



MRS. RAPLEY.

THE way in which a broadcasting station can handle public functions for the information and entertainment of listeners was demonstrated by 3YA during the Diamond Jubilee celebrations of Christchurch last week.

ON the four days over which the celebrations were spread, there were many attractions, as is evidenced by the fact that there were 22 relay lines to 3YA. The speeches at the many public functions were broadcast perfectly, and in the case of spectac-

Pioneers Contribute Unique Children's Session.

AN unofficial event of a most unusual nature provided one of the many attractions put over the air from 3YA during the celebrations of Christchurch Diamond Jubilee last week. The children, and grown-ups, too, were given a unique opportunity of hearing four old ladies speak from the studio, of their early impressions of the city. These pioneers are 3YA's oldest broadcasters.

ular events, such as the big procession on Monday, listeners "saw" it through the eyes of 3YA's announcer, Mr. Clyde Carr, whose descriptive work was very good.

ONE aspect which was of outstanding interest was that of the



MRS. T. V. WHITMORE.

children's session of Uncle Sam and Aunt May on Saturday evening. This was not one of the official jubilee celebrations, but it was nevertheless of a memorable nature. Four old ladies came to the studio and spoke to many thousands of listening children about the early days of Christchurch. These old pioneers were a most interesting link with the past.

ONE, Mrs. T. V. Whitmore, aged 83, is the last lady survivor of the "Charlotte Jane," one of the four ships which brought the first immigrants to Christchurch in 1850.

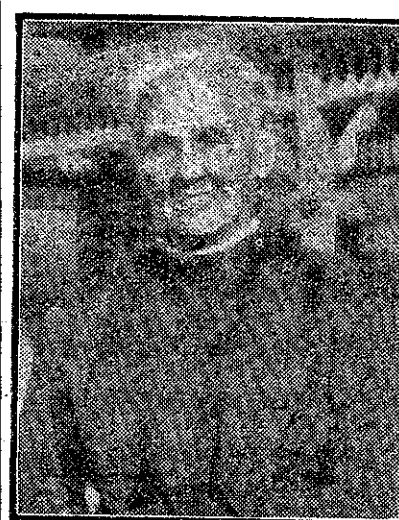
Another, Mrs. Rosindale, aged 73, mother of Mr. J. S. Neville, Christchurch Town Clerk, came to New Zealand on the "Cressy."

Mrs. C. S. Bell, aged 84, mother of the programme organiser at 3YA, played a lively pianoforte solo, "Weber's Last Waltz," with all the abandon and skill for which she was noted two generations ago.

ANOTHER old pioneer, Mrs. Rapley, gave a very graphic account of

her first impressions of the site of Christchurch when she as a child arrived with her parents. Mrs. Rapley spoke without reference to any notes.

STILL another pioneer, Mr. Bell, forwarded a most interesting letter,



MRS. M. ROSENDALE.

MRS. C. S. BELL.

descriptive of the early days of the city. The whole entertainment was unique, but it was distinctly appropriate for a children's session owing to comparison of conditions, special reference being made to the modern wonder radio.

AUNT PAT, Children's Session Organiser at 3YA, arranged for the appearance of the old pioneers at the studio. She endeavoured to induce some of the male members of the oldest generation in Christchurch also to speak, but they were "far too shy."

STORING THE BATTERY

TWO SAFE METHODS.

OCCASIONALLY one is faced with the necessity of storing the accumulator for a few months. It may be that a holiday is to be taken, or that business calls us away for a month or two. Now comes the question, what shall I do with my accumulator to keep it in good order and condition until I require it again? Two methods of doing this are available, each calling for a special treatment of the cells. Whichever is used, care should be taken to place the accumulator in such a place that dust will not collect on it.

The reason for this provision is that dust makes a conductor between the terminals, and if we wish to counteract sulphation it is essential that the charge be retained in the plates during the storing. If dust is allowed to collect on the top of the cells a short circuit will be formed by it between the terminals, and the plates will become at least partially discharged. The result of leaving an accumulator in a partially charged condition and containing electrolyte is to assist in the formation of sulphate of lead, which is commonly called sulphation. If we adopt the second method where a liquid is left in the cells the same rule applies as to the dust.

