

regulations are still in force, and under different phases of radio communication. However, it should be sufficient to state that all licensed transmitting stations shall have calls consisting of a numeral followed by two letters, and, in the case of broadcasting stations, the first of these letters shall be a "Y." The numeral part denotes the district. Thus, Auckland is the first district, Wellington the second, Canterbury the third, and Otago the fourth. "3YA," therefore, denotes the broadcasting station in the third, or Canterbury, district.

THE TEMPORARY STATION.

Before the present station came into being there was in Christchurch a small 50 watt station, designed and constructed by the R.B.C., but which was run as an amateur station by the Radio Society of Christchurch, under the call sign of 3AC. This station, though only of low power, gave a reasonable service to Christchurch listeners, and served in some measure to keep the ball rolling till the present 3YA took the air in September last. Immediately after the opening of 3YA the writer rushed post haste to Christchurch to commence the installation of the 500-watt transmitter which was waiting there in cases, having been ordered and delivered at the same time as the Auckland station. It was decided that the first location of the station and studio should be only of a more or less temporary nature, in view of the fact that the A. R. Harris Company's premises, which were eventually to house the station, were only in course of construction. A large hall in Hereford Street, which had previously done duty as a dance hall, was converted into a temporary studio and connected by land line with the transmitter, which was erected in a galvanised iron shed at the rear of the A. R. Harris Company's property in Gloucester Street. This temporary arrangement worked exceptionally well, and was used right up to the time of the change over to the new building. While the building was in progress the opportunity was seized for making every provision for the future installation of the station. All the necessary conduits were fixed in position, wires were drawn in, lugged, and labelled, and everything got in readiness for the change over. At last the time arrived for putting in the permanent installation. All the equipment was lifted up to the room built to receive it, and placed in position. The work of connecting up occupied only a few days, and the station was then ready for the official opening.

THE STUDIO EQUIPMENT.

The studio is located on the third floor of the A. R. Harris Company's building, and was specially designed for the purpose, having walls approximately 15 feet high. Adjoining the studio are the various lounges and the control room. The lounges are described elsewhere, but the control room is worthy of explanation here. It consists of a long, narrow room approximately 14 feet by 5 feet, and looks into the studio through a large plate-glass window. Along one side is a bench, which holds the various control equipment for connecting to relay lines, microphone switching, and signalling to the transmitting room on the roof. The studio is wired to take duplicate microphones, and by suitable adjustment of controls it is possible to use either one of two microphones, or to bring both microphones into service, in order to obtain any desired degree of balance.

The control room also has a microphone for the announcer, and a loudspeaker for checking up on the transmission. This loudspeaker is so arranged that when announcements are being made the speaker is automatically cut out to prevent "howling back" into the microphone.

MICROPHONES.

On account of the rugged nature of the carbon microphone, this type is used almost exclusively. There is, however, a condenser microphone in the studio, but this is used only on special occasions, as it is a very touchy, though high-grade, piece of apparatus.

THE TRANSMITTER.

The transmitter is located in a specially built room on the roof of the building, and consists essentially of four pieces of apparatus. The motor generator, power plant, transmitter, and speech input equipment. The motor generator set consists of three units: a 5-h.p. three-phase motor, directly coupled to a 1600-volt generator for plate supply, and a 16-volt generator for filament lighting. The whole generator unit is fixed to a concrete bed, set on rubber, which very effectively prevents any noises being communicated to the rooms underneath. The motor generator set is contained in a partitioned off portion of the transmitter room, this portion also containing the battery charging apparatus and the Edison A and B battery sets, which are used for the amplifier equipment.

