

Latest Licence Figures

MARCH AND APRIL, 1935

NEW SOUTH WALES

	March	April
New Issues	4,612	4,554
Renewals	14,980	14,723
Cancellations	1,664	2,532
Monthly Total	272,342	274,364
Nett Increase	2,948	2,022
Population Ratio	10.29	10.37

VICTORIA

	April
New Issues	3,883
Renewals	12,938
Cancellations	1,523
Monthly Total	232,116
Nett Increase	2,360
Population Ratio	12.63

QUEENSLAND

	April
New Issues	1,270
Renewals	3,711
Cancellations	368
Monthly Total	64,605
Nett Increase	902
Population Ratio	6.74

SOUTH AUSTRALIA

	April
New Issues	1,233
Renewals	3,928
Cancellations	581
Monthly Total	74,408
Nett Increase	652
Population Ratio	12.62

WESTERN AUSTRALIA

	April
New Issues	861
Renewals	1,922
Cancellations	162
Monthly Total	39,249
Nett Increase	699
Population Ratio	8.87

TASMANIA

	April
New Issues	487
Renewals	828
Cancellations	321
Monthly Total	19,486
Nett Increase	166
Population Ratio	8.42

COMMONWEALTH

	April
New Issues	12,346
Renewals	38,307
Cancellations	4,619
Monthly Total	702,206
Nett Increase	7,727
Population Ratio	10.47

The above figures include:

Total Free Licences to the Blind 1,545
Total Paid Experimental Licences 1,251

1,614 1,292

NEW VISTAS IN RADIO— (Continued)

loudness (*crescendo*) and gradual or quick reduction of loudness (*diminuendo*). Also sudden accents on one or more notes, or on a chord, or on a melodic outline, either on the top edge, or the lower edge, or somewhere in the middle of the total mass of sound, add certain moments to the poignancy of the music. Another factor in increasing the eloquence of some kinds of musical expression is the powerful contrast of a great mass of loud harmony followed or preceded by delicate, distant-sounding music.

One of the greatest values of music—its power to evoke in us moods and states of feeling and of being—thus depends greatly upon dynamic contrast and gradation. Of course the potential intensity range of an orchestra or operatic ensemble varies in different concert halls, opera houses, and radio studios. Some of the influencing factors are the texture of reflecting surfaces, the degree of rigidity of the structure to which these surface materials are attached, the size and form of the total air-volume that is vibrating, the rapidity of absorption of various frequency levels, the general reverberation period of the enclosed space, and so forth. For example, the Centre Theatre in Radio City gives—to one conducting in it—the impression of an almost limitless intensity range. Some other halls have so narrow a potential range that music in them sounds monotonous and relatively colourless. Every orchestra varies in intensity range, and even the same orchestra varies with different conductors, for psychological reasons which I am far from fully understanding.

To-day, in broadcasting a symphony orchestra, we are employing an intensity range of about 30 decibels, instead of the 85 decibels that we are using in our concert playing in performing, for instance, music with the immense dynamic range of Wagner. In broadcasting, the 85 decibels have to be compressed to about 30, and this is usually done by the engineer at the controls. The control engineer has certain instruments before him, one of which is like the volume control on your radio set. By turning it one way he gives the music the full intensity that is the result of amplification. By turning it progressively in the opposite direction he gradually attenuates or softens the sound of the music. By reducing the loud moments and by increasing the soft parts he compresses the intensity range so that there will be no overloading by loud music and so that the soft music will be easily audible and not covered by the 'noise level,' which is the sum of all the extraneous sound produced by the transmission and receiving equipment, plus audience noise, if an audience is present, as in a concert. This audience noise is often greater than might be imagined. The total sound of several thousand persons turning the pages of the programme book, making other movements, talking or whispering, coughing, the sound of late comers finding their seats, of the opening and closing of doors, is surprisingly high. (To be Continued)

BROADCASTING BUSINESS
June 7th, 1935.



TELEVISION FACSIMILE BROADCAST TRANSMISSION NEW PRODUCTS SERVICE NOTES NEW DEVELOPMENTS PROCEEDINGS of the I.R.E.

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2BH (Broken Hill) Startles the Natives

Monster 2BH Radio Ball

THE very recent and most successful Radio 2BH Ball held at Broken Hill (May 21) was an unprecedented success in every direction.

As announced in earlier issues of "Broadcasting Business," preparations for the 2BH Ball indicated a wonderful variety of entertainment for Broken Hill listeners.

The eventful night of the Ball found the programme crammed full of interesting, spectacular and novel effects, which easily justified the Management's announcements that it would be the brightest and gayest night ever experienced in Broken Hill.

Opening with a brilliant ballet movement by 14 local lasses, who had been trained from the raw material by a member of 2BH staff, the programme proceeded to a presentation of "Fashions Through the Ages" from 1825 to 1936, and whilst undoubtedly the womenfolk present were extremely interested in the old-fashioned frocks, it can be definitely stated that the interest of the menfolk was centred upon Miss 1936 wearing a model, if a few inches of material can be given such a name, designed by 2BH as being their idea of next year's fashion.

The star attraction was the engagement of Mr. Charles Ring and Miss Thelma Wilde, Australia's champion professional ball-room dancers, who created great interest with their demonstrations of the "Carioca" and the "Rhumba."

Altogether the Radio 2BH Ball was a brilliant, spectacular and artistic success, and it is doubtful whether the capital cities will exceed the effort of 2BH, in providing such a wonderful night's entertainment.