The Dry Method.

THIS is the better and is recommended. Proceed as follows:—1: Give the cell or cells a good charge, so that all the plates are in good condition. 2: Empty out all the electrolyte. 3: Refill cells with distilled water only and discharge the cells until the voltage or charge condition has fallen 10 per cent. 4: Empty out all the water, and allow cells to drain completely. Absolute dryness should be striven for. Wash away all traces of electrolyte from the cell terminals, and give the terminal stems a good coat of vaseline. 5: Store away in a dry dust-proof place.

The reason for discharging partially after the water has been added is to avoid heating of the negative plates when they become dry. The water absorbs any electrolyte which has remained in the pores of the surface of the plates. It is imperative that all liquid be removed from the cells, otherwise sulphation will set in immediately.

The Wet Method.

1: See that the plates are well covered with electrolyte, but below the lead connecting bars inside the cells. 2: Place on charge until all plates have received a good charge (hydrometer 1.270 or over). 3: Carefully clean all the tops of the cells, the terminal stems, and give all the metal parts a coat of vaseline. Now store away as in the dry method. In this method a periodical charge is beneficial, but not essential. It depends on the condition of the battery when stored, the type of plates, and the quantity of sediment which may be in the cells. If an examination shows the charge condition to be low, say, after a few weeks' storage, it will be necessary to give it an additional charge.

Taking Batteries Out of Storage.

When it is desired again to use the battery, it will be necessary to give it a charge until maximum charge condition is again attained. If your battery is showing a whitish coating on the plates before you commence storing operations it would be well to give it a lengthy charge at a low rate of charging until the plates become free of the deposit.

WMHA, the New York station, is owned by Troop 707 of the Boy Scouts' Association, of Washington Heights. The wavelength is 230 metres, and a power of 30 watts is used.

LIMITING CONTROL

COUPLE CONDENSERS.

EVERY effort is now made to reduce the number of controls on a set to a minimum, and this is particularly the case with the tuning controls, for it will be realised that the ideal set will only have one tuning control, and that so arranged that any particular reading on the dial will always correspond with a certain wavelength, so that the tuner can be calibrated, and any station instantly found.

When a set consists merely of a detector valve, with or without a low frequency amplifier, there is no difficulty in limiting the tuning controls to one; in fact, no more is necessary; but when one or more stages of high frequency amplification is to be used the problem is different, for each stage has to be tuned. The only method of providing a single control is to couple the variable condensers together, so that they may be all turned by one knob at the same time.

Each condenser is connected in parallel with a coil to make the tuned circuit. It will be obvious that if the wavelength of each circuit is to be the same, and is to remain the same when all the condensers are rotated together, then the tuned circuits must

be exactly matched at the minimum setting of the condensers, and each condenser, when rotated, must increase the capacity of each circuit by the same amount for each degree of rotation.

Matched Inductances.

THE first essential is to obtain coils with exactly matched inductances, for wave-length is made up of inductance and capacity, and as the inductance in each circuit is fixed, being almost all provided by the coil, and the capacity is the only variable, it will be obvious that it is first necessary to make the inductance of each coil identical.

Assuming that each coil is matched, it will be seen that any difference in the wave-length of each circuit must be due to a difference in the capacity. The circuit coupled to the aerial will, for example, have some of the aerial capacity added to it, and the other circuits will differ slightly, also due to the difference in the capacities of the wiring, and slight discrepancies in the minimum capacities of each condenser. The sum of all these capacities in each circuit is known as the minimum capacity, and is a non-variable quantity. To match the circuits, capacity should be added to those circuits with the least minimum capacity to make them equal to the one with the greatest amount.

The capacities may be matched by placing small variable condensers in

parallel with each tuning condenser, except the aerial tuning condenser, and then adjusting each one until they synchronise at every setting.

VOLUME AND QUALITY

VIRTUE OF POWER VALVES.

