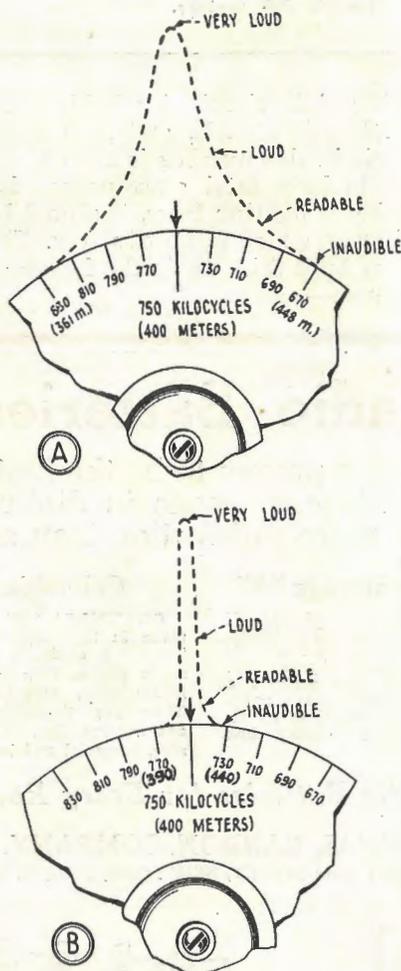
respond to signals falling within a band of frequencies about 160 kc. wide and has very little selectivity. It will not cut out local interference to any great extent, and its user will have to be content with listening to the strongest of his local stations. The type of receiver shown at "B," however, will respond only to signals within a narrow band of frequency, about 10 kilocycles wide. It has extremely good selectivity. In fact, it is not feasible to improve its selectivity at all without destroying the quality of the music received from an ordinary broadcasting station. Theory and experiment agree in showing that a band of 10 kc. width is required for good musical reproduction, and any receiver that receives a band of less than this width is entirely too selective and will destroy the quality of the concert received. It was for this reason that the Department of Commerce, acting on the recommendations of the Second National Radio Conference, assigned frequencies to broadcasting stations 10 kilocycles apart so that they could be entirely distinguished from each other by a receiver having the greatest usable selectivity, and so that they, in turn would not interfere with each other by producing audible whistling or "beat" notes when they were transmitting.

The following tables give in a general way the degrees of selectivity, or power of distinguishing between signals of equal strength at different frequencies, and the usefulness of each class of selectivity:

Receiver tuned to 750 kilocycles (400 metres).

1. Equal signal becomes inaudible 80 kc. off tune (that is, at 670 kc. or 448 metres). This is poor selectivity, and will barely enable the listener to distinguish between local stations.

2. Equal signals become inaudible 30 kc. off tune (that is, at 720 kc. or 416 metres). This is good selectivity,



Tuning Effects for Poor and Excellent Selectivity.

at practically the same loudness to 755 kc., and then drops very rapidly becoming "inaudible" at 756 kc.

The type of receiver shown at "A" in the drawing will therefore re-

and will in general enable distinguishing between local signals and some distant signals.

3. Equal signal becomes inaudible 10 kc. off tune (that is, at 740 kc. or 405 metres). This is very good selectivity, and will meet most requirements of reasonable interference-prevention.

4. Equal signals become inaudible 5 kc. off tune (that is, at 745 kc. or 403 metres). This is excellent selectivity, and will meet all possible requirements. It is, in fact, the very limit of selectivity which can be employed with ordinary broadcasting transmission without injuring the quality of music. Greater selectivity than this is, therefore, unusable and undesirable.

As a general rule, it may be said that a good crystal receiver of the single circuit type will have selectivity in Class 1 of the above table; a non-regenerative receiver will fall between Classes 2 and 3 and generally nearer Class 2; a properly used regenerative receiver will be in Class 3; and the obtaining of a Class 4 receiver requires special design and construction. The accompanying illustration shows some of these receivers.

