

With a heavy current the de-polariser must be more effective than with a small current, and it is clearly uneconomical to have a small percentage of de-polarising agent with a large percentage of active (sal-ammoniac) material, and vice versa.

Best Discharge Rate.

Therefore, for each particular construction of cell, there is a definite discharge rate at which the best life will be obtained. As the cell is used and the chemicals become exhausted, so the voltage across the terminals of the cell falls and the use life of the cell or battery is determined by the time taken for the voltage to fall to a pre-determined value.

This pre-determined value is generally taken as between one-half and two-thirds of the original voltage, for when the cell has reached this condition, its internal resistance will have grown so high that difficulty will be experienced with its use. Consequently, although a cell will continue to give voltage until it is completely exhausted, it is not desirable to use it beyond this point.

If a small-sized cell is used with a current greater than the optimum figure, it will not have due time for recuperation, and it will become exhausted at a relatively more rapid rate.

This is to say, that if a cell will last for 200 hours at a discharge rate of 5 milliamperes (giving 1000 milliamperes hours), it will not last for 100 hours at a discharge rate of 10 milliamperes. It will only last for perhaps 80 hours, giving us a 20 per cent. loss of efficiency.

If, on the other hand, we use a cell at a smaller rate of discharge than the optimum value, then, again, we shall not obtain the best life because of the local action which takes place. This effect is often referred to as shelf-life, meaning the capability of the cell to maintain its properties when standing in stock on a shelf.

A battery, such as a grid-bias battery, which is not required to give any current, but merely to maintain its rated voltage for long periods, is specially designed to avoid local action and, therefore, to have a long shelf-life.

Excessive Local Action.

A power battery, on the other hand, is designed to give large current intermittently, and is intended for use. That is to say, it will not last indefinitely in stock if not used. Similarly, if we do not utilise a battery to its full capacity, then we get an excessive proportion of local action, which means that the battery becomes exhausted before we have had the full discharge capacity from it.

And so, when buying a "B" battery, it pays first to determine the current consumption of one's receiver, and then to buy a battery which is rated to supply approximately that amount of current for its optimum life. A double-capacity battery does not cost twice as much as a single-capacity type, but it will last twice as long, and similarly with a triple-capacity battery.

The set's requirements in the way of total plate current can be easily ascertained in either of two ways: firstly, by placing a milliammeter in the B—lead; and, secondly, by reference to the maker's leaflet accompanying each valve, and which gives the plate current taken by the valve at the plate voltage employed. Of course,

THE WORLD ON SHORTWAVE

By F. W. Sellens

Programmes for N.Z. from XETE.

MR. BERT A. JESSE (Wanganui), who is on a visit to Wellington, showed the writer a QSL card from the new Mexican shortwave station which had us all guessing as to its correct call, and which proved to be XETE.

According to the card, this station operates on 6130 k.c. (48.94 metres), and 9600 k.c. (31.25 metres). The hours of transmission are not mentioned. The card is headed "Empresa de Telefonos Ericsson." Mr. Jesse asked in his report on reception if they could broadcast a special programme for New Zealand. They have kindly agreed to do this, as a footnote reads, "Special New Zealand DX Programme, Saturdays, 8 to 11 p.m., C.S.T.," which in our time is, Sundays, 1.30 p.m. to 4.30 p.m. Their address for report is, P.O. Box 1396, Mexico City, Mexico.

XETE has not been heard on the 31.25 metre wave-length recently, but a station has been heard on about 43.94 metres, announcing in what appeared to be Spanish, but the call has not been heard, so this may be XETE.

Radio Rabat.

CHANGES have been made in the wave-length used by the shortwave transmitter at Rabat, Morocco. This station, which is used chiefly for radio communication with Paris, broadcasts on Sundays only, using two wavelengths, namely, 23.39 metres, and 37.33 metres, the latter replacing the old wavelength of 32.26 metres.

The schedule in our time is from Sunday midnight on 23.39 metres, and from 6.30 a.m. to 8.30 a.m., Sunday, on 37.33 metres.