In a case where quality, rather than quality plus tremendous volume is the primary consideration, there is nothing to be gained by the use of very high "B" battery power. To be enjoyable, the device of very high voltage would of necessity have to be operated at a point considerably under maximum output. If a proper means of controlling this volume were used, the quality would not suffer; but it would not be better than the maximum output of an amplifier more in accordance with the tastes of the average set owner and the acoustical capacity of his home.

Detuning Condemned.

Of course, there is no denying the fact that power and fidelity in reproduction are, up to certain points, closely associated. The set owner should remember, however, that a moderately-powered amplifier puts every bit as much energy into the loudspeaker as a very-high-voltage device operated at a fraction of its volume. In the latter

case, the energy, as expressed in the A.C. variations of the plate current, remains in reserve, or is dissipated by means of the volume control. When control is attempted by means of reducing the filament voltage, or through slightly detuning the set, the results, particularly in the case of the high-voltage amplifier, are far from satisfactory. In the case of sharply-tuned receivers, serious distortion results from the suppression of the side bands when the set is detuned; while extraneous noises, static, line disturbances, etc., are amplified out of all proportion to the signal.

Volume of Quality.

In the last analysis, quality in the reproduced signal is not so much a matter of volume as of freedom from overloading. Were it purely a matter of amplification, valves of 201A type, or the "high mu" valves, would be far superior to those of the 171 and 210 types. The superiority of the power valve lies, not in its ability to amplify, but in its ability to handle great volume without overloading.

When, for example, a valve of the 201A type is used in the last stage of an amplifier with, let us say, 90 volts on the plate, the sounds issuing from the loudspeaker are apt to be thin and with the tones in the lower end of the musical scale missing. Now, as we increase the plate voltage, the quality of reproduction improves until a point is reached where, on loud signals, serious distortion occurs, owing to the fact that valves of this type have a comparatively high amplification factor, so that signals of even moderate intensity drive the grid positive. This overloading, in the case of the 201A type, occurs long before the volume has reached a point commensurate with the requirements of the listener, and before sufficient current is flowing in the plate circuit to reproduce accurately the bass notes. In a broadcast station, for example, only signals of little more than telephone intensity are expected from valves of the 201A type; whereas, in the set of the average radio enthusiast, they are expected to furnish unlimited volume.

CAPACITY OF A BATTERY.

HOW TO ESTIMATE IT.

The capacity of a wet battery has nothing whatever to do with "capacity" in the sense that we use the term applied to condensers. What is meant is the accumulator's capacity, to give up a certain amount of electricity.

An accumulator is designed to produce a certain current, and this is reckoned in amperes; and it will give this current for a certain time, which is reckoned in hours. The product of these two factors is called the "ampere-hour capacity" of that accumulator.

For instance, if the actual capacity of an accumulator is 40 ampere hours, it means that this accumulator will give 1 ampere of current for 40 hours. Similarly it would give half an ampere for approximately 80 hours, or it would give 2 amperes for 20 hours, before recharging became necessary.

So we see that the ampere-hour capacity of an accumulator can be regarded as a convenient method of finding how long it would last if it gives a certain current, or conversely how many hours it will take to discharge it, if the discharge is at a certain rate.

A good idea of the number of hours an accumulator will last without recharging can be obtained merely by adding together the current consumption of all the valves in the set; then divide this figure into the actual ampere-hour capacity of the accumulator and the answer will be the number of hours that it will last (approximately). It is important to note that this applies to the actual ampere-hour capacity of the accumulator and not to the "ignition" rating, which is generally about twice that of the actual ampere-hour capacity.

Make your Radio 100% more efficient

You can! Simply by using Mullard Valves—the valves with the wonderful P.M. Filament. A prominent Christchurch Electrician says: "I bought them to cut down operating costs, but they increased the clarity and volume wonderfully—I consider my set 100 per cent. more efficient."

Operate on one-tenth ampere, give much longer life, filament practically unbreakable.

You can never go wrong by using Mullard's—they're British through and through.

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