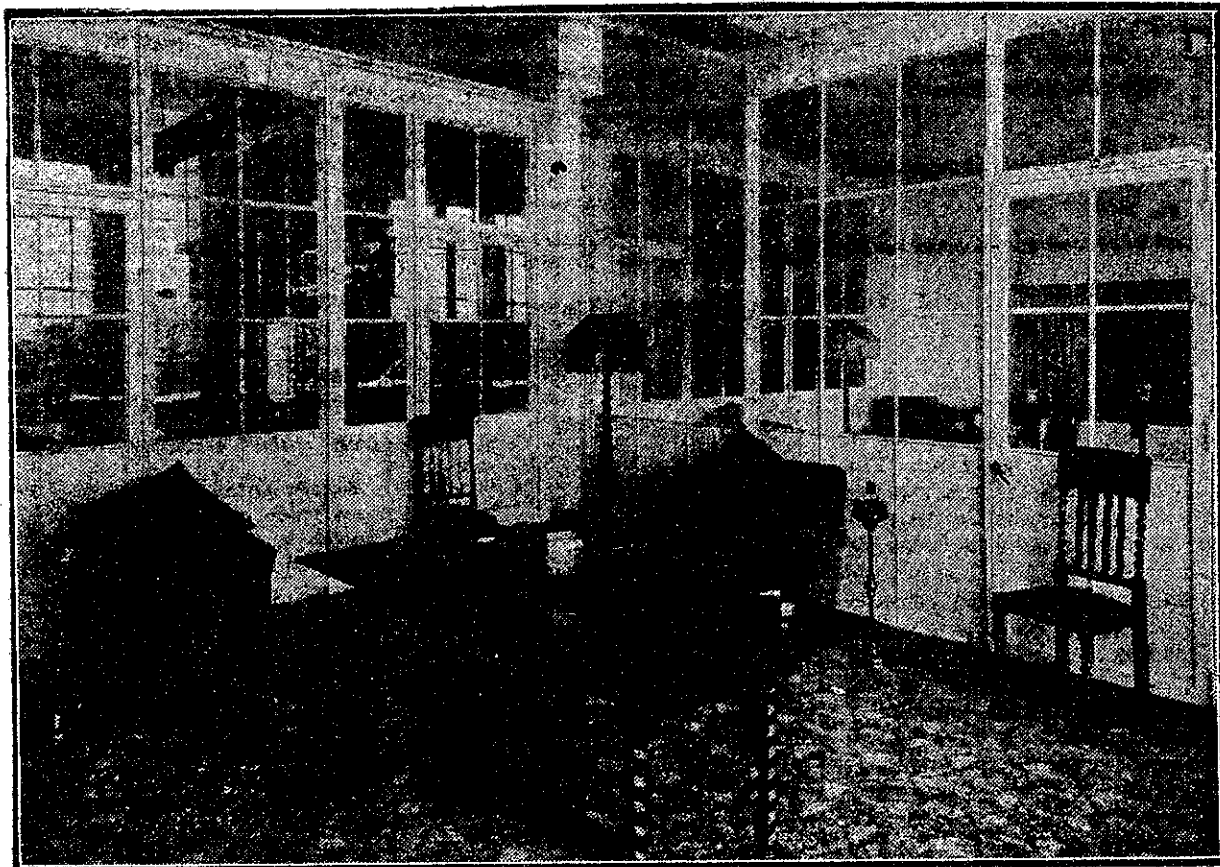
SPEECH INPUT SYSTEM.

In the larger portion of the transmitting room are the other three units. On the right is the speech input equipment, which consists of a rack on which are mounted the various meters, amplifiers and switches for keeping check on and controlling the music which is picked up by the microphones in the studio. This equipment is of a highly important nature, as it is here that the minute currents delivered by the microphones are amplified to an extent sufficient to modulate the transmitter. On the main or "8B" amplifier is mounted a "gain" control, by means of which the operator regulates the volume level of the amplified signal. Immediately above this amplifier is also another amplifier, but this one is used merely to operate a loud-speaker for keeping an accurate check on the quality of the transmission. By means of a small key switch it is possible to connect the

