

hole is bored with an awl just slightly out of centre, to fit over the driving spindle, from which the small knob is removed. About 1-16in. from the hole a slit is made in the widest end of the cork about 1/4in. deep. The cork is now placed on the spindle, and the centre of the diaphragm gently worked into the slot, which can be slightly opened with the thumb, in order not to strain the reed of the unit. Now on one edge of the frame, spread seccotine to a width of exactly half-an-inch, not missing any portion. The best method of doing this is to put the seccotine on roughly from the tube, and then with a small folded piece of cardboard, spread the seccotine evenly, when the edge of the diaphragm may be applied, using the marks at the ends as a guide. The paper is carefully pressed down, care being taken to ensure that at the outer edge of the frame the paper adheres everywhere, as any unglued space is liable to cause unwanted vibration. The other end of the diaphragm is secured in the same way, and the speaker is ready for a trial run, which will be a revelation to listeners who have been accustomed to the more or less ordinary type of horn speaker.

As mentioned above, the speaker is capable of reproducing what the receiver is able to deliver. If the receiver gives crystal clarity, the speaker will reproduce it. If clear reception is not obtained, it will be a good cue to make improvements in the audio department of the receiver on lines that have been indicated from time to time in this column.

If the last valve is "going off," that is, losing emission, it may give distortion that is easily mistaken for "rattle" in the speaker, and if the last valve is not a power valve equal to handling the volume the receiver is capable of giving, then overloading of this valve occurs, with the inevitable distortion, and impaired reproduction.

It should be noted that an essential point is to have the diaphragm about 1/4 inch shorter than the frame, so that when standing on a table, the lower edge of the diaphragm is about 1/2 inch clear of the surface of the table.

If the diaphragm shows any tendency to sag, it should be supported by a thin rubber band attached inside the centre ridge about 2in. from the top, and over a small hook under the centre of the top of frame.

If a smaller unit is used to work the speaker, results in proportion to the capabilities of the unit are all that must be expected.

The "omniphone" unit is also suited to drive a linen-diaphragm speaker as recently described.

This type of speaker lends itself well to being placed (sideways) in a cupboard below the receiver.

An ingenious person could elaborate the frame to act as a protection to the ends of the rolls by enlarging the wood ends of frame to come out in a semi-circle projecting outside the rolls. A narrow ornamental edge of metal could then be fastened round, projecting over edges of rolls, but not touching them. The top and bottom edges of rolls must not be allowed to touch anything.

Linen-Diaphragm Speaker.

THE linen-diaphragm speaker is often referred to as the "Air-chrome" speaker, that being the name given to a commercial make on the American market.

A New "A" Battery

A NEW type of A battery accumulator has been invented by a Portuguese Jesuit.

As far as can be gathered, the Almeida accumulator resembles the existing ones in so far as it has its positive and negative plates with a container and electrolyte, but it is much lighter, while the container itself can be made from a cheaper material than hitherto. The electrodes themselves are particularly interesting, the positive plate being a mixture of what may be termed a "passive" conductor and a small proportion of silver, the latter acting as a catalytic agent.

Not Expensive.

SINCE the quantity of silver used is quite small, there is no fear of great expense entering into the cost of manufacture. Expressing it in simple language, we may say that as far as chemical reactions are concerned the silver only works by its "presence," and is not "consumed" in the actual sense of the word.

The negative electrode is essentially, but not wholly, metallic zinc, and the two electrodes work in an electrolyte made up from a solution of chloride of zinc with salts of the same metal (such as zinc bromide).

The accumulator is remarkable in that as soon as it is assembled it can be charged and discharged immediately without any of the usual process of formation, and this undoubtedly is a distinct advantage.

Examining this process, we find that what has been termed the passive conductor of the positive plate, e.g., graphite, generally works with the silver (reduced to powder) to facilitate the action that is being developed by the catalytic agent during the process of charge. As soon as a charging current flows electrolysis begins, first the bromide and then the chloride of zinc being decomposed.

Cannot "Sulphate."

FOR the purposes of explanation, the inventor splits up the actual charge and discharge periods into three phases.

Sulphation, that bugbear of the acid types of accumulators, unless due care and attention is paid to them is non-existent in the Almeida accumulator.

Parasitic discharges do not take place in the positive plate, since it only consists of a passive conductor and a catalytic agent; while, since the negative plate is practically metallic zinc resting in a solution of chloride or bromide of zinc, no internal reactions occur.

In consequence of this important feature it does not matter in what state of charge or discharge the accumulator may be left. It can be retained in that condition for an indefinite period without discharging itself or losing any of its energy.

These features, coupled with the fact that numbers of tests have established a figure of 93 per cent. for the accumulator efficiency, calculated on the usual basis, should serve to awaken a good deal of thought, and further developments are awaited with interest to see how far theory and practical laboratory experiment can be borne out when

it comes to be tackled from the point of view of bulk manufacture.

Large Capacity.

ADDED to this, weight for weight, the capacity is ten times greater; or, conversely, capacity for capacity, the weight is only one-tenth of the average weight for the other two types.

Tips and Jottings

New Eliminators.

TWO types of Igranac B eliminator are now obtainable, the V208 giving 200 volts, 30 milleamps from 240-volt mains, and retailing at £10 10s. The V208A is the same as above, with the addition of an A battery charger that automatically cuts out when the eliminator is switched on. Arrangements are made whereby the A charge can be varied from trickle to 1.3 amps. Price, £15 15s. Both units are enclosed in an attractive-looking pressed steel case, whilst the interior finish

suggests high quality. The International Radio Co., Courtenay Place, Wellington, are the distributors.

Series and Parallel.

WHEN battery cells are connected together in series their individual voltages add together, and the amperage is unaltered. When they are connected in parallel, the amperes are added together and the voltage remains that of one cell. Suppose we have ten accumulator cells of two volts and 5 amps. each. If these are connected in series by joining negatives and positives alternatively, the total output will be 5 amps. at 20 volts, but if they are connected in parallel by connecting all negatives together and all positives together, the output will be 50 amperes at 2 volts. It will be seen that in the latter case we are practically only enlarging a single battery cell by joining on extra plates of the same kind, although they are in separate containers, so that we increase the ampere hours without altering the voltage.



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