The selectivity which can be obtained from a receiver depends not only on its design but also on the correctness of its use. Even the best receiver carelessly used will not yield all the desired results. For this reason, a series of suggestions are given below for getting the greatest selectivity from various types of receivers and thus avoiding interference as far as possible:—

1. In using a non-regenerative receiver of the two-circuit type, reduce the value of the coupling between the antenna circuit and the secondary circuit as far as permissible for the desired signal strength. The tuning of the antenna and secondary circuits should then be sharp.

2. In using a single-circuit regenerative receiver, do not use an antenna any larger than is required to give a loud signal on the most powerful local station *when the tickler has been brought up to the point where further increase begins to spoil the quality of the music.*

3. If difficulty with howling or covering the wave-length range is experienced under the condition mentioned in suggestion 2 above, place a con-

denser across the ground and antenna binding posts of the receiver, the value of this condenser being about five ten-thousandths (0.0005) of a microfarad.

4. In using two-circuit regenerative receivers, keep the coupling from an-

the set as mentioned under suggestion 3.

5. Be satisfied with signals of reasonable loudness.

6. The selectivity of any type of set being necessarily limited, it is necessary to be content with nearby station



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tenna to secondary circuits as loose as will give the desired signal with tickler adjustment well up toward the point where further increase begins to disturb the quality of the music. If necessary, reduce antenna dimensions as well and add a condenser to

concerts if one is located very close to such stations. Distant station reception, if absolutely required, must then wait for the later evening hours.

Ever so often, the broadcast listener will be told of some receiver that pick-

(Continued on page 120.)



Queries Answered



PLEASE NOTE.

In order to avoid unnecessary delay all letters containing questions to be answered in this section must, in future, be endorsed "Queries Answered" on the top left corner of the envelope. Readers, when writing, are requested to number their questions, phrase them as briefly as possible and write only on one side of the paper. It should be remembered that it is impossible for us to estimate the ranges of reception of experimenters' sets, as the controlling conditions vary so considerably.



ASCOT.—Q.: Why is it necessary for "Cossor" valve to require full filament current to detect, although distinctly marked 3.5 volts?

A.: Apparently the valve is faulty.

Q.: What is the cause of three plates of accumulator breaking, although showing correct voltage and amperage?

A.: Without a personal inspection we are unable to explain cause of trouble.

G. M. P. (North Sydney). Q.: Would any difficulty be experienced in constructing and operating a three-valve Reflex receiver?

A.: No, especially if you are handy with tools and do the work in a systematic manner.

Q.: What are the values of condensers A, B, C and D? (Circuit submitted.)

A.: A—.0005 m.f. fixed. B—.001 m.f. fixed. C—.0005 m.f. fixed. D—.001 m.f. fixed.

Q.: Can circuit No 2 be used for broadcast reception?

A.: Yes.

Q.: Can transformer having output of about 30 volts 5 amps with four jar electrolytic rectifier be used for charging four volt 80 amp battery?

A.: Yes, if you allow 10 square inches of aluminium electrode for each ampere rectified.

Q.: Will the above battery operate four valves successfully?

A.: Yes.

K. A. J. (Broken Hill). Q.: What is the wave-length of 2FC?

A.: 1,100 metres.

Q.: What distance will a two slide tuner receiving set receive messages?

A.: See answer to "C.G." published in these columns.

C. G. Atherton (N.Q.). Q.: Can I pick up 2FC? (Particulars of receiver submitted.)

A.: We are unable to estimate ranges of reception.

J. L. W. (Bega). Q.: What is the cause of valve suddenly oscillating, in spite of every precaution taken to avoid this, and everything being thoroughly tested? (Diagram and particulars of receiver submitted.)

A.: Your trouble points to a high positive resistance loss somewhere in your circuit, due possibly to (1) unsoldered joints, (2) dielectric hysteresis, (3) low insulation either individually or in combination. Without a personal inspection it is impossible to give you any further assistance.