Under the able management of Mr. R. G. Lamb, Managing Director of Radio Silver City Ltd., owners and operators of 2BH, the Silver City in the Western part of N.S.W. is certainly beginning to realise that a radio station can provide a great variety of entertainment. Mr. Lamb is one of the modern school, and be-



THE RADIO 2BH DANCE BAND

This splendid orchestra provided the music for the Radio 2BH Ball held in Broken Hill on Tuesday, May 21. Manager R. G. Lamb wields the baton.

BROADCASTING BUSINESS

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Dave Worrall - 3DB - Returns

MR. DAVID WORRALL, manager of 3DB, Melbourne, has brought back many new ideas from his world tour.

He spent some considerable time in the United States, staying two weeks in California and visiting studios in Chicago, Detroit and New York. In San Francisco there are 12 stations, although the population is not much greater than that of Melbourne, but generally the public seemed to be listening to three or four of the stations.

The Californians suffer from the fact that a great many of the chain programmes originate in New York or Chicago, and as there is a difference of three hours between New York and San Francisco, you sometimes hear children's programmes at 3 o'clock in the afternoon as they are relayed from New York to San Francisco.

He was greatly struck by the wide variety of entertainment offered in the daytime, especially in California, and he secured the rights for some very interesting programmes broadcast on the leading stations there.

Apart from some outstanding independent stations, the best programmes in the United States are heard over the Columbia and N.B.C. chains. These programmes emanate usually in the big talent centres of New York, Chicago, Hollywood and San Francisco, although occasionally an outstanding programme comes from a place like St. Louis.

"Some of the most popular American programmes disappointed me," said Mr. Worrall, "and I think most Australians would not appreciate them. Indeed, I found that many of my American friends did not care for them, although the same extraordinary diversity of tastes exist in the United States just as it does here. For instance, when visiting a friend in New York one Sunday evening I asked him if I might hear the Joe Penner programme, which is supposed to be the third most popular in the United States. My host, like many others to whom I had mentioned this programme, expressed great disgust with it. (Joe Penner, by the way, is what might be called the Charlie Vaude of America). "I'd like to oblige," he said, "but that man's voice will never be heard in my home." "Where is your radio?" I asked, and he indicated a small study outside the sitting room. I went in there and found that Tom's two sons, aged 14 and 16, had the radio on softly and were straining their ears to hear the slapstick comedy of Joe Penner.

"To go back to San Francisco for a moment—We found the makers of some of 3DB's best recorded programmes were most delightful people. MacGregor and Sollie, of San Francisco, have produced

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"Ee and Zeb," "Cecil and Sally," "The Black Ghost," "Do You Believe in Ghosts?" "What Would You Do?" and a great many other programmes.

Bombs!

"The B.B.C. in London, which we visited next, was quite a different affair, although it too is so huge that leading executives when walking round the corridors have to carry in their hands little white cards stating who they are and on what authority they are taking visitors around. Apparently they are afraid that Communists will break into the B.B.C. at any time and howl things through the microphone. After listening to some of the B.B.C. programmes I quite sympathised with the Communists and sometimes I felt that bombs were called for.

"We had a most interesting time in Berlin, where the Radio building is guarded heavily by Black Shirts with black, steel helmets. I had heard a good number of German programmes when listening in from England and was greatly struck by the brightness of the music and

the friendly tone of the announcers and general high standard of light entertainment presented. I'm sure if I had known what it was all about all the time I should have enjoyed it a lot more. Unlike the British they are on the air from 6.30 until late at night, as in Australia, and although, of course, the stations are used a lot for propaganda purposes, the Germans have served up to them on the air not only a lot of good music, but lots of jolly choruses and bright light entertainment.

"The French stations were woefully behind the times, both from a technical and programme point of view. Some of their station facilities are extremely makeshift and we did not spend much time there.

"And so back to Australia where we decided that the Australian programmes after all were nothing to be ashamed of. In technical quality and in general entertainment value I think we all do a splendid job compared to many of the other peoples. After all, the Australian system seems to be working very well, and I am sure if the B.B.C. had some live B class stations to compete with it the British listener would get a more varied type of programme."

Tamworth Chamber of Commerce Active

VARIOUS important post and Wireless matters, which are being dealt with by the Tamworth Chamber of Commerce were dealt with in a communication from the Federal member, Mr. V. C. Thompson, M.H.R., and the Secretary of the Chamber, Mr. T. J. Treloar.

Dealing with the projected A-Class re-laying station in the North West of N.S.W., the Director of Postal Services, Mr. H. P. Brown, informed the Chamber, that this station would be commenced in about twelve months and the location would be the centre of the North West between Boggabri and Barraba, and will be approximately 40 miles from Tamworth. The station would not be placed in any towns. The scheme was intended to serve the whole of the North-West and tablelands of the Tamworth districts and the tablelands would also have service from the new A Station at Grafton. Geological aspects had to be taken into account in placing a relay station where it would give the best service to the largest number of people. There was also the need to avoid "blanketing" the reception from outside stations in adjacent towns.

Mr. Landa by affidavit now stated that 2KY Broadcasting Station was owned and controlled by the Labour Council of New South Wales which was registered as an industrial union. There were no partners or individuals owning shares in the station, and the licence issued by the Postmaster-General was in the name of the Labour Council.

Evidence having been given by Mr. Landa as to receiving directions in the matter, and by the manager of 2KY (Mr. Voigt) the matter was stood over to permit of the production of records, showing the legal authority of the manager.

Mr. Weston, K.C. and Mr. E. R. Roper (instructed by Messrs. Lionel Dare and B. P. Purcell) appeared for plaintiff, and Mr. Mason, K.C., and Mr. C. Evatt (instructed by Messrs. Landa and Lamaro) for 2KY.

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Broadcasting Business Gossip

The B.B.C. has decided after a long search and seemingly endless discussion, to use the word "Televiewer" to denote one who looks into a television set.