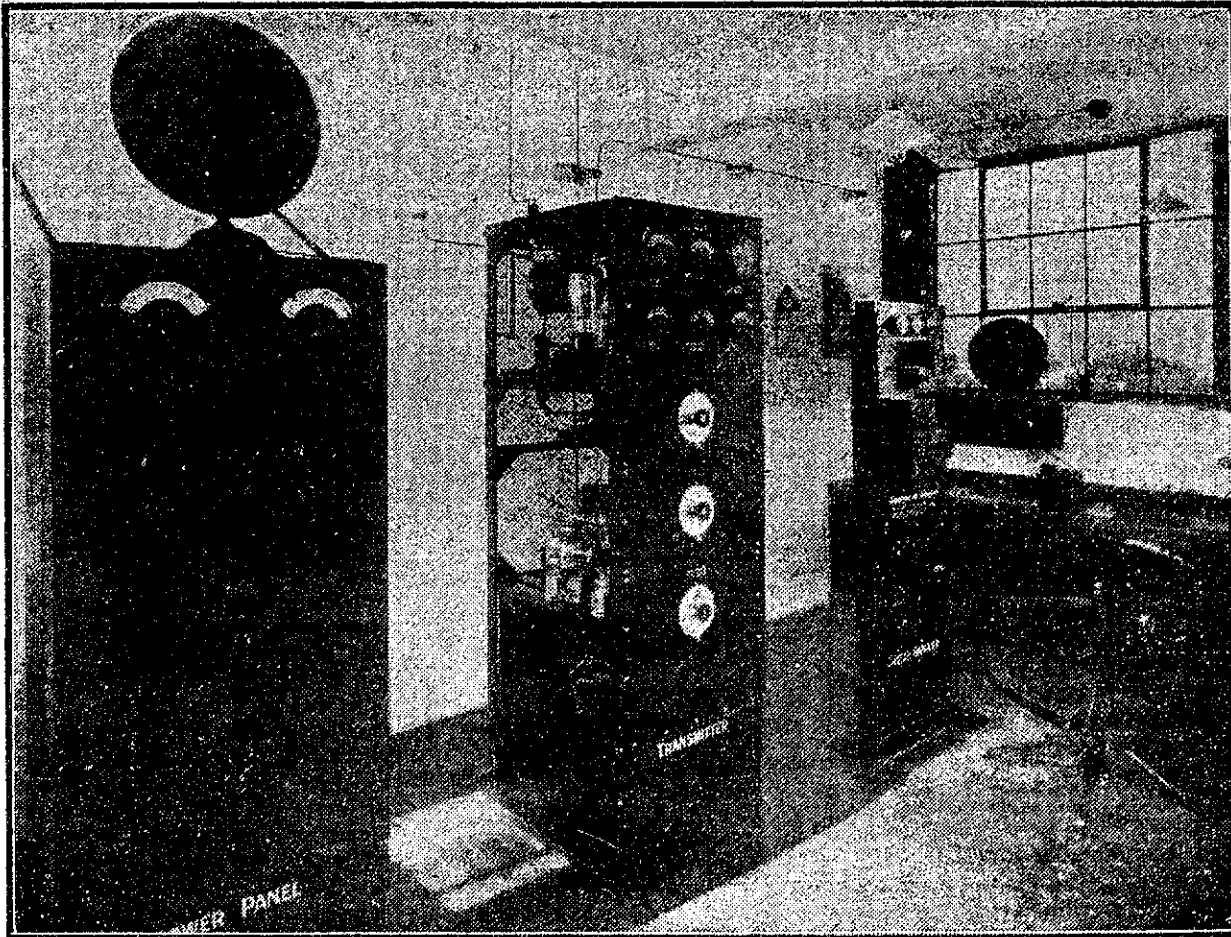
Attractive Studios in Christchurch.

Artistic and Harmonious Effect.

The thoroughly artistic and striking nature of the furnishing and equipment of both the Christchurch studio and the Wellington studio stands to the credit of Mrs. J. M. Bingham. With excellent taste, Mrs. Bingham has achieved an effect in each case that is attractive, harmonious, and creative of an atmosphere of restfulness and comfort. Under such conditions the performing artists can give of their best; and in this sense the artistic taste displayed throughout constitutes a permanent asset to the efficiency of broadcasting in general. The labour, taste, and judgment involved in the equipment of the two studios have been outstanding, and the result stands as a tribute and credit to Mrs. Bingham.



SMOKING LOUNGE OF THE CHRISTCHURCH STUDIO.



TRANSMITTING ROOM AT STATION 3YA.

loud-speaker directly into the radio, transmitter or on to this amplifier, and by changing alternately from one to the other, comparisons can be made between the signal going in to the transmitter and the signal going out of the transmitter, and observations made to see if there is any distortion actually occurring in the transmitter itself.

THE TRANSMITTER.

Immediately alongside the speech equipment is the transmitter proper, consisting of the filter system, oscillating, and modulating circuits, and aerial tuning system. The valves employed consist of two oscillators, and two modulators, each of nominal rating of 250 watts capacity, together with a speech amplifier valve of 50-watt capacity. The oscillating circuit consists of a modified three-coil Meissner capacitively coupled to the aerial

through circuits designed for the suppression of harmonics.

The output from the speech equipment is first applied to the 50-watt amplifier valve, and the output from this is passed to the two modulators, which are coupled to the two oscillators by the Heising system. On the front of the transmitter panel are meters for observing the functioning of the various circuit and dials for the tuning controls.

