EXPERIMENTAL BROADCAST STATION 4RM

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In recent months a great deal of interest has been centred on Experimental Station 4RM in Hawthorne, Brisbane. Many people who have listened to the excellent experimental broadcasts have shown a natural curiosity regarding the origin of the announcer, C.V. Woodland, formerly official announcer at 4QG. His presence has served to intensify the interest aroused.

Whatever the future may bring forth, 4RM at the present time is purely an experimental station, and is being operated as such. It is owned and operated by Mr. Ray McIntosh (one of the engineers at 4QG).

Some time ago, an application was lodged with the P.M.G.as Department for a Class "B" Broadcast Station License. This has not as yet been granted; the reason being that no new licenses are being issued until after the revision of the Wireless Regulations suggested by the recent Royal Commission has been effected. However, there is every reason to hope that the arrival of the licence will not be long delayed, and Mr. McIntosh has made arrangements to commence a regular service of a very high standard immediately the necessary authority is received.

Just now, the test transmissions are being effected on a power of only 15 watts, but the transmitter is designed to operate normally on a power of 1,500 watts. That the 250 metre transmissions are being widely listened to is attested to by the tremendous pile of letters which Mr. McIntosh showed to a representative of "*The Queensland Radio News*". These letters come from points as far apart as Longreach, Hobart, Bathurst, and New Zealand, and, without exception, refer in glowing terms to the writers' reception of 4RM.

Although regular programmes cannot be arranged until the license is received, 4RM has on several occasions secured the services of well-known artists in tests which were being carried out. Due to the fact that adjustments have been made at frequent intervals, the transmission has varied a little from time to time, but recently the quality and volume have been amazing, and 4RM can count on a large and very appreciative army of listeners, both in this and other States, whenever the station goes on the air.

The transmission of phonograph records, very well chosen by the way, is particularly fine, and one is sometimes left in doubt as to whether the item being broadcast is a record or "the real thing". The voice of "Uncle Jim" Woodland, of course, needs no introduction to listeners. It is one that is particularly suited to broadcasting, and no doubt will do much towards enhancing the popularity of the new station.

4RM's white-painted Oregon aerial mast forms a landmark for miles. Towering 95 feet into the sky, the mast and its complicated rigging present an imposing spectacle. Another 50 feet section is to be added to the mast in the near future. The aerial is of the three-wire ship type with Pyrex glass.

At present the complete station is situated in the house itself, but all the apparatus will shortly be moved into a special room which is being erected immediately underneath the aerial. The lead-in will then drop directly from the aerial through a bushing in the roof of the station building, and the earth lead will go through the floor to the very complete earthing system which has been installed. This earth connection consists of a copper plate measuring 18 feet by 6 feet, buried in permanent moist earth, three feet below ground level, with feeders radiating from the plate to different points underground. Thus, an ideal radiating system is assured, and the efficiency should be very high indeed.

In the meantime, the transmitting equipment at 4RM is located in a room adjoining the studio. All of the apparatus has been constructed by Mr. McIntosh, and the splendid workmanship is at once apparent. There are two separate transmitters; the main 250 metre set, and a small 32 metre set. The main transmitter at present consists of two UX210 7½ watt valves connected in parallel in a Meissner circuit. With these valves the power input to the plate circuit may be increased as high as 50 watts, but in the meantime the power is maintained in the vicinity of 15 to 20 watts. An interesting feature of the main transmitter is the very complete system of shielding employed; the whole unit covered on all sides by a sheet brass screen. The problem of filtering out generator or A.C. hum from the power supply is one which does not exist at 4RM. A bank of storage batteries totalling 300 volts supplies plate current to all the valves; this being kept charged by a Tunger charger operating from the A.C. lighting mains.

For 32 metre operation a beautiful little shortwave transmitter has been built. Behind the silver plated brass panel is a 7½ watt valve with its associated apparatus, arranged in a "Split Colpitts" circuit. At a later date, when the "B" class broadcasting licence which is shortly is an established fact, it is intended to utilise this transmitter for conveying programmes to the transmitting station, where they will be received on 32 metres, and placed on the air in the regular 250 metre channel. This will eliminate much expense, and will make it possible to relay programs from points to which the provision of landlines is difficult or where lines do not exist. Preliminary tests which already have been carried out within the suburbs of Brisbane indicate that extremely reliable communication can be maintained with 4RM when the power input to this "baby" transmitter is as low as one or two watts.

Both of these transmitters are oscillators only; their purpose being to generate the "carrier wave" upon which the speech and music is impressed. As they stand, they are each capable of sending out Morse signals, with a transmitting key being provided for this purpose, but they cannot transmit speech and music. The unit which impresses the voice currents from the microphone on the carrier wave is termed the "modulator', and at 4RM this is combined in one unit with the speech amplifier, the duty of which is to amplify or magnify the weak impulses from the microphone before they reach the modulator. Two stages of choke-coupled amplification using power valves are employed, drawing power at 160 volts from the same bank of batteries that supplies the oscillators. In conjunction with the speech amplifier, a specially designed volume control is used; the knob being mounted on the control panel alongside the switches and jacks, etc., which are provided in order to link up the station with a maximum of ten outside points by landline.

Mr. McIntosh has developed a modulation system which he claims includes several important advantages over existing methods. Any doubts as to the efficiency of the system are dispelled when one listens in to 4RM's transmission with its admirable depth and quality.

For transmission of phonographic music, an electric pick-up is used. This is identical with the pick-up designed and supplied by Mr. McIntosh to 4QG, and used by that station for all gramophone work. A new microphone of original design handles studio music and speech. This instrument, for which patents are pending, is a wonderful piece of work, and a great tribute to the skill of the designer and constructor.