Laurence Halbert Passes

Last week broadcasting circles were shocked to hear of the death of Laurence Halbert, the well known Studio Manager and Producer for 2FC on the National Service. Mr. Halbert, whose full name was Laurence Halbert Hollingworth, was a son of Mr. J. L. P. Halbert Hollingworth, chemical and botanical scientist of Finchley, England.

Mr. Laurence Halbert came to Australia after a splendid career as an actor-singer in England and under contract to 2FC.

When the Broadcasting Commission was set up he was appointed Studio Manager and Producer. He was one of the pioneers of the presentation of plays over the air in Australia and did much to encourage this form of radio entertainment as well as to aid the promising talent.

Mr. Halbert was often referred to as the announcer with the perfect voice, and his charming personality will be missed very much in broadcasting circles.

Sincere sympathy is extended to his widow and two young daughters.

Sincere sympathy is extended to Mr. and Mrs. H. P. Brown, in the death of their daughter Eva, last week, in her 28th year. Miss Brown came from England to Australia with her parents in 1924, when her father was appointed Director-General of Postal Services.

Congratulations to Professor T. H. Laby of the Melbourne University, who has been awarded a grant by the Carnegie Corporation of America to travel overseas—probably early next year—to study the contemporary research situation. Professor Laby has the reputation of being an outstanding Australian scientist. Born 55 years ago at Creswick, Vic., he went to Sydney University and later to Emmanuel College, Cambridge, of which he became a doctor of science. He was awarded one of the famous 1851 Science Research Scholarships, and won distinction for research work under Professor J. J. Thomson, Lord Rutherford's predecessor at the Cavendish Laboratory, Cambridge. Later he was on the staffs of Sydney University and Victoria University College, Wellington, N.Z. He has been Professor of Natural Philosophy at Melbourne since 1915.

A.W.A.'s studios in Melbourne have been extended and refitted so that now a complete audition service can be offered to advertisers. The new studio which is about three times the size of the old, is also used for broadcasting 3ME programmes. A.W.A. maintain a very complete library of transcriptions which are available to stations and advertisers.

NATIONAL ADVERTISERS . . .
should investigate the wonderful results obtained by those who advertise with . . .

2 BH Broken Hill

OUR MEN KNOW THEIR JOBS
We are positive we can show you results—write direct to 2BH Broken Hill.

OBITUARY

We regret to announce the sudden death of Mr. V. L. H. Coghlan, representative of 3AW, 2TM and other stations, in Sydney on Wednesday last.

LATEST RECORDINGS

Lawrence Tibbett, on DB-2262, "Avant De Quitter Ces Lieux," and "O Du Mein Holder Abendstern," gives an excellent rendition of two most acceptable numbers.

Browning Mummery, magnificent Australian tenor is recorded on C-2684, the "Flower Song" and "A Clown No Longer." Browning Mummery's records are always popular, and this one still further upholds his reputation.

Gracie Fields records B-8233 in a very attractive manner, and those who like Marek Weber and his Orchestra will find "Four Indian Love Lyrics," on B-8205, a most pleasing record.

C.2679—"Faust Selections," Part 1 and Part 2, by the London Palladium Orchestra, conducted by Richard Cream. B-8205—"Four Indian Love Lyrics," "The Temple Bells," "Less Than the Dust" and "Pale Hands" and "Till I Wake," played by Marek Weber and his Orchestra.

B-8197—"It is Only a Tiny Garden," by Danny Malone, Tenor, with Orchestra and "The Irish Emigrant," also by Danny Malone with Orchestra.

B-8189—"Echoes From the Puszta," and "Kiss Me Again," played by the London Palladium Orchestra conducted by Richard Dreas.

B-8233—"How Changed is the Old Place Now," and "The House is Haunted," sung by Gracie Fields, Come-dienne.

EA.1450—"Who Made Little Boy Blue," Fox Trot, played by Jack Jackson and his orchestra, with vocal refrain and "I Never Slept a Wink Last Night," Fox Trot, played by Teddy Joyce and his orchestra, with vocal refrain.

EA.1452—"Okay Toots," Fox Trot—played by Tom Coakley and his Palace Hotel Orchestra and vocal refrain by Dudley Nix and "Your Head On My Shoulder," Fox Trot, also played by Tom Coakley and his orchestra with vocal refrain by Carl Ravazza.

New Vistas in Radio

By Leopold Stokowski

(Circulated by the Philadelphia Orchestra Association.)

Continued from Broadcast Business, June 7th

The controlling and compressing of the intensity range can also be done by the conductor, who can make the soft passages louder and the loud passages softer, but this devitalises the music.

For the reception of operatic and symphonic music in the average home, a dynamic range of 85 decibels would not be necessary, but music needs a much greater variation of loudness and softness than is at present possible.

Auditory Perspective

WHEN we listen to music in the opera house or concert hall the complex mass of sonority enters our two ears from the front, both directly and by reflection, and from the sides and back by reflection only. Our impression is that the major part of what we hear is direct and the lesser part reflected. But the truth is the reverse. The reflected sound in most theatres and halls is very rich and full, and is greater than the directly heard sound. Although we may

not be conscious of it, our two ears are hearing slightly different sound-patterns because the reflections from right and left are different in time and in the intensity of all the component parts of the complex sound-mass. Unconsciously we compare these different impressions received from right and left and this comparison gives us the sense of perspective—of a feeling of tonal spaciousness. More of this subject will be included in that part of this writing that deals with 'wired transmission.'