J. K. R. (Barcardine). Q.: Can you give me a spark coil valve transmitting circuit?

A.: See article and diagram published in *Radio*, No. 11.

Q.: How is it telephony was received on a single valve with no earth connection to receiver?

A.: This was due to the very small aerial formed by the natural elevation of the receiving apparatus which gives it an electro-static capacity to earth.

J. K. (South Singleton) is not quite clear regarding article on Radio Transformers published in *Radio*, No. 25.

A.: The best connection of a radio transformer depends upon the relative direction of the two windings, and should be a matter of investigation for an experimenter.

W. T. C. (Stanthorpe, Qld.). Q.: Is it possible to use a resistance to operate a three-valve set direct from a 32-volt Delco light system?

A.: It is possible to use a series resistance to operate your valves from the 32-volt battery, but it would be a wasteful process and dangerous to the filaments in the event of short circuits, etc. Instead of using dry cell valves why not recharge your six-volt battery from the larger one, by using a series resistance of about 10 ohms, which will allow about two amperes to pass? To work your present valves direct, use individual series variable resistances of 40 to 50 ohms.

A. G. H. (Temora). Q.: Can you give me instructions how to make a frame aerial?

A.: If you supply data regarding the wave-length desired to be received, we will be pleased to assist you. The efficient wave range of this type of aerial is very limited.

J. G. (Nana Glen). Q.: What is the cause of honeycomb coils refusing to oscillate at times while at others no difficulty is experienced, coupling being the same?

A.: Treat your coils to a bath in hot paraffin wax after drying in an oven. Your trouble is due to absorption of moisture

by the insulation of the windings during humid weather.

Q.: What primary and tickler coils would be necessary to receive 2BL and 2FC?

A.: For 2BL use two fifty turn coils and for 2FC two 150 turn coils.

Q.: What is the best way to connect a 40 volt 40 amp accumulator to light the filament of a WD12 valve?

A.: Connect both cells in parallel. If this is not possible, use a series resistance of 12 ohms in addition to the present variable one.

Q.: Is receiving 3AR 800 miles on one valve good work?

A.: Yes, your reception is excellent. Let us know your results regarding the two above-mentioned stations.

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R. F. G. LEWIS signed off s.s. *Aeon* at Melbourne, 17th, and proceeded on Home Port leave. Mr. R. C. Williams signed on s.s. Jervis Bay as second operator at Fremantle, 24th.

Mr. J. F. McGinley relieved Mr. R. C. Williams on s.s. *Charon* as senior operator at Fremantle, 24th.

MAY.

Mr. A. V. Middleton relieved Mr. E. S. Bailes on s.s. *Taroola* at Sydney, 2nd.

Mr. E. S. Bailes relieved Mr. A. V. Middleton on s.s. *Burwah* at Sydney, 2nd.

Mr. G. Pow signed off s.s. *Karoola* at Sydney, 3rd, and proceeded on Home Port leave.

Mr. A. Stuart signed on s.s. *Eureka* at Sydney, 6th.

Mr. P. J. Banney signed off s.s. *Australmead* at Sydney, 6th.

Mr. C. Britcher signed off s.s. *Milluna* at Sydney, 5th, and relieved Mr. D. N. Quinn on s.s. *Riverina*, same date.

Mr. M. Webb-Watts signed on s.s. *Dumosa* at Melbourne, 2nd.



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STAFF CHANGES.

Mr. F. J. Gowlett, Radiotelegraphist, has been transferred from Broome Radio to Esperance Radio on completion of his term of tropical service.

Mr. A. D. Hosken, Radiotelegraphist, has been transferred from Darwin Radio to Perth Radio on completion of tropical service.

Mr. L. Luscombe, Radiotelegraphist in Charge, has been transferred from King Island to Port Moresby.

Mr. C. E. Hutchinson, Radiotelegraphist, has been transferred from Darwin to Esperance Radio on completion of his term of tropical service.

Mr. S. J. Connor, Radiotelegraphist, has been transferred from Perth Radio to Darwin Radio.