Immediately to the left of the transmitter is the power panel, for controlling the power applied to the different circuits. On the front are meters, rheostats, and push-button switches. The whole of the operation of starting up is performed by push-buttons, the application of power to the various circuits being automatically controlled in their proper

sequence by relays within the power panel.

THE AERIAL.

The aerial system is swung between two steel towers, one of 104 feet height, erected on the corner of the building, and the other of 151 feet height, erected on the ground at the rear of the building. The aerial is of a four-wire flat top, "L" type, directional north-north-east.

Taking all things into consideration, 3YA is, perhaps, the most conveniently equipped station of all the R.B.C.'s stations, as it is the only one where both studio and transmitting room are located adjacent to each other, and the company is justly proud of this station.

RADIO'S FUTURE

A MAYORAL VISION

CAPACITY FOR SERVICE

The Rev. J. K. Archer, Mayor of Christchurch, is interested in radio broadcasting from the civic point of view. As a service supplementary to the success of broadcasting he was specially interested in the first number of "The Radio Record."

"The first issue of your paper," he said, "is in my judgment a complete success. The illustrations and general production are attractive, while the letterpress is exceedingly readable. Not being the possessor of a wireless reception set, I cannot give any testimony of practical value as to the articles dealing with the technical side of broadcasting, but perusal of these articles suggest that they must be of great service to possessors of receiving sets."

"As to radiology itself, there can be no doubt that it is of immense service to the public and will become increasingly so as time advances. Even to dwellers in large centres of population, with their numerous opportunities for attending concerts, picture theatres, and other forms of public entertainment, it must be a real boon, while to those resident in outlying areas it must be of almost incalculable benefit. It brings them into touch with the centres of population and makes available for them all current activities and enjoyments. To the aged and infirm everywhere, who are unable to leave their homes, it brings if not a new lease, yet a new enjoyment of life."

"If one were to venture upon a criticism it would be that some of the people—whether singers, reciters, preachers, or musicians—whose contributions to programmes are broadcast, overstrain their voices as though they were trying to make people hear at long distances without the assistance of the apparatus. This has several undesirable effects, one of which is that the overstrained voice loses some of its carrying power, and another that there is a distinct loss of pleasure for listeners-in. I have had at least two personal experiences of this nature. Some months ago whilst convalescing I had the opportunity of listening-in at a long distance from Christchurch, and everything was most enjoyable except that the loudness of the voices of the speakers and singers proved somewhat tiring."

"What the future of radiology will be no one can with safety prophesy. Its possibilities, however, appear to be immense. It is hoped that those who are in charge of it for this Dominion will adhere to their present plans of distributing many types of programmes and the best of every type. Through the air the public desire to get educative and inspirational matter as well as entertaining. In this way the interest of every class of person will be secured and maintained and the whole community will be benefited."

CHILDREN'S SERVICE

SUCCESSFUL INNOVATION

An innovation which is likely to be generally approved was introduced at 3YA on Sunday evening last, when a service for children was broadcast from the studio for half an hour before church time. Some of the members of the juvenile choir of the Edgeware Road Methodist Church, under Miss Rapley, supplied the music, and the children's voices were delightful.

Afterwards the service at Sydenham Baptist Church, where the Rev. J. K. Archer is the minister, was broadcast. Mr. Archer has a good radio voice, and he preached a powerful sermon on the Crucifixion.

A special sacred concert followed, the soloists being some of the best broadcasting artists in Christchurch.

RADIO ON FARMS

The increase in the use of sets on United States farms shows a tremendous jump from 10,000 in 1922 to 1,350,000 in 1926 at the close of the year. Exports from the United States in radio apparatus increased from 2,800,000 dollars (\$500,000) in 1922 to 8,500,000 dollars (\$1,700,000) at the close of 1926.

The saturation comparison with other industries to date is as follows: Number of homes in the United States, 26,900,000; phonograph, 11,000,000; passenger automobiles, 18,000,000; telephones, 17,000,000; homes wired for electricity, 15,900,000; farms, 6,370,000; homes without radio sets, 20,300,000. The radio saturation totals 94 per cent., showing that more than three-quarters of the United States is still a potential market for broadcast receivers and the necessary accessories.

A census of United States radio manufacturers reveals 2550; wholesalers and distributors, 985; and retailers, who carry a complete stock of sets and accessories, 29,000. During 1923 there were 8500 dealers; the peak was reached in 1924 when there were 45,000, but since that time they have been reduced so that 29,000 was the number of dealers in the United States when 1927 arrived.