The microphone is a kind of electric ear. In broadcasting, the microphone picks up the sound which is afterward brought by a complicated process to our ears. But the microphone is a single ear attached to a single circuit or means of carrying the sound to us. To convey music with full and true auditory perspective, we should have, in my opinion, double circuits which could be made to correspond to our method of hearing with two ears and which would give us the tonal spaciousness and beauty of sound that make music so satisfying in a large and well-planned auditorium.

When all the results outlined in (1) Frequency Range, (2) Intensity Range, (3) Auditory Perspective, are brought about, it will be more possible to find the answers to the two great questions of how the cost of radio can best be met and what ought to be the relation of

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June 14th, 1935.

3AW

Succeeds in Pleasing . . .

- ALL THE PUBLIC
- ALL THE TIME

government to radio. First of all we must see clearly what we need from radio socially and technically.

Wired Transmission
MUSIC can be conveyed by the radio we now have in our homes —sometimes called 'space radio' —or by wired transmission, sometimes called 'wired radio.'

Space radio has the disadvantages of a compressed frequency range, a compressed dynamic range, fading, and electrical disturbances and static that sometimes ruin reception. Up to this time, physicists have not found a way to protect music that is conveyed by space radio against these extraneous sounds.

Wired transmission, or wired radio, in which the full range of frequencies and the full dynamic range can be transmitted, protects music against fading, static, and disturbances of every kind. With wired transmission, we could all hear, in our homes, in public buildings, in recreation centres, music that would sound exactly as it sounds in the concert hall.

An interesting test of this method of transmission, made on April 27, 1933, shows that it is entirely practicable and that it gives superior results. The test, made by the Philadelphia Orchestra, was sponsored by the National Academy of

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Sciences and was given and arranged by the research and engineering forces of the Bell Telephone Laboratories.

This is what was done. The full Philadelphia Orchestra played a symphony concert in Philadelphia. The music was picked up by specially designed microphones and transmitted over underground wires into Constitution Hall in Washington. Here, through power amplifiers controlled by special apparatus, I was able to control, in Washington, music made in Philadelphia and to send it forth to the Washington audience of scientists, musicians, music critics, and music lovers. It is an amazing thing that this possibility has existed now for two years and that no use has been made of it.

Nor is the scope of wired transmission limited to its capacity to convey music to our homes with the same quality that it would have in the concert halls. Wired transmission can so increase the intensity range that it would be possible—in a recreation park, for example—to listen to music with a much greater intensity range than is heard in the concert hall. The dynamic contrasts and accents, the slow building up of the sonority to climaxes, the gradual decrease of tone and fading out can be so enlarged—by wired transmission—that the music acquires greater eloquence, energy, and significance.

Nor is even this the sum of the full possibilities of wired transmission. Through it, by a selective process, it is possible so to enrich certain parts of the tapestry of sound, bringing them out in relief, that the three-dimensional character of music is greatly emphasised. To illustrate certain aspects of this three-dimensional conception: At a certain moment the music may be high and low and deep. In other words, some sounds will be high in pitch, others low in pitch, but another mass of sound may be markedly louder or softer than the first two groups, and so give the impression of being nearer or farther than the first two groups, thus bringing the dimension of depth to the total mass of sound. In some ways this is like certain kinds of painting which have the two dimensions of a flat surface, plus a third dimension of depth or relative planes of distance. In painting, this depth is sometimes the result of perspective, sometimes of almost magical subtleties of colour relations, as in Cezanne. In music, depth is often achieved through highly sensitive relations of loud and soft planes of sound, as in Debussy. Depth in music can also be suggested through tone character. For example, a melodic line or tone-mass can sound soft yet near, or it can be played or sung so as to sound soft but far away. Chaliapin is a master of this power to achieve depth by suggestion. He can make his voice soft but intimate and close, like an intense whisper that is either caressing or threatening, as he does in Boris. Or he can make his voice soft and remote as he does at the end of the 'Volga Boat Song,' giving the impression of distant and ruthlessly indifferent desolation. A similar distance of tone can be suggested also by instruments—in the hands of highly sensitive and imaginative players. Naturally the

same qualities are required in the listener.

Another type of depth or tonal perspective is achieved when the sound actually comes from right and left, high and lower, far and near—for example, when the violins on one side of an orchestra play an answering phrase to the cellos on the opposite side, or when a near trumpet is answered softly by a distant trumpet, as in Carmen, or as in Tristan, when the English horn plays behind the scenes, or the hunting horns are heard in the distance, becoming increasingly remote and soft. Or again, in an important passage of oboe or muted trumpet, the high sounding harmonics which give the individual character and quality of tone to these two instruments can be increased in intensity during the duration of the solo. Or if the deepest sounds of the contrabass or organ pedal have a significant melodic outline, that part of the frequency range can be so intensified that the fundamental sounds of the melody and the harmony above it will take on greater power and sonority. Or a middle voice in the orchestral fabric, such as the French horn or the cello can be brought out into high relief.

In other words, the potentialities of music, with reference to dynamic power and frequency, have reached new heights of plasticity and controlled power, never dreamed of in the past as possible of attainment. Great composers, like Wagner in the Nibelungen Ring, and Bach in such music as the 'Toccata and Fugue in D Minor,' undoubtedly dreamed of powerful contrasts of this kind, but were unable to produce them by the limited means available in their lifetime. Yet,—except for the above described demonstration in Washington and in Philadelphia,—nothing has been done to give these new possibilities of sound to the vast music-loving public throughout the country. If a gold mine of great capacity were found, or a subterranean sea of petroleum were discovered, it would be quickly developed. But a means whereby Everyman can hear music with overwhelming beauty and eloquence in any part of our vast country, no matter how remote, is neglected and left unused in a laboratory.