CQN, Macao.

A NEW station on the 49-metre band is being heard in Australia toward midnight. This is CQN, located at Macao, an island and port of South

in the case of screen-grid and pentode valves, the current taken by the screen must be added to the plate current.

Several Maintenance Hints.

With intelligent use the modern dry-cell battery is a reliable and economical source of plate current, but it should not be overlooked that it is essentially a delicate organism which is easily open to abuse.

It should be installed in a cool place away from radiators or hot-water pipes, and short-circuits, of however short a duration, must be avoided at all costs. From time to time the set should be tested for leakages by inserting a sensitive milliammeter in the B+ lead with the "A" current switched off; in any case, it is a good plan to remove the plug connections from the battery if it is to be left standing for any considerable time.

Finally, good inter-cell insulation is always worth paying for, and a few more shillings on the initial cost of a battery so constructed is invariably justified by the performance of the battery toward the end of its life.

China, at the mouth of the Canton River. With the islands of Taipo and Colcaene, it forms a Portuguese colony. This station, according to a correspondent of "The Listener In," operates every other day, and comes in best after midnight, Melbourne time.

The Empire Station.

ALTHOUGH the programmes radiated for the Australasian zone by the Empire station are seldom heard now in New Zealand, it is interesting to note that GSD (25.53 metres) is improving in Australia, having been good enough to re-broadcast during the past week or two.

Mr. Malcolm Frost, the B.B.C. representative, who recently left New Zealand for Australia, says: "The other afternoon I heard an absolutely perfect re-broadcast of a talk by Vernon Bartlett on 'Turkey To-day.' It would have been impossible to distinguish it from a local station broadcast. But from a relay point of view, it is impossible to forecast whether the reception on a defined date will be good or bad. While this talk of Vernon Bartlett's was coming through, I rang up New Zealand, and asked how they were receiving it. They said they could not hear it at all—an unaccountable state of affairs, since we know that the broadcast is coming across the South Pole, and over New Zealand. That is one of the mysteries we have to clear up."

Log for Week Ending August 12

RECEPTION conditions are very patchy, and are, except at times, below normal.

RV59, Moscow, 50 metres. Usually up to R7 till about 8 a.m., when volume goes off. On Tuesday at 7.45 a.m., some orchestral selections by orchestra of the G.P.U. come over very well.

W9XF, Chicago, 49.18 metres. Received at fair strength from about 3 p.m., or soon after, but too much noise in the background to be enjoyable.

49 metres (about). A station is often heard on this wavelength from 11 p.m., but it is spoilt by Morse QRM. It was identified as an American on Tuesday evening. At 11.15 p.m. the time was given as 6.45 a.m., which would be Eastern Standard Time in America. Music and talk were R6, and clear enough when QRM permitted.

48.9 metres (about). A foreigner was tuned in at 3 p.m. just as they were closing down. The talk appeared to be Spanish, but no call was heard. Possibly it was XETE.

WSKK, Pittsburgh, 48.86 metres. Audible first at about 3 p.m., increasing to R8 by closing time at 4.30 p.m.

GSD, Daventry, 31.55 metres. Very weak from 7.30 a.m. till 8 a.m., the only time heard during the week.

W2XAF, Schenectady, 31.48 metres. From R3 at 2 p.m. to R5-6 by 2.30 p.m. is the usual volume received at present.

VK2ME, Sydney, 31.28 metres. Only heard during the first session, when they were considerably weaker than usual, fading right out at times.

JIAA, Tokio, 30.5 metres. Not heard so often now, and weaker than a few weeks ago.

EAQ, Madrid, 30.4 metres. Also gone off; was up to R6 on Saturday at 11 a.m., but very noisy.

FYA, "Radio Coloniale," Paris, 25.6 metres. Is not so regular now with good reception, but on Saturday, 2.30 p.m., it was necessary to tune it down, volume was so high. Quality was good except for slight gushiness.

(Continued on next page.)