The relieving officers for the coming Winter Season at Willis Island Radio Station left Sydney on the 1st instant per the *Morinda*. The party consisted of Mr. J. J. Hardy as Officer in Charge, and Mr. T. Moore as caretaker. The relieved officers, Messrs. A. G. Kempling and N. Stockton, are coming South, and Mr. J. Hogan, Meteorological Observer, will return to his headquarters at the Meteorological Bureau, Melbourne.

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Highlights of Radio Broadcasting

(Continued from page 117.)

ed up a very distant station loudly through powerful local stations on nearby frequencies or wave-lengths and without interference. If he cannot duplicate these results, it is no positive reason for discouragement because transmission conditions vary so much from night to night that any general conclusion is meaningless. Distant stations are sometimes amazingly strong and easily received. It is not meant that receivers of Class 4 high selectivity will not accomplish wonders compared to those of Class 1 having poor selectivity. What is meant is that "one swallow does not make a summer," and that single records prove very little.

Experimental Transmitters

(Continued from page 115.)

rents are both very low. This serves to tune the grid circuit to resonance with the aerial, when oscillation will take place. The negative grid bias is obtained in a slightly different manner to that usually employed, viz., grid condenser and leak resistance. The potential is applied directly from a battery. Its exact voltage must be a matter for individual experiment. Using an "R" valve with 500 volts on the plate, the bias should be about 20 volts, which can be obtained from an ordinary "B" battery. The writer has had an "R" valve operating with 1,000 volts

on the plate with a bias of 40 on the grid using this circuit, but such an experiment should not be attempted until the reader is thoroughly familiar with the apparatus he is using. Under these conditions, the valve handled an input of 20 watts for telegraph work without serious overheating.

The filament of the valve can be operated from a storage battery or small step down transformer built according to the specifications given in *Radio* No. 15. This also applies to the high tension transformer which should preferably be an independent unit to the filament transformer. It can then be operated with the telegraph key in the 240 volt primary supply lead. If an ordinary receiving valve is used the filament will have to be burned slightly brighter than usual to obtain the necessary electron emission for transmission.

Assuming that the apparatus has been connected up in accordance with the foregoing instructions, set the aerial clip at some arbitrary position on the helix, and with the aerial series condenser at about half value, apply an alternating voltage of about 200 or 300 to the plate of the valve. A milliammeter should be inserted in the low potential lead from the transformer secondary and when the set oscillates an increase in its reading will be observed. If no such instrument is available, a good oscillation indicator is a small flashlight lamp of the lowest candle power obtainable, inserted in the aerial lead. This will glow to maximum brightness when the two circuits are properly tuned. Always "short" the lamp when transmitting, for its power consumption will be an appreciable percentage of the high frequency energy generated. By reducing the series air condenser

and the number of turns in the aerial circuit the wave-length can be reduced to a very low value. The writer's transmitter is capable of immediate adjustment between 130 and 250 metres with the above windings when using an aerial 25ft. high and 80ft. long. This will be found extremely useful in avoiding interference, for upon receipt of a QSY from the other station it is but a moment's work to change to another wave. In a future issue of *Radio* will be described an experimental transmitter working on both valves of the alternating current cycle employing what is known as the self rectification principle.

"R.L.S.'s" Old Home Now Listening Station

RADIO Broadcasting in future is likely to play an important part as an educational factor in the islands of the Pacific. This prediction is emphasised by Major-General Richardson, Administrator of Samoa. While the guest of the American Consul at Apia, Samoa, he had the pleasure of listening to the programme broadcasted by KGO Oakland, California, which he heard in its entirety. The old home of Robert Louis Stevenson is now the residence of the Major-General and is termed "the listening station of KGO."

F. L. Moore Relief Fund

We have received the sum of 5/- from Mr. T. W. Smithson, of Railway Town, Broken Hill, N.S.W., as a donation to the F. L. Moore Relief Fund. The money has been forwarded to the trustees.

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