The Vistas Opened Up by Wired Transmission

IUR standards of good orchestral tone, of the relations of individual instruments to each other, of groups or choirs of instruments to each other, of solo voices, of voices in chorus, and of all these above-mentioned voices and instruments sounding together,—as, for example, in opera,—have been built up by the memories and experience of the best performances we have heard—best as to singers, instrumentalists, instruments, acoustics, setting. The music lover of each city remembers the most satisfying performances of opera and symphony that he has heard in the opera house and symphony hall of his city, and these constitute for him a norm and standard—the conception of tone that is for him 'right' and 'natural' and ideal. Other conceptions are for him 'wrong' or 'artificial.' If in going to the festival in Bayreuth or Munich he has in

his memory the sound of voices and orchestra under other acoustical conditions, but now prefers the way they sound at the festival, the former standard of tone is modified and a new conception or norm is established.

I am not sure that these ways of establishing criteria any longer hold. I should like to state the reasons simply, but with a degree of detail. With the new possibilities of sound being opened up to-day by wired transmission and other laboratory experiments, I suspect that there is no longer any unchangeable norm in our minds of good tone and tonal relation. Through constant experience of listening by radio, and laboratory experimentation with electrically produced and reproduced sound and wired transmission of music, our horizons have become so vastly extended that formerly accepted standards and definitions of 'good' and 'bad' and 'natural' and 'artificial' tone have become less dogmatic and more fluid. Or it might be better to say that they are no longer adequate but give a limited and incomplete view of a field which is every year becoming more extended in our consciousness.

It may perhaps be a revolutionary and unwelcome idea to some that the definitions of sound and of tone that have held good for a long period no longer are able to limit the possibilities of music and sound. But there have been gradual or apparently sudden changes of centre like this in other spheres of our life and experience. For example, the changing of theories of the solar system issued the same challenge to men of various ages.

Once men believed that our earth was the centre of the universe and that the sun and planets revolved around it; later came a broader view that the earth revolved around the sun; and later a still more extended view of the vastness of space, and a theory that our sun might not be the centre, but only a relatively small part of a vast system of magnetic and orbital relations between masses of matter suspended in space. In the course of years and of moving from one fixed belief to another we have at present come to the point where scientists prefer to rest their conception or interpretation of time and space upon a belief in relativity. Just as the former Euclidian attitude that there are axiomatic truths, not questionable and not in need of proof, is no longer tenable but is replaced by the vast and elastic conception of relativity,

(Continued on Page 6.)



THE RADIO 2BH BALLET

Trained from the raw by a member of the 2BH staff, these young ladies provided one of the important attractions by the Radio 2BH Ball held in Broken Hill on Tuesday, 21st May

YOU GET RESULTS
at

2 HD
NEWCASTLE

Follow the Crowd!

Write Box 123, Newcastle, or
Mr. E. A. WOOD (BW 2211)
c/o A.W.A., 47 York St., Sydney

NEW VISTAS IN RADIO.—(Continued)

so are the theories and standards of tone and tonal relations no longer unchallengeable in the field of music and sound.

What, then, is the 'natural' sound of an orchestra? Some years ago there would have been many willing to answer the question in terms quite definite, but the enlarging conception of sound, and new possibilities of controlling and modifying it, inevitably lead us to distrust the certainties of years not long past. The whole sphere of sound has become vastly freer. Those that know this to be true and realise the scientific basis for it become much more open-minded—and much more modest—because they know that they do not know, whereas those who are unwilling to depart from the safe certainties of an earlier era know only the dogmas which naturally grew out of a more limited experience than is now the privilege of the physicist and musician who is in intimate contact with, and has absorbed, the most recent experiments in sound and the broader conceptions and richer knowledge that are the birthright of everyone to-day.

It is not too much to say that wired transmission has opened possibilities that may ultimately revolutionise the whole world of music. Clearly it is for us to see that those possibilities are used not capriciously but with true artistic motivation and discipline, not as an end in themselves but as a means to greater freedom and range, in expression.

It used to be that, in making a great crescendo, the possibility of ascending to the mountain height of sonority was limited by the co-ordination of the mind, the nervous system, the muscles of the hands and lips of the players, and by the power and tonal range of the instruments. Even if the composer or the listener found it possible to dream of higher mountain peaks, he could not achieve them by means within his reach.

The facilities of wired transmission extend these possibilities enormously. Now they are really limited only by the intake

of the human ear and by the brain centres to which the ear reports and in which the sensations of sound are received and in some mysterious way changed into emotion, mood, and states of being. When in India, I used to look at Everest and Kinchinjunga in the Himalayas, and it seemed impossible to me that man could ever climb to the highest levels of these masses. Now the airplane has flown up to them and higher still. Wired transmission is the airplane which, in the control of those that know how to use it, could lift millions of listeners to higher peaks of musical experience.

Electrical Production of Tone

WE can listen to tone and music

the human voice, musical instru-

ments, space and wired radio,

recorded music either by disc or by film,

and electrically produced tone. When

we listen to music from our radio set,

the tone is produced by voices or in-

struments and then carried to us by a

method we call broadcasting. But it is

possible to produce the tone, not by

voices or instruments, but by new types

of instruments which do not have bows

and strings like those of the violin, or

tubes of wood or metal like those of the

wood-wind and brass instruments, but in

which tone is produced by oscillators,

which in principle vibrate like a tuning

fork, or by sound waves imprinted on

film, and by some other principles of

which I am not yet at liberty to speak.

The Theremin was one of the first of

these instruments. All of the various

types of these instruments have means

to control frequency, intensity, timbre,

duration. Of course they are to be played

by musicians, just as the violin or piano

or any other instrument.

If we wish to think clearly and without prejudice about these new instruments, we should compare them with the instruments of the past to see which are the more mechanical in structure, and, when played by musicians who understand their

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full possibilities, which are more free and have a greater range of musical expression. Examined without prejudice, all the instruments of the orchestra have important mechanical features. The violins, violas, cellos, double basses, all have bows which must be adjustable and capable of a certain tension, with strings capable of a still greater degree of precision of tension, stretched over a frame that must be light and sensitive to vibration, yet strong enough to remain rigid with the four strings under high tension, and with a bridge, front plate, post, back plate, so perfectly adjusted and in contact that the vibrations, begun by the bow setting the strings into vibratory motion, are conveyed to all parts of the instrument so as to set into vibration the surrounding air. The wood-wind and brass instruments all have bores of various calibres, either cylindrical or conical, and complicated systems of keys which open and close certain apertures or additional lengths of tubing. In brief, they have mechanisms without which they could not function except in a very primitive and limited way.

The electrical instruments also have their mechanical side, but when they have been more fully developed they will have greater range in their powers of playing loud and soft, high and low, legato, staccato, glissando, and greater variety of tone-colour. For example, on our present instruments it is difficult to play a really perfect legato because the breath becomes exhausted, or we must change the direction of the bow because of its limited length. There are no limits to the legato of the electrical instrument. All our ordinary orchestral instruments are constantly becoming 'out of tune' during performance. Many of our wind instruments are never in tune because of their faulty structure. The only limit to playing in tune on some types of electrical instruments is the ear of the player. Others are so constructed that they never need tuning and it is impossible to play out of tune on them. These are of the 'tempered scale' type. So that in several ways the electrical instrument is not more mechanical than our present imperfect instruments. Since the development of the electrical instruments is still in a very early stage, they are not to be fairly judged by present performance.

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BROADCASTING BUSINESS

June 14th, 1935.

NEW VISTAS IN RADIO.—(Continued)

Electrical production of tone may some day revolutionise the manner of composing music. At present there are two processes: (1) The composer indicates by black notes on white paper (a method of musical notation which is unfortunately far too limited) his musical ideas as expressed through rhythm, melody, harmony, counterpoint. (2) The singer, player, or conductor tries to breathe life into these notations by making them vibrate in the air as music. This double process may in the future become a single process, as when an artist paints a picture. Through electrical production of tone, the composer will be able to record directly into sound his musical ideas instead of first writing them on paper. This will not prevent other musicians later from making new interpretations. These musicians will again record directly into sound their own ideas, or their differing conceptions of the ideas already expressed by former composers.

The Character and Quality of Radio Music

IF all our equipment and methods were brought up to date and in line with the most highly developed technique and instruments now lying unused in laboratories, the range of our programmes could be broadened. By short wave there would be available to us the best programmes from all the European countries. In addition there could be programmes from Canada, Mexico, and the South American Republics, and occasionally interesting special programmes could be arranged from Africa, Japan, China, India, Java, Bali, offering us the national music of those lands, a music different from ours, but well worth our attention and the intimate study made possible by radio.

For our own United States programmes the field for selection is rich. Some of the varied possibilities are:

(1) Brief talks by experts on subjects that would interest all of us if clearly focussed—in the fields of science, the different arts, and the social questions that intimately concern us all in our daily life.

(2) American folk music, including, on the one hand, the powerful primitive jazz mainly created by our musicians of Negro origin, and, on the other hand, sensuous romantic jazz, folk songs from various parts of our country, such as cowboy songs (there are hundreds of these and they are purely American), songs of the Virginia mountains, songs and dance music of the many tribes of those we so erroneously call Indians. This 'Indian' music would be difficult (although not impossible) to pick up because it is an integral part of the religious life of our aboriginal Americans and is sacred to them.

(3) Opera, both 'light' and 'grand.'

(4) Symphonic music—North, Central, and South American and European.

We are in a significantly creative stage in the development of an American musical culture. Musically speaking, we have passed the central point of the depression and are on our way upward. As the country builds itself again into a new

social and economic life, there is bound to be—and the process has begun—a new expression of the creative forces of American life in music.

The rhythm of our life is different from that of any other country. In any age and any country, it takes a certain amount of time for the expression of fundamental forces to be released. The process of expression in America is now moving beneath the surface, and through colour, form, motion, and sound the ideals and forces of American life are emerging into art forms. Not only are we building up a distinctive American music, but we are also developing distinctively American ways of presenting it. We need to see to it that our methods of presenting music shall accord with our national and cultural needs. We need, for instance, to build our concert halls and opera houses in the spirit of our own era, making them express the rhythm of our own present civilisation, rather than reflect the ideas and artistic traditions of other ages and other lands. In our larger cities our concert halls should have greater seating capacity. The cost of tickets could then be less. The halls should be designed by American architects to meet the functional needs of ourselves here and now.

The Listener's Responsibility

IF the radio listener wishes to make the most of his receiving equipment and hear the better type of programme in a way that will give him or her the best results as recreation or as personal cultural growth, or both, the radio set must be used with understanding. In tuning-in on the wave length desired there is a central point of maximum clarity and truth of reception. On either side of this point is a zone which still gives reception, but in increasingly distorted form as the tuning adjustment departs from the central points of exact tuning. The low frequencies filter out, the balance of the music is destroyed, and new and very untrue tonal relations are brought into the sound picture. I have often been in the house of friends who were listening to a good programme well transmitted, but their tuning adjustment was off centre and they did not seem to be conscious that the whole sonority composition was false and distorted. There are other practices which interfere with hearing music at its best. Although it is common knowledge that there are clear limits to the effective functioning of radio tubes, and that they become exhausted and must be renewed, many enthusiastic radio listeners do not keep their equipment in good condition in this respect.

On every receiving set is a volume control by which the total loudness of the music can be increased or decreased, and a tone control by which the intensity of high frequencies can be increased or decreased. On the better type of receiving sets there is also a third control by which the low frequencies can be increased or decreased in intensity. In other words, a certain zone of the tonal frequency range is first amplified, and then attenuated, and this attenuation is

under control by the listener. It is very important to use the volume control and tone controls in relation to each other and also in relation to the acoustical conditions of the room where the listeners are. There are probably not two rooms in the world with exactly the same acoustical conditions. Some of the factors involved are the total air-volume and form of the enclosed space, the texture of the reflecting or absorbing surfaces, such as walls, floor, ceiling, rugs, hangings, furniture, mirrors, curtains, windows, doors, and so forth, the position of the receiving set in relation to the form and volume of the enclosed air-mass and to the listeners. Radio is developing a consciousness of the relations possible between middle, high, and low frequencies in the minds of a vast listening public interested in music, and this one element alone is going to have important musical and cultural effects.

In addition to the great differences of acoustical conditions in our rooms at home where we listen to broadcast music, we all have another varying factor in listening to and in evaluating music—our ears. There are probably no two ears in all the world which hear alike. In other words, every ear has its own degree of sensitivity to various parts of the frequency range. This is probably why two musicians of roughly similar degrees of musical talent and experience will differ sharply in their opinion about concert halls and the way music sounds in them. They hear music differently because their ears, if tested, would show a different response to different types of sound and music. A musician who truly understood all the factors involved—the nature of sound and its mathematical basis, the highly personal and individual response of his own ears, man's vast ignorance of the psychological elements in music and our reaction to its subtle stimuli—would never make dogmatic *cathedra* statements about any aspect of music because he would be fully conscious that all his reactions are personal and subjective and true only for himself at that time—because our response changes with the unceasing changes that are going on inside us each day and each hour. It is necessary for the music lover and broadcast listener to understand the few simple principles just stated. With these in mind he will know how to adjust the controls of his receiving set. It is to be hoped that all sets will have at least the three controls:

(1) Volume (general amplification)

(2) High frequency attenuation

(3) Low frequency attenuation.

All three are necessary to adjust the tonal relations of music to the acoustical conditions of our individual rooms where we listen.

All the above refers to the mechanical and objective. Still more important are the subjective and psychological ways that the listener has of controlling the value to himself of what he hears by radio.

(Continued in next week's issue)

Latest Licence Figures

MARCH AND APRIL, 1935

NEW SOUTH WALES

	March	April
New Issues	4,612	4,554
Renewals	14,980	14,723
Cancellations	1,664	2,532
Monthly Total	272,342	274,364
Nett Increase	2,948	2,022
Population Ratio	10.29	10.37

VICTORIA

	March	April
New Issues	3,883	4,070
Renewals	12,938	13,996
Cancellations	1,523	2,273
Monthly Total	232,116	233,913
Nett Increase	2,360	1,797
Population Ratio	12.63	12.73

QUEENSLAND

	March	April
New Issues	1,270	1,438
Renewals	3,711	3,453
Cancellations	368	454
Monthly Total	64,605	65,589
Nett Increase	902	984
Population Ratio	6.74	6.83

SOUTH AUSTRALIA

	March	April
New Issues	1,233	1,394
Renewals	3,928	4,472
Cancellations	581	508
Monthly Total	74,408	75,294
Nett Increase	652	886
Population Ratio	12.62	12.77

WESTERN AUSTRALIA

	March	April
New Issues	861	913
Renewals	1,922	2,272
Cancellations	162	194
Monthly Total	39,249	39,968
Nett Increase	699	719
Population Ratio	8.87	9.03

TASMANIA

	March	April
New Issues	487	512
Renewals	828	841
Cancellations	321	345
Monthly Total	19,486	19,653
Nett Increase	166	167
Population Ratio	8.42	8.53

COMMONWEALTH

	March	April
New Issues	12,346	12,881
Renewals	38,307	39,757
Cancellations	4,619	6,306
Monthly Total	702,206	708,781
Nett Increase	7,727	6,5
Population Ratio	10.47	10.57

The above figures include:

Total Free Licences to the Blind	1,545
Total Paid Experimental Licences	1,251

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BROADCASTING BUSINESS
June 14th, 1935.

Expanding Trade and Better Times for Newcastle

Chamber of Commerce President's Report

NI his address at the Annual Meeting of the Newcastle Chamber of Commerce recently, the President (Mr. W. E. Alexander) said that Newcastle's trade is expanding in all directions.

"Whatever may be one's political views," Mr. Alexander added, "I think it must be generally recognised that the N.S.W. Government has accomplished a remarkable achievement in evolving some measure of stability out of the chaotic condition which existed when it took over the affairs of the State three years ago. I feel sure the confidence in the Government, displayed by the electors on May 11, will again react to the benefit of the whole community."

Mr. Alexander said that it was pleasing to note the coal exports from Newcastle to oversea and interstate ports in 1934 totalled more than 2,370,000 tons, an increase of about 270,000 tons over the previous year, and that for the first quarter of 1935 the figures showed a further increase of more than 112,000 tons on the corresponding quarter of 1934. Unfortunately the prices obtainable remained very low. The coal trade was gradually providing employment for more men and more regular work for those engaged. It was to be earnestly hoped that increased trade would continue and that better prices would be obtainable in the near future.

Steel Exports

MARKED progress has been evident in the iron and steel industry," Mr. Alexander said, "and during the year the welded pipe industry has been added to the list of works that are spreading the fame of Newcastle. The district is now definitely linked with the iron and steel industry, and, with the feeling that the aim of those in control seems to be expansion, we can look forward to the future with every confidence. To quote one lot of figures: The export of steel products jumped from 184,452 cwt. in 1933 to 386,905 cwt. in 1934, while those for the first quarter of 1935 were 406,789 cwt., actually greater than for the whole of 1934."

Reviewing other aspects of Newcastle's export trade, Mr. Alexander said that it was expected that the season just ending would result in over 36,000 bales of wool having been disposed of at the Newcastle wool sales, opposition to which had almost vanished. Exports of butter had risen from 504,686 lb. in 1930 to 11,341,686 lb. in 1934, and the figures for the first quarter of 1935 exceeded 5,000,000 lb. Cheese had not appeared in the Newcastle export list until 1933,

when only 50,000 lb. were exported. Last year the total was more than 633,000 lb. Exports of eggs had increased to 665,567 dozen last year from 336,330 dozen in 1931, when the first shipments were made.

The export flour trade was also steadily increasing. Frozen and chilled beef exports showed a slight decrease during 1934, and the British quota system would probably retard what would eventually prove to be an expanding export trade. The approaching completion of the Newcastle terminal wheat elevators would materially add to the business of the port.

Unemployment

THE district has done well in absorbing into industry many who were almost without hope three years ago," Mr. Alexander added. "In June, 1932 we had the appalling total of over 15,000 men registered for employment in the Newcastle district. In April of this year only 7,161 were on the register, showing that over 8,000, or more than half, had been absorbed. Even those still without employment are in receipt of greater assistance from the Government than formerly, and mostly get some relief work."

Newcastle is the home of Station 2HD, and the above interesting figures from such an authoritative source give some indication of why 2HD is in a very effective area.

LONG TERM CONTRACTS.

One of the best arguments for the pulling power of any Radio Station is to find satisfied clients renewing their contracts with alacrity and for the longest possible period. This is the happy state of affairs prevailing at Station 2HD Newcastle with whom Messrs. Gibb and Beeman, Opticians and Optometrists of Sydney and Newcastle have just signed a long term contract, going on the air four times a week at that enterprising Station.

This progressive firm has been telling the world through 2HD for a number of years and have found it such a profitable tale, that they have decided to peg out a claim for themselves that will secure their pitch for some time to come.

In view of the reports coming from Newcastle of steadily increasing prosperity, that industrial centre is likely to provide a happy hunting ground for advertisers for some time to come and Messrs. Gibb and Beeman are apparently satisfied that by experience they have learned that a good method of approach to Newcastle buyers is through Station 2HD.

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Broadcasting Business Gossip

WJR, large power station at Detroit, will change over as a Columbia affiliated Station in September next, for a period of five years, under an annual guarantee of \$200,000, more than it received from N.B.C. This represents the first major casualty suffered by N.B.C. since the latter network undertook to bring its associated stations within the provisions of a new uniform contract.

"Radio broadcasting stations may continue to choose their own clients," was ruled by a Federal Judge recently, in dismissing the suit of Henrietta B. Martan, against Blanche Virgin, operator of radio station KMED, Medford. Mrs. Martan, President of the Good Government Congress Inc., sued Mrs. Virgin for \$35,000 plus \$4,000 attorney fees, for Mrs. Virgin's refusal to allow Mrs. Martan to broadcast a New Year's message to her followers over KMED.

Mrs. Martan's attorneys contend that radio is a common carrier bound by Interstate Commerce Rules to accept any client willing to pay for broadcasting time. The demurser which Judge McNary sustained, set forth that a broadcasting station is not bound by the Interstate Commerce Rules.

With the Canadian Radio Commission putting a ban on "spot" advertising on Sundays over all Canadian stations, there is a possibility that Canadian stations other than those operated by the Federal appointed C.R.C., will close down for the day, according to the President of the Canadian Association of Broadcasters. Although the ban does not apply to time signals and certain public services, feeling among independent station operators is that, despite the fact that they let the churches have Sunday time at a low fee, latest ecclesiastical moves removes station revenue that was offsetting part of the loss on church service broadcasts.

Station WLW, the half million watt outfit of Crosley, has installed a shielding system, by which that station seeks restoration of its 500,000 watt transmission licence at night, except for a power reduction of 50,000 watts in the area of Toronto, Ont. This new shielding system, designed by J. A. Chambers, is reported that an old plan for the creation of a Government-operated radio network in U.S.A., has been dug out of the archives to provide adequate facilities for non-commercial broadcasting. The Federal Communications Commission was due to hold a Conference recently to map out plans for more comprehensive educational and cultural uses of radio resources.

The present idea is to raise necessary

funds for both construction and operation of a Federal network through direct taxes on radio. Two schemes are being submitted, one to impose annual licence fee "a la Europe" on all receivers, and the other to tax all commercial stations with either heavy charges for their franchises or some other type of income tax, as it is said that neither the key-men in Congress, nor President Roosevelt, will go for such a proposal, fearing an unsympathetic reception, which would boomerang and lead to serious political consequences.

On the evening of Saturday, June 8, Mr. Jack O'Hagan on behalf of 3AW, bid farewell to Rodway Gainford, 3AW's late chief announcer. In going to an executive position on 4BK Brisbane, Mr. Gainford carries with him from 3AW the good wishes of the directors and staff. He should do well in his new sphere.

A. J. Veall Pty. Ltd., can now be heard from 3AW between 11 and 11.30 a.m. instead of the evening session. This progressive company moved around in order to contact a different section of listeners.

Predicting inside of 10 years that the small-town daily newspaper will have its own radio station and the weekly small radius will establish a community radio, Mr. Fred W. Kennedy, Field Manager for the Washington Press Association, told a group of editors and journalists recently

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